LONG-TERM SEED AID IN ETHIOPIA:

PAST, PRESENT AND FUTURE PERSPECTIVES

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CIAT Centro Internacional de Agricultura Tropical International Center for Tropical Agriculture

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ARARI

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Acronyms

ADCS	Adigrat Diocesan Catholic Secretariat (Tigray)
ADLI	Agricultural Development Led Industrialization
AISCO	Agricultural Input Supply Corporation
AMC	Agricultural Marketing Corporation
ARARI	Amhara Regional Agricultural Research Institute
ATF	Agricultural Task Force (also known as National Disaster Management Agricultural Task Force)
BoARD	Bureau of Agriculture and Rural Development
CADU	Chilalo Agricultural Development Unit
CFSAM	Crop and Food Supply Assessment Missions
CIAT	Centro Internacional de Agricultura Tropical
CISP	Comitati International per lo Sviluppo dei Popoli
CRDA	Christian Relief and Development Association
CRS	Catholic Relief Services
DSD	Direct Seed Distribution
DPPA	Disaster Prevention and Preparedness (formerly DPPC)
EIAR	Ethiopian Institute for Agricultural Research (formerly EARO)
ERCS	Ethiopian Red Cross Society
ESE	Ethiopian Seed Enterprise
FA	Farmers' Association
FAO	Food and Agriculture Organization of the United Nations
FVs	Farmer Varieties
GO	Government Organization
GoE	Government of Ethiopia
HCS	Hararghe Catholic Secretariat
IDRC	International Development Research Centre
ICRC	International Committee of the Red Cross
IMC	International Medical Corps
IRC	International Rescue Committee
MoARD	Ministry of Agriculture and Rural Development (in past MoA)
MVs	Modern Varieties
NAIA	National Agricultural Inputs Agency
NEIP	National Extension Improvement Program
NFI	Non Food Items
NGO	Non-Governmental Organization
NSIA	National Seed Industry Agency (now under NAIA)
ODG	Overseas Development Group (University of East Anglia)
OPV	Open-Pollinated Variety
PANE	Poverty Action Network of Civil Society in Ethiopia
PASDEP	Plan for Accelerated Sustainable Development to End Poverty
PSNP	Productive Safety Net Program
REST	Relief Society of Tigray
RRC	Relief and Rehabilitation Commission (now DPPA)
SARI	Southern Agricultural Research Institute
SC-UK	Save the Children – United Kingdom
SNNPR	Southern Nations, Nationalities and Peoples' Region
SV	Seed Vouchers

SVF	Seed Vouchers and Fairs
TARI	Tigray Agricultural Research Institute
UN-EUE	United Nations Emergency Unit for Ethiopia
USAID/OFDA	United States Agency for International Development/Office of Foreign Disaster Assistance
WARDO	Woreda Agricultural and Rural Development Office
WVE	World Vision Ethiopia

Notes

During the course of the research project, there were changes in a number of organizational names and administrative boundaries (and associated names):

- The Ethiopian Agricultural Research Organization (EARO) the Ethiopian Institute of Agricultural Research (EIAR).

- The Disaster Prevention and Preparedness Commission (DPPC) became the Disaster Prevention and Preparedness Agency (DPPA)

- The woreda of Gera Keya was divided into two new woredas: Menz Gera Midir and Menz Keya Midir. Unless otherwise indicated, research took place in both of the new woredas. The older name will be used here when work crossed the two.

Glossary

Belg	Short rainy season, generally lasting two months somewhere between February to June, depending on region
Birr	Ethiopian currency; at time of writing 9 Birr = 1 US$
Certified Seed	Formal sector-produced seed which meets specified standards of variety purity, and physical, physiological and sanitary quality.
Chercheri	Retailer
Delala	Broker
Farmer Variety	Genetic materials broadly-defined as local or traditional varieties, or landraces.
Formal seed system	System producing certified seed, including official research system, seed parastatals, and commercial seed companies.
Gelbach	Farmer collectors (for grain/seed)
Informal seed system	Seed channels that include farmers' own stocks, local exchange networks, and local seed/grain markets (=local, traditional, farmer system)
Meher	Main, longer rainy season, generally three to four months between June and October, depending on region (also called kremt)
Kekabi	Village-level broker, lit. 'donkey ear'
Modern Variety	A variety developed and released by formal research system (sometimes also called 'Improved Varieties')
Quintal	100 kg
Sebsabi	Collector
Tabia	Tigray term for Farmers' Association (=kebele)
Woreda	District, level below Zone

EXECUTIVE SUMMARY

Introduction

This report assesses the effects of emergency seed assistance in Ethiopia. Such aid has been given at least since 1974, making Ethiopia a country with some of the earliest distributions and likely the most continuous emergency seed-related initiatives.

While analyses of food aid in Ethiopia have been abundant, overviews of seed aid are non-existent, with modest site-specific cases appearing only within the last three years. This seed assistance information gap seems a crucial one for an aid practice which has been ongoing for more than three decades and which unfolds in some of the more marginal farming zones and among more vulnerable populations.

Intervening in seed systems represents serious business. Seed is the input at the heart of agricultural production and determines what farmers grow and if they will harvest. Further, as seed is often replanted, even short-term seed-related interventions can have effects over many seasons. The design of emergency seed aid interventions is also particularly challenging as such interventions are complex and context-specific, and, following a disaster, time may be short for anticipating needs of the next season.

For all these reasons, it seems illogical (and unwise) that seed-related assistance to date has received so little attention within the governmental and non-governmental aid communities in Ethiopia. In short, seed aid suffers from being a humanitarian orphan. Seed aid is often given simply because food aid is given: Alternatively, seed provision may be lumped together with the diverse pool of non-food items, and emphasis put on efficient procurement and transport procedures. Far from being a logistical exercise, (i.e., buying and distributing seed), effective seed aid operations demand considerable expertise of (*inter alia),* regional agro-ecology, livelihood strategies and markets. While good seed aid can help, poor assistance can make farmers even more vulnerable.

Aims and Methods

The aims of this investigation have been practical ones:

- to assess the effects of seed-related assistance;
- to promote 'better implementation practice' for the acute and chronic stress zones;
- to help shape general policy and specific guidelines for targeted and effective seed security support (as distinct from food security support).

The report has asked a basic set of questions:

- What is the history of seed aid in Ethiopia?
- What policies shape seed aid practice?
- What forms of seed aid have been delivered?
- Has seed aid been needed?
- What have been the short-term results of seed aid?
- What have been the longer terms results of seed aid?

Investigations have pursued three general strategies. Researchers collected information from different stakeholders in the seed aid process: from national and regional policy makers, including donors; from governmental and non-governmental aid implementers (GO/NGO); from seed supply providers (formal sector and local seed grain/traders); and from farmer aid recipients. The work embraced long-term and short–term analyses, documenting seed aid history as well as the diversity of contemporary implementation. Third, analysts reviewed the national and region policy environments which have shaped seed aid practice.

In terms of field investigations, four sites were identified for intensive case study.

Miesso and Chiro woredas in West Hararghe (Oromiya)
Raya Azebo woreda in Southern Tigray (Tigray)
Humbo woreda in Wolaita (SNNPR)
Gera Keya woreda in North Shoa (Amhara)

The first two of these sites represent 'classic' seed aid scenarios, where chronic drought stress has led to low crop production and repeated emergency aid. The latter two sites have also received repeated aid, though their primary stresses are different: high population density and land degradation.

While this *Executive Summary* presents broad conclusions and recommendations, specific conclusions and recommendations are listed at the end of each report chapter.

SUMMARY OF FINDINGS

1. History and Overview of Seed Aid

Emergency Seed Aid has been implemented in Ethiopia for at least 34 years and has been near continuous since 1982. Conservative estimates suggest $US 15,000,000 per year of seed aid has been delivered by governmental and non-governmental organizations. *Over a 34-year period, this translates to $US 510,000,000 or about ETB, 4,650,000,000 spent for emergency seed-related assistance.*

Three broad types of seed assistance have been identified in use in Ethiopia: besides emergency aid for a crisis or acute stress, seed is provided for chronic stress contexts ('aid for chronic stress'), and for medium to higher potential areas where production is being intensified (that is, more 'developmental aid'). These three are poorly distinguished conceptually, and often not distinguished at all in terms of what is offered 'on the ground'. There seems to be little governmental strategy tailored to addressing these different seed assistance contexts; In particular, seed assistance strategies for the most vulnerable, those in chronic stress areas, appears to be the least well-conceived. This is despite concrete data which show that the lion's share of recent 'acute' seed aid has been delivered in the chronic stress (safety net) zones.

At present:

- Acute seed aid (repeated year after year) is being implemented mostly in chronic stress areas;

- Acute (emergency) aid is being used as an important vehicle for moving new, modern varieties (which, when used alone, is a developmental type of assistance);

- The seed system support component for chronic stress areas (including safety net areas) is near-completely undefined.

The box below lists the broad types of approaches in use.

Emergency Seed Aid • Direct Seed Distribution (DSD) • Revolving Seed Funds • Seed Vouchers (SV, also sometimes called 'coupons') • Seed and Fairs (SV+F, also sometimes linked to Livelihood Fairs) • Seed Swaps (grain for seed, which is then redistributed) • Cash for Seed (in relief context)
Development Seed Programs • Agricultural packages: seed and fertilizer (for repayment) • Modern varieties alone (for free or repayment)
Special Seed Assistance for Chronically-Stressed (within safety net other poverty alleviation programs) • Seed given in food security-related programs • Seed given in HIV/AIDS victim support programs (instead of food aid)

Moving Forward: Recommendations (overview)

1.1 National reflections on seed security strategy need to be planned so as to distinguish recommended seed system support: for emergency, for chronic stress and for developmental contexts. Frameworks need to be sharpened so as to give strategic guidance to on-the-ground implementation.

1.2 Recognizing the considerable overlap between acute and chronic stress contexts, specific reflection should be given to programs which link 'relief to development' (or 'developmental relief'), starting in the emergency phase and continuing through recovery and beyond. This reflection should explore what approaches are already known and proven, and which ones need to be further tested.

2. Policies Shaping Seed Aid

Emergency policy, seed policy and agricultural development policies potentially all shape seed security approaches and this policy set was respectively reviewed. Policies articulating overall government strategy for achieving seed security are not apparent. In terms of specific thrusts, The GoE's strategy of seed assistance for development is strongly expressed through a number of technology transfer programs, including the National Extension Improvement Program (NEIP) and its successors. In contrast, strategies for seed security in acute stress and chronic stress contexts remain inadequately differentiated.

Few specific policies appear to shape seed aid specifically, except a provision to relax regulations of seed quality in situations of acute need. Emergency seed aid remains an 'orphan' within policy.

Emergency seed aid in Ethiopia is not generally used to promote the seed industry (whose mandate is development as the commercial sector remains limited). Package programs presently absorb most of public-sector seed production, which is dominated by maize and wheat. The formal seed industry produces 'other crops' (non-maize/wheat) only in small quantities. Multiplication sites are concentrated in the intermediate and higher attitudes and there is little emphasis on lowland crops. This has implications for seed aid, as most of emergency delivery takes place in drought-prone areas.

Seed aid tends to be affected most by policies designed for other reasons. Food security policy presently leans heavily on agricultural intensification through modern varieties. This promotion affects the shape of seed aid directly in terms of the GoE's preferred choice of approach (Direct Seed Distribution) and use of emergency as the vehicle to distribute modern varieties.

Moving Forward: Recommendations (policy)

2.1 Seed security needs to be put on the emergency, chronic stress and development agendas as a central theme in its own right. This needs to happen at the policy level, as well as in practice, and from national planning and all along the chain down through to the district (woreda) and farmer association-level implementation.

2.2 Special seed security expertise (seed *system* expertise) has to be made available with the MoARD, starting at the national level.

2.3 Crop development for chronic stress areas needs far more attention. Chronically-stressed areas are often "low-potential", and need types of technologies that recognize the high levels of risk and large distances from markets and infrastructure.

2.3.1 One priority is to review technologies that perform under stress and under farmers' management for high-risk conditions (i.e. low inputs). Full packages should not be assumed in these cases.

2.3.2 A second priority is to address the barriers to the development of technologies for stress conditions. More resources need to be directed to research for lowland ecologies,

2.3.3 Related to the above (2.3.2), seed production for lowland crops needs to improve and become more demand-responsive.

2.4 In terms of emergency aid, seed security issues must treated distinctly from food security issues. For this to occur, the integration between emergency and technical agencies needs to improve. Presently, the DPPA does not deal with seeds, while MoARD generally does not engage with emergencies. The current restructuring in the MoARD may offer an opportunity to forge clearer lines of communication between DPPA and MoARD, delineating responsibility so that key decisions are not lost in the "no man's land" between both organizations.

More specifically in reference to emergency aid:

2.4.1 *Seed aid has to be given a separate identity, distinct from food aid practice .*

2.4.2 *Seed aid has to be removed from the ill-defined cluster of 'Non-Food-Items (NFI).* Seed-related interventions demand explicit concepts, expertise and planning. The shopping list of NFI often translates into simplistic supply-side operations (for instance, tallying the amount of seed aid which should be given).

3. Seed Security Assessment

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 have been invariably based, implicitly or explicitly, on food security assessments. This results from a lack of appreciation and understanding of seed security issues.

For farm families to achieve seed security: seed has to be available, farmers need to be able to access to it, and the seed quality must be sufficient to promote healthy seed system functioning. This has to happen in the short and in the long-term

At present, there are no seed security assessments conducted at any level in Ethiopia.

More National Level Assessments

At national level, determinations of need for seed aid are not done directly. Rather, food and crop supply assessment missions, food security assessments, or no assessments at all are used to justify seed–related responses. So seed need is extrapolated from food security assessments, or 'assumed' from food security assessments.

The trigger used to signal a "need for seed aid" is most often a "harvest failure". A drop in harvest is directly linked to a lack of seed. *Concrete examples drawn from across Ethiopian crops and regions show that even a severe production shortfall does not necessarily translate to a seed shortfall.*

While since 2005, there have been initial moves (spurred by the Agricultural Task Force) toward more holistic seed security assessments, the proposed changes exist mostly on paper, and in rough (not sufficiently defined) indicator formats. The current variables for 'best-worst' scenarios are not sufficiently honed for seed security insights, and the formats for determining seed assistance ('emergency needs requirements') encourage a pre-determined response: that seed is needed and that seed availability is the problem.

Regional and Woreda (District) Level Assessments

Seed security assessments at the governmental local (woreda) level are not conducted.

Seed security assessments by NGOs are not conducted.

Seed need estimates at the woreda level are projected for two different factors. 'Possible seed shortage' is inferred from yield loss thresholds. The desire to acquire modern varieties for the zone also strongly shapes seed need assessments. Hence, seed need requests in emergency appeals can be particularly inflated so as to obtain modern varieties.

Moving Forward: Recommendations (seed security assessments)

Seed security assessment tools need to be refined for Ethiopia, capacity needs to be built, and incentives must be put in place to ensure such tools are used. National level organizations (such as the Agricultural Task Force) should be the prime drivers behind this.

3.1 Overall national 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.

3.1.1 The 'best to worst' scenario formula and the emergency needs assessment formats should be reviewed—to shift to seed security perspectives;

3.1.2 The Crop and Food Assessments missions (and other more 'national formats), should be revised to contain a specific seed security component.

3.2 Precise seed security indicators need to built into early warning system programs. These might start by focusing on harvest/seed tables and key indicators for seed/grain market fluctuations.

3.3 Seed security assessment capacity needs to be built at regional and woreda levels . Technical tools are already in development to help agricultural officials move forward on seed security assessments. These include harvest/seed tables, and field 'seed system security assessment' (SSSA) guides. An explicit technical process needs to be put in place to:

- raise awareness of seed security versus food security issues
- set up woreda level seed security indicators
- train woreda level staff in seed security field assessments

3.4 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.*

Without strong seed security frameworks and indicators (as national guides) and without strong leadership ensuring that seed security assessment is given focus (as distinct from food security and other Non-Food Item assessment), seed aid assistance in Ethiopian will likely remain supply-driven rather than demand or problem driven

4. Implementation: Government and NGO Aid Givers

Historical records show seed aid to be continuous in areas considered as stress zones. For example, in one site of study, investigations found seed given 13 times in a period of nine years.

The emergency seed aid approaches used are strongly shaped by institutional philosophy, rather than by concrete problems encountered on the ground. Hence, seed aid approaches used in a given zone directly depend on which implementers are present. The GoE generally uses Direct Seed Distribution (DSD) (assuming that seed availability is the problem). NGOs have taken the lead in testing non-DSD approaches: cash, vouchers, seed vouchers and fairs (assuming that seed access is the problem). Some NGOs still also favor DSD, particularly to promote new varieties.

Two themes shape novel trends in seed aid programming: a) approaches to empower farmers within the seed aid process; and b) approaches to link relief response to more

developmental initiatives. 'Developmental relief' work presently encompasses: support to small scale business enterprises during the relief phase; support to local traders as beneficiaries in relief (via the SVF system), and introduction of new varieties as part of relief aid. Using a 'developmental relief' perspective might be particularly important for chronic stress contexts. (The direct technical approach would need to be tailored to high risk contexts among vulnerable populations.)

Seed aid targeting is little differentiated from food aid targeting. In one effort to encourage that seed received is actually used by farmers, one NGO asks that recipients to sign a 'contract' to plant and not sell aid. Similarly, evaluations are few and far between. Seed aid is often treated as a logistical exercise (that is, distribute seed). Little learning is taking place on even the short-term effects of seed aid. There are a few exceptions.

Moving Forward: Recommendations (GO and NGO Implementers)

4.1 Seed - related responses have to be better matched to actual seed security problems encountered on the ground. This can be encouraged by building capacity to conduct seed security assessments (section above); and also by building capacity among implementers to effect a greater range of response options.

More specifically: developing greater response capacity will involve:

- **4.1.1** establishing two-way learning for a among practitioners of the intricacies of different approaches (GO-NGO and among NGOs)
- **4.1.2** explicit-in-field training on approaches for implementation;
- **4.1.3** awareness raising within government and donor circles of the variety of response options;
- **4.1.4** harnessing financial support for more targeted action;
- **4.1.5** getting policy support for more targeted action.

4.2 The complete gap in seed aid implementer guidelines for Ethiopia also needs to be addressed. An initial set of issues for inclusion in guidelines has been suggested by seed security experts (Box below). The list needs to be expanded and might best be discussed in national fora, with strong regional representation and representation from key stakeholder groups. Such guidelines would be indicative, and non-binding, so debate and consensus are important for achieving subsequent advances on the ground.

SEED RELIEF GUIDELINES FOR ETHIOPIA: (proposed items)

- Seed security assessment needs to be effected prior to intervention.
- The type of aid response should be matched to the seed security problem at hand.
- Implementing organizations need to have agronomic expertise (seed aid is not just a logistical exercise). Such aid intervenes at the heart of a farming system.
- IF seed is to be provided, *minimally:* (examples)
  1. adapted crops and accepted varieties need to be put on offer
  2. the quality should be at least as good as what farmers normally use
- Modern varieties should be introduced in crisis periods only after a well-programmed set of steps has been followed *.
- Monitoring and evaluation (M+E) should be built into all seed relief interventions. This M+E is to promote learning by doing, and to improve practice. Such a commitment to follow-up should be a *pre-condition* to receipt of funds.
- If seed aid in any one zone continues for multiple seasons (3 or more) a review process should take place. The review should either: a) clearly justify the continuance of emergency aid; or b) stop the aid and plan an explicit exit strategy.
- Implementers should be held accountable for the products they deliver (whether from formal sector or from traders). Processes need to be devised for ensuring this accountability.

* Procedures detailed in Box 4 in the full report

5. Implementation: Traders

Seed/grain traders are key for stabilizing farmers' seed systems during both normal and stress periods. Farmers routinely rely on markets to fill seed gaps and traders may be sought as suppliers for select emergency operations (both in DSD and SVF implementation). Traders at all levels (from collectors to large-scale traders), distinguish between seed and grain routinely, but to different degrees according to crop and according to their intended customer base. When presented with specific requests for seed (from local clients, government or exporters), traders can refine their seed management practices and often negotiate premiums to obtain better quality seed and sell better quality materials.

Traders' assessments give strong insights into what happens to seed systems in periods of stress. For example, traders in West Hararghe recounted their extensive business experience, across periods of drought, severe insect and pest attack and civil strife, Traders (from small- to large-scale) asserted that there was *no time, not a single season, when sufficient seed was not available directly within the region or within reach of the region for all key crops. Seed did not need to be brought in from outside as a form of aid.*

While in times of stress, seed availability is not generally a problem, traders do cite other signals, which indicate seed system stress. These signals can be quickly and easily monitored at regional and more local levels.

- Volume changes in seed supply
- Seed price fluctuations
- Changes in geographic sourcing of seed
- Changes in the scale of seed loans
- Seed quality shifts (both positive and negative)

In terms of precise trends, unexpectedly, larger traders in West Hararghe, *increased* the volumes of seed sold during stress periods (sometimes tripling volumes), aiming to capture increased demand. Prices also increased from 50-100%, with the rises due mostly to increased transport costs.

Traders were also directly linked to NGOs and relief programs, particularly involving seed vouchers (with or without fairs). Experience showed that incentives can be put in place which encourage traders to improve seed (versus grain) management within a small number of seasons, so as to improve the quality of supply.

Moving Forward: Recommendations (traders)

Given that local markets and traders are the backbone of farmer seed supply, much more attention should be given to ensuring that these markets can supply the kinds of seed farmers need. .

5.1 Seed/grain traders could be powerful partners in helping to move *new modern varieties* widely within and among farming communities. Methods should be tested for directly linking formal sector seed supply with informal trader seed/grain sellers. Among the items that might be tested and evaluated:

5.1.1 Distribution of variety samples (to stimulate demand);
5.1.2 Sale of small packets of seed;
5.1.3 Sale of modern varieties in bulk.

5.2 Seed/grain traders are potential partners in improving the *seed quality per se* of sowing materials put on offer to farmers. While the quality of farmer seed overall is often shown to be quite adequate, procedures for (*inter alia*) segregating among varieties and reducing percentage of sub-standard grains could give farmer clients a better return for their purchases. Awareness-raising, capacity building and incentives might all be possible measures for encouraging gradual seed/grain quality improvements.

6. Implementation: Farmer Recipients

Farmers receive seed aid repeatedly. The average household sampled received seed aid 3.35 times, with a high of 10 separate seed aid receipts. There is little evidence that recurrent seed aid decreases their vulnerability.

Seed aid supplied about half the seed a household actually planted, for the crop supplied, in any given emergency season. This was the case across all four regions sampled. This figure for seed aid should be interpreted as elevated for three reasons:

- Aid was frequently given specifically to introduce a new variety or even a new crop, so farmers may not have had parallel local stocks;

- Seed is distributed in some regions as a 'third' season, after the normal rains (so farmers already had sown their stocks in the 'season before'). Chickpea, in particular, is often given for such late planting. Many farmers consider this a crop of 'last resort' and do not have their own stocks.

- Seed aid usually provided one or two different crops, but farmers generally grow a range of species. Therefore, seed aid's contribution to overall household seed supply is less than 50%.

Fourteen percent of aid recipients relied on seed aid for 100% of their sowing needs (for the crops distributed). Even in an emergency season, seed aid recipients obtained over 30% of their seed from their own stocks, with another 12% coming from markets.

Seed aid provides a mix of Modern Varieties (MVs) and Farmer Varieties (FVs). Across all regions (with 578 cases examined) 60% of seed aid cases involved MVs and 40% FVs. The balance of MV/FV varied between sites: in the Tigray site, 58% of cases involved FVs; in the Amhara site, only 2% involved FVs. In places such as Humbo and Gera Keya, seed aid largely serves to promote MVs.

The large majority of farmers (95%) indicated that seed was available in their respective regions in periods of stress (in concordance with traders' assessments, section 5). However, farmer preference for aid approaches was not directly linked to the problem identified (i.e. seed availability, seed access, or seed quality). Rather preference varied by region and the way that an approach (DSD, cash, voucher, or SVF) was actually implemented. Generally those wanting to buy their own seed (and preferring voucher or cash approaches) highlighted that they preferred having a choice of crops and varieties. Generally, those preferring the DSD approach found transactions with traders difficult, or sought access to modern varieties.

Overall, no conclusive patterns were identified of long-term changes linked to emergency seed aid (for instance possible changes in seed sourcing practice, or in farmers' relationships with others). In some 400 interviews, obtaining new varieties was the single clear positive impact identified; and widespread dependency, from farmers, traders, and aid implementers, was cited as the single clear negative impact.

Moving Forward: Recommendations (farmer aid recipients)

6.1 Even though farmers are 'recipients of assistance', it is important they be treated as active, not passive actors in this aid process. *Procedures need to maximize farmers' ability to strategize even during an emergency, and especially in vulnerable areas.*

More specifically: this might include

6.1.1 Farmers should have right to say 'no' to any one type of crop and variety, especially if it has been not previously used in system (such as many modern varieties). A range of crop and variety options should routinely be put on offer.

6.1.2 There should be vigorous efforts to get seed aid out early. Early knowledge of what crops and varieties might be on offer increases farmers' flexibility to respond to changing conditions (e.g. rainfall).

6.1.3 Overall standards for fair dealing with farmers should be reviewed, no matter what the approach.

This might involve:

- maximizing information to farmers on expected procedures in advance;
- increasing competition among providers (traders and sellers);
- setting up procedures for farmer feedback to refine aid processes;
- setting up transparent procedures for allowing farmers to redress grievances: —in cases where the aid process or aid product is significantly substandard.

Concluding Comments: There are multiple and significant challenges to improving seed-related assistance in Ethiopia, particularly in the emergency and chronic stress contexts. Changes are needed at the policy, national planning and strategy levels, as well as in the areas of regional, zonal and district implementation. Changes and refinements will involve Government, NGO, as well as donor modifications.

Capacity building and political will need to be reinforced to put seed security issues on the agenda as separate from food security issues. Promoting seed security assessments; better matching seed system-related responses to actual constraints on-the- ground; and generally shaping Ethiopian-specific guidelines for 'Better Practice in Seed Relief', are among the central activities recommended. The aim for future seed system-related assistance is to *move away* from three decades of supply-driven aid and to *move toward* more targeted, effective and problem-solving programs.

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I: INTRODUCTION

Rationale for Report

Why focus on seed aid?

This report aims to assess the effects of emergency seed assistance in Ethiopia. Such humanitarian aid has been given at least since 1974, making Ethiopia a country with some of the earliest distributions and likely the most continuous emergency seed-related initiatives.

While analyses of food aid in Ethiopia have been abundant (e.g. Clay *et al.*, 1997; Sharp, 1997; H.K. Desta, 2003; Quisumbing, 2003), broad overviews of seed aid are non-existent, with modest site-specific cases appearing only within the last 3 years (Mburathi *et al.*, 2004; Bramel *et al.*, 2004). This seed assistance information gap seems a crucial one for an aid practice which has been ongoing for 34 years, which has been implemented across most regions of the country, and which repeatedly unfolds in some of the more marginal farming zones and among more vulnerable populations.

The aims of the investigation have been practical ones:

- to assess the effects of seed-related assistance;
- to promote 'better implementation practice' for the acute and chronic stress zones;
- to help shape general policy and specific guidelines for targeted and effective seed security support (as distinct from food security support).

Worldwide, but particularly across Africa, seed provision to quicken recovery of agricultural systems following disasters has become an increasingly important activity of governmental and non-governmental relief agencies. Its rationale has been an enlightened one: right after a crisis (for example, drought, flood, short-term conflict), farmers should be given the means to produce their own crops for food or sale. In theory, such aid promotes farmer dignity and contains elements of sustainability as farmer production should be restored, and subsequent food aid limited. Also, in theory, such aid makes solid economic sense: given 10 kg of sorghum seed, a farmer in Hararghe can potentially realize 1000 kg of production: this is a good return on a humanitarian aid investment.

This report aims to put seed aid practice in the prime spotlight. Nationally, within Ethiopia, several diverse trends suggest an urgent need for such a seed aid review. The Government of Ethiopia (GoE) is increasingly concerned about dependencies due to repeated aid and national decision-makers are reviewing strategies for addressing constraints particularly in chronic stress areas (Anonymous, 2003). Simultaneously, there is a strong national push towards agricultural intensification and especially for diffusing research-proven technologies towards some of the harder- to- reach areas (i.e. those often targeted by repeated delivery) (Abate, 2006). These review activities are also taking place at a time when the aid and development communities are looking towards a broader combination of measures to tackle food and livelihood insecurity

within Ethiopia, including support to production, market-based measures and provision of social "safety-nets" (GoE, 2004b).

Internationally, this longer-term seed aid review builds on complementary and quite recent initiatives suggesting the need for seed aid reflection and critique. Since 2003, a number of key seed assistance policy makers have been extensively reviewing their shorter-term seed aid activities with the aim of improving their effectiveness. The Food and Agriculture Organization of the United Nations (FAO) has revised it basic "Guiding Principles for Seed Relief" (Sperling *et al.*, 2004b). The Office of Foreign Disaster Assistance of The United States Agency for International Development (USAID/OFDA), has funded a set practical security and seed aid briefs (Sperling *et al.*, 2006a), and increasingly calls for post-implementation evaluation, including in Ethiopia (e.g. Brandstetter, 2004; Gregg, 2004).

Two phrases commonly heard in Ethiopia, by officials and humanitarian practitioners alike, suggest that the general 'problem' of seed aid assistance, and particularly of assistance in chronic stress areas, has entered common knowledge.

1*) "It is not the rains in Ethiopia we need to worry about, but whether it rains in America and Canada."*

[meaning: it does not really matter how the harvests yield locally; more important is the supplies of external aid.]

2) "*In Ethiopia, most of the emergency aid is just failed development"*

[meaning: disaster-related aid is being given in the short-term because fundamental production and developmental problems are not being sufficiently addressed].

It is now past time to give seed aid practice the close scrutiny it deserves.

Caveat: moving beyond delivery logistics

This review of emergency seed assistance in Ethiopia starts with a caveat. Intervening in seed systems during and immediately post crisis periods, represents truly serious business. Seed is the input at the heart of agricultural production. It determines what crops and varieties will farmers grow, when and if they will have a harvest, and partly influences how much they will have to eat. Given that seed can also be replanted, the effects of seed aid may endure for many seasons after the emergency intervention ends.

The design of emergency seed aid interventions is often particularly challenging. Seed interventions are complex and context-specific, especially so following a disaster; time is usually short as seed is needed before the next planting season; and the implementer agency best placed to respond may lack experience in local seed systems and seed security analysis.

For all these reasons, it seems illogical (and unwise) that seed-related assistance has so far been little highlighted or analyzed within the governmental and non-governmental aid communities. In short, seed aid suffers from being a humanitarian orphan. Seed aid is often given simply because food aid is given: hence seed insecurity in a region is most often 'assumed' via food security assessments. Alternatively, seed provision is frequently lumped together within the diverse pool of non-food items NFI. NFI may include inputs related to health, nutrition, water, sanitation, as well as agricultural needs, and their lumping together suggests that their successful delivery mainly involves efficient procurement and transport procedures. Far from being a logistical exercise (that is, simply buying and distributing seed), effective seed aid operations demand considerable expertise of (*inter alia),* regional agro-ecology, livelihood strategies, and markets. Substantial evidence also shows that ineffective seed aid can damage vulnerable farming systems and local economies in multiple ways.

The purpose of this report work is to 'go beyond listing the problems' and to provide a solid platform for moving towards improvements in seed-related assistance. This includes seed-related assistance to address acute stress situations and to address more chronic stress situations.

Finally, this report may well be the first one analyzing the effects of chronic as well as acute seed aid. Lessons from Ethiopia can help inform the design and delivery of seed-related assistance in other chronic stress contexts and other chronic aid delivery contexts.

The Scope of the Seed Aid Analysis

Basic Questions

This report asks a set of basic guiding questions:

- What is the history of seed aid in Ethiopia?
- What policies shape seed aid practice?
- What forms of seed aid have been delivered?
- Has seed aid been needed?
- What have been the short-term results of seed aid?
- What have been the longer terms results of seed aid?

Investigations conducted

To gain insight into these rather fundamental questions the investigations have pursued three general strategies. First, researchers have collected information from different stakeholders in the seed aid process: from national and regional policy makers, including donors; from governmental and non-governmental aid implementers; from seed supply providers (formal sector and local seed grain/traders); and from farmer aid

recipients. Second, the scope of work has embraced both the long-term and short – term analyses, documenting the history of over three decades of seed aid implementation as well as the diversity of contemporary practice. Third, analysts have reviewed the national and regional policy environments in which seed aid has been shaped, and have compared policy guidance with what unfolds on the ground. Hence this report on seed aid in Ethiopia aims to be a comprehensive one.

The types of investigations conducted for the seed aid review fall into six major types. These are introduced in Table 1 below, with short notes on the scope and methods used in each. Greater detail appears in subsequent sections, where findings associated with each thrust are presented.

Table 1 Investigative thrusts used in analysis of long-term seed aid in Ethiopia

Type of Investigation	Commentary
Seed Aid Policy Analyses	Review of major policy documents related to emergency relief, seed policy and agricultural development (laws, proclamations, secondary materials) Interviews at national and regional levels, with: • seed sector officials • emergency agency professionals • academics/policy research NGOs • donors • humanitarian practitioners
Documentary Review of Seed Aid Practice	Review of project reports spanning 35+ years Consultation of MoARD data bases
Governmental and Non-Governmental Organization (NGO) Implementers	Interviews in both Addis Ababa and four major regions. Consultation of project and program records Gov't focus: zonal and woreda: emergency, agricultural and food security officials NGO: 15+ detailed intra-program analyses
Seed Suppliers Interviews (formal sector and local seed/grain traders interviews , including market analysis)	Interviews along the full seed chain in two sites: Gera Keya and West Hararghe. Includes: farmer producers, collectors, retailers, medium level and large traders
Farmers Seed Aid Recipients Interviews and Focus Groups	400 interviews conducted in four major regions:Amhara, Oromiya, SNNPR and Tigray Focus Groups Discussions at each prime woreda site
Secondary Information collection	MoARD, DPPA records, seed system literature, Ethiopia agriculture research reports

Site Choice

For in-the-field analyses (of seed suppliers, aid implementers, farmer aid recipients), several sites were selected for more intensive inquiry. These were selected by the research team, in close consultation with experts in the Ethiopian Agricultural Research Institute (EIAR) and regional Agricultural Research Institutes, major aid implementers, as well as food security and aid experts in the regional Bureaux of Agriculture and the DPPA.

To ensure for valid cross-site comparisons, but also to promote opportunities for extrapolation of findings, regions and specific woredas (districts) were chosen along the following criteria.

- locales had to be sites of repeated seed aid (over long-term, with frequency)
- locales had to be afflicted by different types of stresses (drought, civil conflict, frost, green famine)
- locales had to embrace multiple aid implementers (so as to compare/contrast approaches in one site)
- there had to be solid body of secondary information – so that the regional and systems were well documented (farming systems, socio-economics, livelihoods)
- there had to a strong local commitment to examining seed aid openly
- the sites, as a whole, had to represent distinct farming systems
- the sites, as a whole, had to represent different regional administrations

At the first stages of selection West Hararghe (Oromiya), Wolaita (SNNPR), North Shoa (Amhara), and the South Zone of Tigray were identified as valuable zones for gathering detailed information. The entire research team then traveled to each zone to hold formal launch meetings with key government and Non Governmental Organization (NGO) officials, and to hone in on the choice of woredas for intensive follow up. After local consultation, the following woredas were selected as the final field sites.

- Miesso and Chiro woredas in West Hararghe (Oromiya)
- Raya Azebo woreda in Southern Tigray (Tigray)
- Humbo woreda in Wolaita (SNNPR)
- Gera Keya woreda in North Shoa (Amhara)

The first two of these sites represent 'classic' seed aid scenarios, where chronic drought stress has led to low crop production and repeated emergency aid. The latter two sites have also received repeated aid, though their primary stresses are different (high population density and land degradation). A wide range of crops have been distributed across these sites by the government and different NGOs, using diverse approaches – Direct Seed Distribution (DSD), seed vouchers, and cash for seed.

Figure 1 shows the location of the sites of investigation. Brief descriptive characters for each site appear in Table 2.

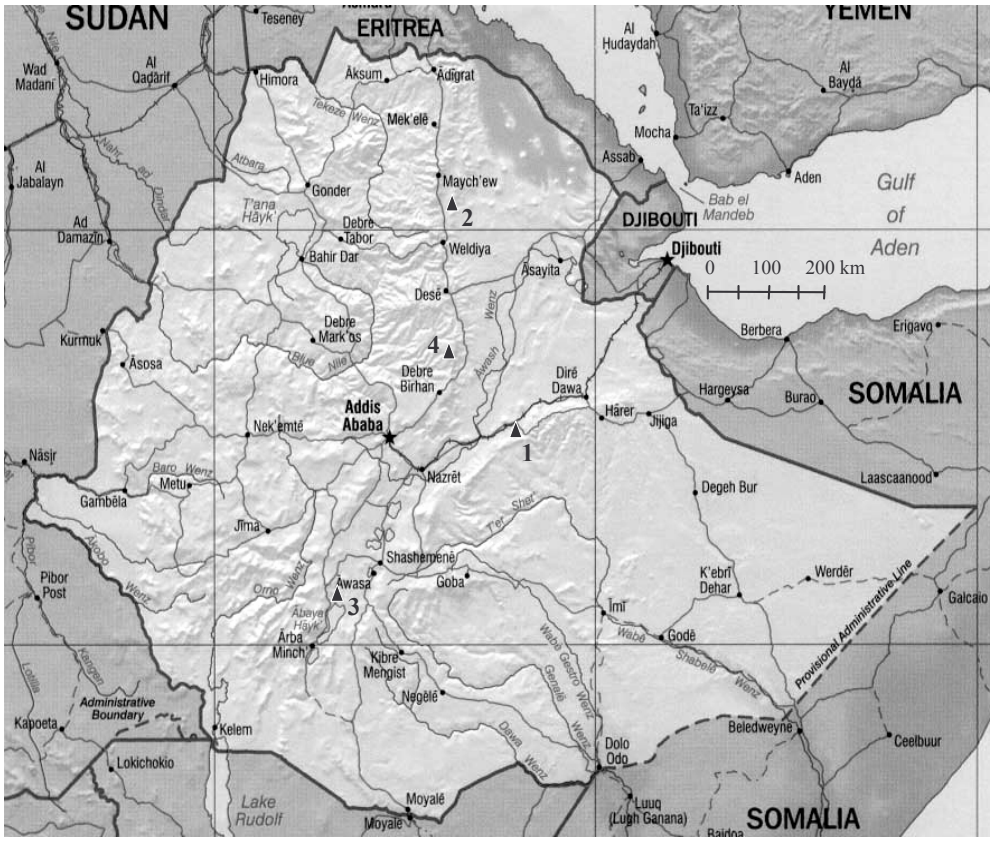


Figure 1 Map of Ethiopia showing location of research sites for farmer surveys and intensive study of seed aid (▲): 1 – Miesso and Chiro, West Hararghe (Oromiya); 2 – Raya Azebo, South Tigray; 3 – Humbo, Wolaita (SNNPR); 4 – Gera Keya, North Shoa (Amhara).

Table 2 Salient characteristics of sites chosen for intensive seed aid analysis

Amhara Region: Gera Keya • Land degradation, frost, hail, waterlogging, some drought • Seed aid since at least 1985 • Barley, wheat and beans • Implementers: GoE, FAO, World Vision Ethiopia (WVE) • Only DSD	**Oromiya Region: West Hararghe (Chiro and Miesso)** • Moisture stress/drought • Seed aid at least since 1984 • Sorghum, maize + haricot bean main crops • Many implementers: BoARD/DPPA; CARE, International Rescue Committee, Hararghe Catholic Secretariat, Ethiopian Red Cross Society (ERCS), GOAL • DSD, vouchers, seed vouchers and fairs
SNNPR: Wolaita- Humbo • 'Green famine' small land size, drought • Seed aid at least since early 1990's • Maize, beans, sweet potatoes, enset • Implementers: WVE, International Medical Corps, Concern, Christian Relief and Development Association (CRDA) • DSD, Seed Vouchers and Fairs.	**Tigray: Raya Azebo** • Moisture stress/drought • Seed aid since mid-1980s • Teff, chickpea, maize. • Implementers: BoARD, REST • DSD, cash for seed (revolving fund)

The Structure of the Report

This report is divided into eight major sections. After this introduction, Chapter II presents some of the basic introductory concepts needed to understand the elements of seed security, and gives an overview of the kinds of approaches used to date to address possible security constraints. Chapters III and IV give overviews of seed aid in the Ethiopian context: chapter III focuses on the history of seed aid and gives a more global analysis of how emergency seed problems have been conceived and requests triggered. Chapter IV describes the policy environment shaping seed aid to-date, drawing elements from emergency, seed and developmental policies and programs. Chapters V, VI and VII, then shift to implementation concerns and what happens on the ground. They describe the processes of seed aid practice and some of the effects of such practice on farmers' crops , seed acquisition and seed security strategies. Chapter V and VI specifically look at the 'supply side of aid ': what the governmental and non-governmental agencies have to share, as well drawing on the insights of local seed/grain traders who are key seed suppliers and supporters of local seed systems in normal and stress periods. The last substantive chapter, VII, turns to the purported beneficiaries, or the 'demand side of seed aid' The views and practices of farmer seed-aid recipients figure prominently. The final chapter, VIII, summarizes the main conclusions and broad recommendations for moving forward. In addition, more detailed summaries as well as more specific recommendations appear at the end of each individual chapter.

II: BACKGROUND TOOLS: SEED SECURITY AND SEED AID RESPONSE

Before addressing seed aid and seed security issues specific to Ethiopia, this section presents select key concepts and background material necessary for interpreting the analysis. The concept of seed security is introduced in some detail and the types of seed aid approaches used to support such security 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 for their own consumption as well as for 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 invariably based, implicitly or explicitly, on food security assessments. This results from a lack of appreciation and understanding of seed security issues.

The concept of seed security (and its inverse, insecurity) is often nuanced by two broad sets of parameters: duration (are the problems short or longer-term?) and the different features needed to ensure security (if there are concerns, what types of diverse problems might farmers encounter?). These are discussed below.

Distinguishing Acute from Chronic Seed Insecurity

Seed security concerns can be short-term, that is 'acute' or longer-term and longer-lasting, that is 'chronic'.

Acute Seed Insecurity

Acute seed insecurity is brought on by distinct, short-duration events that often affect a broad range of the population. It can be spurred by the failure to plant in a single season, dramatic loss of a harvest, or by high levels of infestation of seed stocks. While during normal times households may variously be identified as seed secure, semi-secure, or always seed-short, during an acute event such as a flood or short civil disturbance all households may be affected. Those farmers who recover quickly, with or without one-off seed-related assistance, are often those who have suffered only acute stress. Acute food stress (and the need for food aid) is not necessarily followed

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

by seed stress (and the potential need for some form of seed aid). Seed systems can be very resilient, and, for some crops (e.g. sorghum), farmers' require only small amounts of seed.

Chronic Seed Insecurity

Chronic seed insecurity is independent of 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 – e.g. economically (poor, little land, little labor); ecologically (with degraded land); or politically (in insecure areas, or on land with uncertain tenure arrangements). Populations that suffer chronic seed insecurity may be continually short of adequate seed to plant; may have difficulties in acquiring seed off farm due to lack of funds; or may routinely use seed of low quality or unwanted varieties. Such households experience built-in vulnerability to seed system calamities.

Reflections on the relationship between acute & chronic insecurity

Acute and chronic seed insecurity will very often exist together during an emergency. Indeed, in cases where emergencies are recurrent events, for example in drought-prone areas, acute situations are nearly always superimposed on chronic problems that are rooted in poverty.

Distinguishing the Dimensions of Seed Security: a Framework

The concept of seed security *per se* 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 3) 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 3 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)

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 using the framework, it is important to emphasize that the distinction between availability and access is dependent on scale. At some level, if one is willing to pay enough to transport seed from far enough away, potential seed is always available. Likewise, the concepts of availability and quality are interrelated. If sowing material is available which will mature to harvest, but which is of low quality or of unwanted crops or varieties, one might identify the security constraint as a seed quality problem, but one could also question whether appropriate 'seed' is available at all.

More Refined Analyses Leading to More Targeted Responses

Using the two aspects of seed security outlined above, Table 4 gives examples of more targeted responses to seed insecurity. 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 seed production enterprises (for chronic stress), may be appropriate. In contrast, a diagnosis of a problem of 'seed access' might wisely trigger a more holistic analysis of livelihood strategies. In the acute phase, providing farmers with cash or vouchers to get their desired seed might be the best response to address problems of access. 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 livelihood base would be essential here.

Table 4 Seed System Problems and Broadly Appropriate Responses

Parameter of the problem	Acute (short-term)	Chronic (longer-term)
Unavailability of seed	Direct distribution of seed (possibly for sale)	Support development of seed production, incl. commercial enterprise, where viable
Poor and vulnerable farmers do not have access to seed	Cash or voucher disbursement Seed fairs with vouchers or cash	Poverty-reduction programs: e.g. support development of Income-generating activities Agro-enterprises

Current Major Response Options Being Used in Emergency

Finally, as an introductory tool, this section sketches the types of seed-related interventions currently being implemented. Such interventions 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 5).

Table 5 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 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
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
	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).

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 would imply that a lack of seed (non-availability) is the problem encountered on the ground. In practice, DSD approaches also often involve promotion of Modern Varieties as their central element. Such a seed security response implies that 'problems of seed quality' have been identified. In brief, the main seed security response option, used worldwide, and as we shall see, also in Ethiopia, assumes that seed availability and seed quality are the key constraints in acute stress contexts.

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 Ethiopia shortly thereafter). Both these forms of assistance tend to be based on the assumption that seed *is* available in a given context, and that farmers simply need enhanced means to buy it. So, in theory, use of these latter approaches would imply that the aid implementers have diagnosed the seed security problem as being one of access one.

One can continue down the Table 5 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 might be encountered (availability, access, seed/varietal quality) and whether this problem is a short (acute) or long-term one. In practice, we will see that 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.

The main message of these background tools is two-fold. First, effective seed aid response has to be linked to an understanding of seed security issues. Second seed security issues cannot be directly inferred from food security frameworks and assessments.

It is within this context of a potentially broad number of supply-side options, and with the recognition that each could potentially respond to a well-defined set of seed security constraints, that we turn to specific issues of seed aid in Ethiopia.

III: THE HISTORY OF SEED AID IN ETHIOPIA

Overview

Seed aid in Ethiopia has been delivered at least since 1974, that is, from the time when the Relief and Rehabilitation Commission (RRC) was first established (Shimeles Adugna, pers. comm., 2006). Seed aid also seems to have been near continuous since 1982. As suggested by one World Food Program representative, from the mid-1980's onward, food insecurity in Ethiopia has been assumed, with "five to six million people chronically food insecure ….no matter what happens" (Shaver, 2004). With food insecurity, the need for seed has been routinely also been taken as a given.

Table 6 gives a long-term snapshot of seed aid delivery, taking examples from the centralized records (found in Addis Ababa) which present country-wide overviews. Remarkable is the large range of crops delivered via seed aid, (for example, chickpea, lentil, horsebeans, sorghum, teff, barley, peas, haricot beans) suggesting that crop choice is somewhat tailored to agro-ecological zone. Early records also show seed for aid variously being sourced from local markets, private traders, the Agricultural Marketing Corporation (AMC), as well as from the Ethiopian Seed Corporation (now Ethiopian Seed Enterprise - ESE). Unlike in many other Africa countries, seed aid in Ethiopia is not uniquely tied to the Ethiopian seed industry, although some implementers do often prefer to promote modern varieties and commercial seed via aid relief (for example, the Food and Agriculture Organization of the United Nations - FAO). The aid situation in Ethiopia, where there is a partial de-linking of aid away from the seed industry, means that there is potential to source a diversity of crops to meet regional needs, and also to seek out locally adapted varieties of these crops. Hence seed aid in Ethiopia includes farmer varieties, modern varieties released within Ethiopia, as well as occasional cases of modern variety importation, for such crops as vegetable seed, Irish Potato and hybrid maize (See also Chapter V, on implementation programs.)

The formal sector, ESE, does provide some stocks for emergency use. For example, in for the period July 2003 to July 2004, "Relief Serving Organizations" purchased 26,107.26 quintals of ESE's total 208,670 quintals of production, or 12.5% of its total seed stocks (Ali Adam, pers. comm., 2004). However, ESE professionals suggest that even within the last five years, as Ethiopian policy pushes for agricultural intensification, the volume of such formal seed sector purchases for seed aid has been declining (ESE, communication Sept 14, 2005). By its own accounts, ESE does not maintain stocks of the drought-tolerant, short-cycle varieties that are often sought by NGOs working particularly in emergency operations in drought-prone zones. Further, both ESE and select NGOs report that donors are often reluctant to distribute varieties that demand inputs as part of emergency response, and in some cases, donors prohibit the distribution of specialized crops such as hybrid maize, altogether. As ESE tends to specialize in wheat and maize, and promotes varieties primarily for the better potential regions, its role as a seed supplier for acute stress areas inherently remains limited.

Table 6 Seed Aid in Ethiopia: Summary 1974 to present

Year	Type of Assistance	Region	Crop	Total Amount	Organization	Source of Information (most reports available in UN-EUE library, Addis Ababa)
1974	DSD (with Oxen)	Tigray and Wollo	not specified	n/a	Tiers Fund	Shimeles Adugna, first head of the Relief and Rehabilitation Commission- First year RRC was established,- seed aid given
1983-1984	DSD (maybe with fertilizer inputs)	Wollo and parts of south and southwest	not specified	"agricultural inputs for 50,000 [farmers]" (This is a request: not clear if it was implemented)	FAO/WFP special task force	Special Task force Document: FAO/WFP "Exceptional International Assistance Required in Food Supplies, Agriculture and Animal Husbandry for African Countries in 1983/4. Situation Report No. 2"
1985-86	seed and tools 'seed swap' whereby 17765 MT of US wheat sold to AMC to purchase local seeds available in country 'food for seed' programs Agricultural packages	countrywide	crop not specified—but swap relief food for local grain, to be then used as seed Some seed bought from AMC (teff) and Ethiopian Seed Corporation (which provided wheat and maize) CARE- dist. maize and sorghum seed in Hararghe- haricot and chickpeas sourced from private traders Sorghum from local markets	in 1986 some 33,000 MT of seed given to drought victims among with 1.3 million hand tools and 19,000 draft oxen Seed given could cover 10-15% national requirement, More than $US 43 million spent in Agricultural Recovery	RRC distributed food US and CRDA NGOs- (Christian Relief and Development Organization) also operating were : Ethiopian Red Cross (ERCS) League of Red Cross and Red Crescent Societies (LICROSS) International Committee of the Red Cross (ICRC) World Vision International	report: The Ethiopian Drought/Famine Fiscal Years 1985 and 1986 By the staff of the USAID Office Americin Embassy, Addis Ababa, Ethiopia. Mimeo 94 pages USAID written report, , but with broad country overview US statistics plus , individual NGO statistics report: Provisional Summary of Emergency Contributions Received in 1986. Ethiopia (Un-EUE document 1630.73) <u>Donors for Agricultural Inputs:</u> USAID, AEA Canada, Band Aid, UK, France, CRDA, EEC, IFAD, Ireland, CRS, Oxfam UK, Sweden, China, CIDA, Menschen,

Year	Type of Assistance	Region	Crop	Total Amount	Organization	Source of Information
1986	DSD	Wollo also: Hararghe, Tigray, Eritrea	included:. maize sorghum teff barley wheat haricot bean chickpea lentil sesame Horse beans some seed from ESC (wheat) some food-for-seed swaps some purchase on market (as above, 33,000 MT seed)		RRC CRDA Oxfam SCF	Ministry of Agriculture/ UN Office for Emergency Operations in Ethiopia: Seed Coordination Meetings-1986: comments Knowledge of 'suitable seed to specific areas should be gathered at central place (ESC/MOA)' Assessment of how much seed should be done through RRC early warning figures but, type of seed- should be advised through ECS/MOA there should be trials and multiplication of drought resistant varieties Scheduled a field evaluation 1986: several cases of unsuitable varieties and many cases of seed being distributed late.
1985-89 (CRDA reports) (also data 1990, 1991 appended)	Seed and Tools	country wide	CRDA 1985 99,655 tools and 6,000 MT seed (crop not specified) 1986 16,700 metric tons of seed, 437514 tools in 12 of Ethiopia's 14 adminisitrative regions- esp. Wollo 1987 67,531 quintals of seed distributed to 28 implementing agencies in 12 of Ethiopia's 14 administrative regions In order of importance, seed given of: wheat, chickpea, sorghum and teff then maize, barley, peas, haricot beans, lentils and horse beans plus 169,690 hand tools 1988 130,134 quintals seed (9085 during the Belg) and 121, 049 quintals of 17 varieties of seed during the Meher plus 339,131 pieces. of 10 different types of tools—to drought-affected farmers in 11 administrative regions 1989 33,438 quintals of 15 types of seed and 192,594 pieces of 12 different tools. distributed in all administrative regions but Tigray 1990 18,028 quintals of seed 96,055 pieces of tools 1991 12,813.50 quintals of seed			report: "5-year review of CRDA General rehab program 1985-1989 (year 1990)" CRDA assisting with Logistics as MOA "do not have the capacity to purchase, transport and co-ordinate the distribution of agricultural inputs in a timely manner" 1988- some evaluation of seed aid given: gave 15 kg per beneficiary – met 63% of needs, CRDA coordinates the General Rehabilitation Programme (GRP): includes 29 member churches and agencies Expernditure: Agricultural Rehbilitation: CRDA Year Million Birr 1985 5,965,710 1986 17,193,560 1987 8,487,947 1988 15,504,648 1989 4,669,916 Total 51,821,781

Year	Region	Type of Assistance	Crop/ Total Amount	Organization	Source of Information
1987	"Peasant Sector" Shewa Sidamo Welo Gamo Gofa Hererge Keffa Illubabor Wellega "Settlements"	DSD (developmental aid?)	"Peasant Sector": tons Teff 2.2 Maize 40.1 Sorghum 0.7 Wheat 75.5 Peas 0.2 Haricot bean 0.2. Chickpea 2 .2 Total 121.1 "Settlements": Tons Maize 12.5 Sorghum 3.8 Wheat 17.6 Peas 1.4 Haricot bean 0.5 Total 35.8		FAO Crop Assessment Mission Report Ethiopia (Nov-Dec 1988). Rome Dec 1988. 18pp + Annexes Seed Sourced from Agricultural Inputs Supply Co. (ALSCO) Crops focused on Maize and Wheat. This is likely developmental aid.
1988	"Peasant Sector" Shewa Sidamo Welo Gamo Gofa Hererge Keffa Illubabor Wellega "Settlements"	DSD (developmental aid?)	"Peasant Sector": tons Maize 8.8 Sorghum 0.1 Wheat 30.4 Total 39.3 "Settlements": Tons Maize 3.6 Sorghum 2.4 Haricot bean 0.9 Soyabean 0.3 Total 7.2		FAO Crop Assessment Mission Report Ethiopia (Nov-Dec 1988). Rome Dec 1988. 18pp + Annexes Seed Sourced from Agricultural Inputs Supply Co. (ALSCO) Crops focused on Maize and Wheat. This is likely developmental aid.
1992	DSD (especially in Tigray and Wollo)		5,870 MT response to FAO's 1992 Emergency Appeal	FAO-OSRO	United Nations 1993 Consolidated Inter-Agency Appeal: Ethiopia January 1993: Special Emergency Programme for the Horn of Africa (SEPHA)

Year	Type of Assistance	Region	Crop	Total Amount	Organization	Source of Information
1993	DSD "provision of seeds"	for: Tigray, MNetekel Wello, Arsi, Hararghe North Shewa, Sidamo, Wellega, Illubabor, Keffa, Assosa, Gambella	Imported seeds: emphasis on hybrid maize and sorghum to be supplied by state farms Also : import request for high-quality vegetable seeds, and high yielding Irish Potato varieties Local purchases: barley, teff, pulses and oilseeds- from other regions: Gojjam, Sidamo and Wollega	$19,341,000 funds requested by FAO January-June 1993		United Nations 1993 Consolidated Inter-Agency Appeal: Ethiopia January 1993: Special Emergency Programme for the Horn of Africa (SEPHA) This was an appeal-- it is not clear how much was eventually supplied
1993/4	DSD	"drought-affected areas"	(not clear which crops) but included: the distribution of improved varieties that are no longer resistant or prevalent diseases (e.g. Enkoy and Dashen Wheat varieties) and grain of local landraces used as 'seed'	26,000 MT of 'Seed' (quotations in doc)	MOA, although FAO-OSRO contributed 6,050 MT or 23%	Project Proposal for the establishment of national seed reserve

Year	Type of Assistance	Region	Crop	Total Amount	Organization	Source of Information
1995		countrywide (with only root crops given in regions 2 and 5)		emergency REQUEST 13,127 MT seeds and 40, 978 MT of fertilizer includes also training on root crops propagation and production Also, for West Hararghe, for those displaced by ethnic conflict, who are returning: 165.5 MT seed and 2814 sets of hand tools	Relief and Rehabilitation Commission	The Relief and Rehabilitation Commission: 16 Dec 1994: Relief and Rehabilitation requirement Assistance for 1995
1995 Main season	CARE- Chiro DSD DSD	East Shewa: East and West Haraghe Miesso	Short-cycle maize, sorghum and haricot bean—on loan basis. MOA: 5.4 MTt short-maturing seeds (not specificed).5 mt of pesticide (sevin) on loan basis CARE: 7.5 MT maize, 17.8 MT sorghum 3 MT haricot bean improved seeds		CARE	Final crop assessment : 1995 East Shewa, East and West Hararghe CARE Ethiopia's Food Information Systems

Year	Type of Assistance	Region	Crop	Total Amount	Organization	Source of Information
2001	Seed and Tools	for: Amhara Tigray Oromiya SNNPR Afar Somali	For Amhara: wheat barley Irish Potato vegetable seed For Tigray: wheat barley Irish Potato vegetable seed For Oromiya: maize, barely, haricot beans, vegetable seed, sweet potato cuttings	amount requested: $US 4,217,000.	FAO	report: Food and Agriculture Organization of the United Nations: November 2000. Special Relief Operations Service: TCOR Ethiopia January-Dec 2001. "Agricultural and Livestock Relief and Rehabilitation Requirements for the Drought-affected Populations of Ethiopia see also: report (anon): Non-food Aid Humanitrian Requriements for 2001. (UN-EUE document 162-180).
2002	DSD	countrywide assessment of seed need--	sweet potatoes and vegetable seeds	$2,349,888 (requested)	GoE + FAO (via UN Office for the Coordination of Humanitarian Affairs)	UN Strategy Paper, Ethiopia November 2002
2003-4			Emergency seed appeal	$ US 6,117,490		
2004-5			Emergency seed appeal	$ US 9,149,565		
2006			Emergency seed appeal:	$ US 4,866,466		

Numeric Trends in Seed Aid

It is difficult to calculate the magnitude of emergency seed aid in Ethiopia and assess if absolute volumes are increasing or decreasing. What is certain is that seed aid has been near- constantly delivered for 34 years and, that the number of implementers has augmented particularly within the last five years, as both agricultural and non-agricultural NGOs regularly implement aid, in addition to the GoE's own emergency seed programs. The difficulty in making absolute seed calculations is three fold.

Fragmented delivery documentation

First, documentation is relatively scarce. The library of the United Nations Emergency Unit in Ethiopia (UN-EUE) contains some important early accounts of seed aid delivery as do the headquarters and regional offices of NGO implementers. The CRDA, for instance, had particularly thorough records. Government records, whether from Federal or from Regional offices (e.g. Ministry of Agriculture, zonal Bureau of Agricultural Development), tend to be fragmented, and mostly are available only for the last five years. Seed aid records are retained only for short periods. Finally, different implementers do not always coordinate information sharing. Government and NGO records are not always amalgamated, even in the same decentralized zone.

Under reporting of seed-specific aid

Seed delivery is often lumped together in 'general relief supplies' or with the heterogeneous group labeled Non-Food Items (NFI: tools, oxen, fertilizers, pesticides, etc): hence it is not itemized specifically. Seed may also be given as an adjunct to food aid shipments, and not be reported separately.

Failure to distinguish emergency from non-emergency seed aid

The most important reason for not being able to isolate emergency seed aid trends is a conceptual one, and has important implications for shaping practical seed aid interventions. Emergency seed aid delivery is usually not distinguished from two other types of seed-related aid: seed assistance given for chronic stress areas (now included as part of the Ethiopian safety net programs) and seed assistance given within a larger cadre of developmental assistance. This is discussed directly below.

What is certain is that the money involved in seed aid operations is impressive. For the three-year period 2003-2005, government emergency appeals requested an average of $US 8,078,791 per year, with $4,866,466 being requested in 2006, a period after good harvests[2] (Lautze, 2006). These government appeals are in addition to the substantial funds directly accessed by NGOs. *A conservative calculation (including Government and NGO seed aid deliveries) would suggest at least $US 15,000,000 per year over the last 34 years*, including in such extreme drought-affected years as 1986, when at least $43,000,000 in agricultural recovery (mostly seed) was distributed in rural areas. *With a total cross-year figure of $US 510,000,000 in emergency seed (about ETB 4,650,000,000 Birr), one would expect to see marked changes in rural agricultural productivity, due to seed aid emergency assistance*

[2] Seed was being requested for select flood/conflict affected regions (Amare Mengistu, pers. comm., 2007)

Broad Types of Seed Aid Given

Three broad categories of seed aid are given in Ethiopia. Seed is given for emergency response, for developmental reasons, and often as a component of poverty or chronic – stress alleviation programs. While this report distinguishes them conceptually, these three broad types are mixed together during periods of implementation, lacking clear definition of goals, strategy or priority content. Table 7 loosely summarizes what might be found within each type of seed aid category. Comments on each are presented below.

Table 7 Broad types of seed-related assistance given in Ethiopia

Emergency Seed Aid • Direct Seed Distribution (DSD) • Revolving Seed Funds • Seed Vouchers (SV, also sometimes called 'coupons') • Seed and Fairs (SV+F, also sometimes linked to Livelihood Fairs) • Seed Swaps (grain for seed, which is then redistributed) • Cash for Seed (in relief context)
Development Seed Programs • Agricultural packages: seed and fertilizer (for repayment) • Modern varieties alone (for free or repayment)
Special Seed Assistance for Chronically-Stressed (within safety net other poverty alleviation programs) • Seed given in food security-related programs • Seed given in HIV/AIDS victim support programs (instead of food aid)

Emergency seed aid

Emergency seed aid in Ethiopia embraces a varied set of approaches (Table 7). There is no evidence that the use of these approaches is linked to specific seed security problems *per se*. Rather, choice of use each approach seems to be most closely linked to the a) institutional philosophy of the implementer; b) donor guidance or stipulations and; c) capacity to implement any one type of response (see chapter V)[3].

Developmental Seed Aid

The content of developmental seed aid in Ethiopia has been well documented elsewhere (Howard *et al.*, 2003, and see Chapter IV). The government has long been promoting modern varieties, and use of certified seed, often along with fertilizer and

[3] Chapter IV of this report, "*Implementation on the ground: The supply side: insights from GO/NGO seed aid givers*" summarizes perceived strengths and weaknesses of each seed aid option.

pesticide complements. Such 'package programs' have been designed for the better-off contexts but are also often been implemented in high stress regions.

An unusual finding from an emergency seed aid perspective is the degree to which developmental needs shape the content of what is requested in emergency programs. Within the course of fieldwork, there was substantial evidence that local-level officials are using emergency requests as the prime vehicle for helping farming constituencies get access to modern (or research-derived) varieties (Chapter V). Because formal extension and the formal seed sector do not serve the marginal areas on a routine basis, 'emergencies' prove the stop-gap measure through which poor or geographically distant populations get access to public research sector development products. Certainly, there should more cost-effective and targeted ways of distributing modern varieties than blanket seed aid distributions during times of high stress.

Seed Aid as component of chronic stress-poverty alleviation programs (including safety net programs)

Finally, the least defined of the broad types of seed aid is that associated with poverty alleviation programs. Seed is a common component in safety net programs, in general food-security-related programs, and even in those associated with HIV/AIDS victim support. Yet, despite that these programs are often focused on the most vulnerable populations, and often in regions of marginal productivity, the seed aid strategy is neither explicit, nor tailored, nor consistent (nor well documented), as how best to reach some of the 'hardest to support.'

In brief, after multiple interviews with implementers at many levels, it appears that the seed aid strategy for chronic stress contexts is pretty much a 'black box'. Implementers can recite well the food package involved, but when it comes to seed, the delivery content changes by site and is rarely articulated. In fact, in multiple cases, officials were unclear if seed aid was or was not a component of the safety net program implementation in their own sites.

This vague thinking associated with a vital seed input (which has effects for seasons to come) is odd, given the extent of implementation. A compelling analysis of a recent GoE emergency seed appeal shows that about ¾ of the woredas requesting seed assistance are indeed those targeted for safety net interventions (143 out of the total of 203 woredas seeking assistance; Table 8) (Lautze, 2006). Hence it is much more common for seed aid to be given within safety net zones than within non safety net zones. Further, of the 203 woredas seeking emergency aid assistance in 2006, only 29 (14%) did not seek assistance in 2003, 2004, or 2005 (Lautze, 2006). The problems being faced are clearly chronic ones-- and the seed aid assistance strategy adopted should be tailored to the specific needs of this chronic stress context.

Table 8 2006 Emergency seed appeal, by Safety Net and Non-Safety Net Woredas

Region	Woredas needing seed assistance			Total Safety Net Woredas	Safety Net Woredas requesting seeds (%)
	Total	Safety Net (PSNP) Woredas	Non Safety Net Woredas		
Tigray	28	24	4	30	80%
Gambella	6	n/a*	6	n/a	n/a
Oromiya	53	43	10	51	84%
Amhara	56	52	4	53	98%
Dire Dawa	1	1	0	1	100%
Afar	3	n/a	3	n/a	n/a
Somali	24	n/a	24	n/a	n/a
SNNPR	24	23	1	57	40%
Benishangul Gumuz	8	n/a	8	n/a	n/a
Harari	0	0	0	1	0
Total	**203**	**143**	**60**	**193**	**74%**

Source, Lautze (2006) (*- Safety Net program not operating in some regions)

Seed Needs Assessment at the National Level: The Inadequacy of 'Harvest Declines'

In this last section, we move from the supply side of seed aid (what is delivered and implemented) to looking at how the demand for seed aid for the 'needs' is assessed.

This theme of needs assessment (also linked to 'diagnosis' of the seed security concerns) is a key one, and will be addressed in several sections of the report. Here, we investigate the overview frameworks which are used in making seed need determinations. In Chapter V (GO/NO implementers) and Chapter VI (seed/grain traders), we examine the processes by which calculations are more precisely made in practice, tracing seed needs calculations from the woreda level up.

Seed Needs Assessments: general methods (or lack thereof)

Seed security assessments, worldwide, are rarely given explicit attention. Seed security and food security are often conflated as being 'nearly the same one' and seed security assessments are invariably based, implicitly or explicitly, on food security assessments. Thus, in practice, one of four strategies is routinely employed for 'assessing' seed security, none of which is sufficiently accurate or timely for assessing seed security among vulnerable farming populations:

- No assessment is done at all—and seed need is assumed.
- Food security assessments are effected—and seed need is assumed.
- A crop production fall (decline) is measured—and seed need is assumed.
- Lengthy surveys of farming and rural production systems are completed—and the results are analyzed and written up—after emergency seed has been delivered

(Sperling *et al.*, 2004a)

As mentioned previously, food security and seed security are linked, but also are quite distinct. Households can have enough seed to sow a plot, but little to cover their large food needs. Conversely, households can have adequate food, but lack access to the seed they need to make their plots productive. So food insecurity does not necessarily equal seed insecurity, and vice-versa, seed insecurity does not necessarily translate into food insecurity. Assessments which target in on the key indicator features of both are required.

General assessments: based on food and crop supply assessment missions

Within Ethiopia, seed needs assessments are most closely linked to the MoA/FAO Crop and Food Supply Assessment Missions (CFSAM) (H. Kebede, Amare Mengistu, pers. comm., 2007). These missions take place twice yearly (monitoring each of the two major seasons) and have been ongoing in Ethiopia at least since 1994, Focusing on crop production (yield assessments), the missions broadly aim to project total grain production estimates and assess grain market functioning so as to calculate possible emergency food requirements.

The methodology for the CFSAM has been formally published (FAO, 1995) and is under revision. It is not the purpose of this seed aid report to make a formal analysis of the food assessment approach. Simply, here, we reiterate the major point: seed need assessments within Ethiopia are extrapolated from crop production surveys, yield loss assessments and ultimately food need assessments. This is in spite of the fact the CFSAMs do not focus on seed explicitly (H. Josserand, pers. comm., 2007).

The limits of using 'harvest loss' as the prime seed need assessment indicator.

The most common trigger for justifying the delivery of seed aid, within Ethiopia and beyond, is a broad observation that there has been a 'harvest failure'. 'Harvest failure' or 'production shortfall'; is invariably then been linked with the conclusion that 'seed is not available' (and then that it needs to be brought in from elsewhere). Many of the seed need guidelines used in Ethiopia, state that if production decreases 50%, seed aid 'should be dispensed.' The issue is how to start to move forward towards more accurate assessments.

Drawing on basic agronomic knowledge, and refining it with in-the field reality, recent research has closely examined seed needs as they relate to possible harvests (Sperling *et al.*, 2006b). Findings show that the per cent 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 three percent of the harvest is needed for seed.

Examples, drawn from the field sites within this report, illustrate the relation between harvest and seed availability more specifically (Box 1), drawing on contexts of drought-prone, flood- frost prone and 'green famine' regions (more lush regions with miniscule landholdings). The message from all these tables is consistent: that a *production shortfall is not necessarily equal to a seed shortfall,* not even in a bad year,

and not even when multiple re-sowings may be needed. For many crops analyzed in the Ethiopian contexts (for example, common bean, faba bean, maize, sorghum, peanut, wheat, teff) harvests can drop as much as 80-90%, and enough seed is potentially on offer. We are cautious and add 'potentially' as the quality of seed in the harvest has to be adequate and farmers have to be in the position to save sufficient stocks till sowing time. This may be particularly challenging in regions with just one agricultural season per year.

The point is, as a tool, sowing needs/harvest indexes could provide a keen indicator as to whether a potential seed security problem is emerging or not. Such sowing need/harvest calculations would also be easy to effect countrywide. Many woreda level officials most likely could have such information easily available, through first-hand knowledge or via consultation with local agricultural experts, including Farmers' Association leaders.

Box 1 Sowing needs in relation to harvests (why a production shortfall does not necessarily equal a seed shortfall).

This box examines seed needs as they relate to possible harvests. These calculations take only minutes to complete, with much of the base information at the ready disposal of agronomists and farmers working in a given region.

Example A from North Shoa gives the basic framework. One has to have an idea of the average areas sown to a crop per household and how much seed farmers use or the density of seed sown. The return for these crops (i.e. multiplication rate) will then give an estimate of yields. Seed needed for sowing can then be matched against yields (or harvests).

A. Crop/seed basics: North Shoa, Gera Keya

Crop	Wheat	Teff
Surface Area per household (ha)	0.25	0.50
Seeding rates (kg/ha)	160	35
Sowing needs (kg)	40	17.5
Multiplication rates	11.25	34.28
Harvest (kg)	450	600
% Harvest to meet sowing needs	**8.9**	**2.9**

Example B, from Wolaita, repeats the exercise, but is drawn from actual survey data.

B. Crop/seed basics Wolaita (actual survey data)

Crop	Beans	Maize
Surface Area per Household	0.24	0.28
Seeding rates (kg/ha)	50	30-35
Sowing needs (kg)	12	9.1
Multiplication rates	12	17
Harvest (kg)	144	550
% Harvest to meet sowing needs	**8.3**	**5.9**

Example C, from Tigray expands the range of crops.

C. Crop/seed basics Tigray

Crop	Teff	Chickpea
Surface Area per Household	0.6	0.25
Seeding rates (kg/ha)	30	100
Sowing needs (kg)	18	25
Multiplication rates	44	14
Harvest (kg)	792	352
% Harvest to meet sowing needs	**2.3**	**7.1**

Example D moves to even greater precision (and is drawn from intensive PhD work). It factors in actual farmer sowing rates for sorghum (taking account that they may have to resow) and contrasts yields for a 'good' versus a 'bad' year.

D. Crops/Seed Basics, sorghum - West Hararghe (PhD field data)

Crop	Chiro (highland)	Miesso (lowland)
Surface Area per Household (ha)	0.5	0.75
Sowing needs (kg– for area)	7-8	11-12
Harvest/yield – good year (kg)	1250	1600
% Harvest to meet sowing needs: good year	**0.7**	**0.75**
Harvest/yield – bad year (kg)	400	260
% Harvest to meet sowing needs: bad year	**2.0**	**4.6**

In all the above, less that 10% of a harvest is needed for a farmer to have enough seed. So harvests can 'fail'—but seed may still be available.

Moving towards seed system security assessment methods

Current seed security calculations within Ethiopia focus on tallying up seed needs. The emergency formats used encourages a supply-driven approach, which assumes, by format design, that seed is not available and that it will need to be purchased and be brought into a region (see Table 9, for recent 2005 revision of emergency assessment formats). This seemingly reductionist approach is in spite of several recent and important conceptual advances in Ethiopia.

Emergency scenario construction

As of 2004-2005 government "scenarios for projecting emergency seed seeds" are aiming to divide between 'best', 'mid' and 'worst' case scenarios (Table 10). This is a laudable step forward. At this initial stage, several comments are suggested, to move towards greater realism and usability. The very large number of indicators used makes it difficult to get the 'whole picture' of a seed security situation. Some of the indicators listed are not directly seed security related at all, for instance, "prevalence of human diseases", "man-made disaster", or "livestock situation." Third, the degree of

differentiation within indicators for each scenario doesn't always link to the purported differences with the broad scenarios: e.g. supply of input credit may or may not alter a best-, mid-, or worst-case scenario. Seed security specialists working closely with Ministry of Agriculture and Rural Development (MoARD) experts could likely refine this currently somewhat crude instrument rather efficiently. It needs to become a more useful 'thinking' instrument particularly for national decision-makers, and a more convincing communication tool geared towards possible donors.

MoA/FAO field missions

Another notable and parallel development within Ethiopia is related to the demand for more specific seed security assessments as they relate to comprehensive on-the-ground missions. As of September 2005, after an Agricultural Task Force Meeting, both MoARD and The FAO recognized that separate comprehensive seed security assessments were required (Amare Mengistu, pers. comm., 2007). An initial checklist was drawn up to look at seed systems and seed security in some detail within the consultancy terms of reference for broad field mission (see Box 2). Unfortunately, the Terms of Reference (TOR) cannot be implemented under the current quite short rural missions format, for several reasons. Practitioner testimony suggests these missions tend, by necessity, to be often car based (projecting crop yields from beyond the vehicle windows) Methods for assessing each of these thrusts have yet to be outlined and standardized in full; and third, capacity for assessing this novel seed security thrust has not yet been built within Ethiopia. Unfortunately also, we see that even with a more enlightened seed security checklist, the ultimate goal of the seed security assessment process seems again, at this early stage, conceived towards the calculating of seed tallies, that is, the end goal is the amount of seed needed to be bought and distributed (see Box 2, areas in bold).

Table 9 Emergency seed requirement assessment format

Region_____Zone_____Woreda_____Season_____year_____

Seed Type	Variety	Amount (Qt)	Unit price (Birr/Qt)	Total price (Birr)	Loading/unloading & transportation cost (Birr)	Amount of seeds per HH (kg)	Total beneficiary HHs	Total area to be covered 9ha)	Sowing date (dd/mm/yy)	Deadline for arrival (dd/mm/yr	*Source of seeds

.....

* If the source is local put "local" but if the source is not local put the name of the source place
What are the main reasons for applying for emergency seeds assistance

1._____
2._____
3._____

(source: Anonymous, 2006)

Table 10 Formulation of scenario for project of emergency seed needs

Indicators	Best scenario	Mid-Scenario	Worst scenario
On-set of Meher	Normal	Mixed	Late to very late
Distribution of Meher season	Satisfactory	Below normal	Poor and cause moisture stress
Cessation of Meher rain	The rain stops at normal time	Early withdrawal	Very early termination from normal time
Outbreaks of crop pest/diseases	Only regular pests prevail	Unusual occurrence for short time	Severe outbreaks and persists for long time
Flood/hail/water logging	None	Some areas	Wide areas
Man-made disaster	None	None	May be some
Market price of farm products	Show improvements over last year	Unchanged from last year	Prices fall and farmers lose purchasing power
Status of seed quality	No major problem	Delay in harvest affected seed quality	Due to forced maturity huge problem occurs. shriveled and rotten seeds due to use of grain
On-set, cessation, performance or rain during Belg 2005	Normal	Below normal	failure
Supply of inputs credit for Belg 2005	No shortfall	Some shortfall in remote areas	Huge shortage in several Belg areas due to price and supply limitation
Meher effects on Belg 2005	No significant adverse effects prevail	Little efforts occur	Substantial adverse effects
Livestock situation	Normal	Some	More
Prevalence of human diseases	None	Insignificant	Some disease outbreaks in lowland areas and resettlement areas
Per capita crop production and local food supply	As usual	Below average	Unsatisfactory
Forced seed consumption	In very highly vulnerable areas	Severe in Meher dependent highly vulnerable areas	Severe in both Meher and Belg areas including vulnerable areas
Seed availability of preferred varieties	Available in better rainfall areas	Limited availability	Only mixed or bulked grains available
Seed stocking	Fair	Inadequate	Absent
Crop production prospects for Meher 2004	Normal or close to normal	Below normal	Much below normal
Crop production prospects for Belg 2005	Normal to close to long term average	Below Average	Close to total failure
Prospects for emergency seed needs	Minimum requirements plus some extra needs	Minimum requirements plus substantial unpredictable needs	Minimum requirements plus huge additional unpredictable needs

(source: National Disaster Management Agricultural Task Force, 2005)

Box 2 Contingency Planning for Year 2005. National Disaster Management Agricultural Task Force (*bolding added*)

Section 2.3 Current projection of seed-insecurity situations (excerpt)

- ✓ Describe local system and how farmers normally acquire seeds
- ✓ Identify how disasters affect the households and local seed systems
- ✓ Assess the farm/local coping strategies to combat seed insecurity and assess if there is any sign of losing these coping strategies including status of off-farm activities incomes
- ✓ Assess if the seed shortage is absolute (lack of availability or total seed shortage in area)
- ✓ Identify is the seed shortage is acute (caused by recent current disasters) chronic (long terms and structural problems) or complex (combination of both factors)
- ✓ Assess if the problem is lack of seed or need for specific crop variety
- ✓ Inquire effects of disasters on seed quality

……

Estimate/project the emergency seed needs (types of crops, variety, quantity, estimates costs and time for seed supply).

So in brief, there have been important moves within the last two years for putting seed security assessments on the national agenda, as distinct from food security assessments. Much of the progress, however, has not gone beyond the stage of 'need identification'.

In terms of concrete steps for moving forward, some Ethiopian professional have quite clear ideas. As affirmed cogently by one FAO expert helping to lead the overall agricultural emergency assessments:

- We need a comprehensive, simply handy seed security assessment tool or method.

- The tool needs to be tested on the ground, not only with experienced seed security specialists, but also with the lay practitioners who will also use it.

- The tool will then need to be promoted-- and capacity to use it widely built

(Amare. Mengistu, pers. comm., 2007)

Certainly, given the fast-evolving state of seed security methods and assessment procedures worldwide (CIAT/CRS, 2007), the methodological pre-conditions for moving forward in Ethiopia are already in place. Existing tools embrace methods to assess both acute and chronic stress contexts. They are also sensitive enough to identify gradations in seed security.

Early Warning System Indicators

Addendum, and from a more national perspective, seed security indicators can, and need to be built early warning system programs. National data to predict seed security (or seed insecurity) are, again, linked to but different from, food security indicators *per se.* Sowing needs to harvest loss calculations could serve as one important signal. Seed prices of key crops found on markets could serve as another (noting that seed pricing spikes are different from food pricing spikes) (Table 11).

Table 11 Seed Security Framework; Possible Global Early Warning Indicators

Parameter	More Macro Seed Security Indicators
Seed Availability	Production shortfall versus Seed Need Calculations
Seed Access	Prices of Seed/Grain key crops on market • For crops normally sold on markets • Focus on key local varieties (per region) • Distinguish between normal price spikes at sowing and 'unusual'
Quality	(proxy? in global bases? qualitative variable/)

Other indicators, which can be used at regional levels (and via working with seed/grain traders) include:

- volume changes in seed supplies
- changes in seed sourcing areas
- changes in scale of seed loans

These are discussed in Chapter VI.

Without strong seed security frameworks and indicators (as national guides), seed aid assistance in Ethiopian will likely remain supply-driven rather than demand or problem driven.

Separate expertise within MoARD to lead seed security issues

Finally, there is a need to establish seed security expertise squarely with the MoARD and linked closely with the DPPA. This expertise does not necessarily refer to formal seed sector specialists who may focus on commercial crops and varieties, and devote their major efforts to certified seed. Seed security experts need to have the capacity to conceptualize and strategize support all the seed systems which farmers use, informal (local and traditional) as well as formal. In fact, in a country like Ethiopia, where upwards of 95% of seed may be sourced form local systems, the particular capacity to understand how informal systems function, and how integrated systems might be catalyzed (which combine informal and formal strengths) would seem paramount.

SUMMARY: THE HISTORY OF SEED AID IN ETHIOPIA

Long-Term Trends

- Emergency Seed Aid has been implemented in Ethiopia for at least 34 years and has been near continuous since 1982.

- Conservative estimates suggest $US 15,000,000 per year of seed aid has been delivered by governmental and non-governmental organizations combined. Over a 34-year period, this translates to $US 510,000,000 or about ETB, 4,650,000,000 spent for emergency seed-related assistance.

Broad Types of Seed Aid

- Three broad types of seed aid have been identified in use in Ethiopia: in response to emergency or acute stress; for developmental reasons; and for chronic stress contexts. These three are poorly distinguished conceptually, and often not distinguished at all in terms of what is offered 'on the ground'.

More specifically:

  - There seems to be little governmental strategy tailored to addressing these different seed assistance contexts;

  - Seed assistance strategies for the most vulnerable, those in chronic stress areas, appears to be the least well-conceived. This is despite the concrete data which show that the lion's share of recent 'acute' seed aid has been delivered in chronic stress (safety net) zones.

Frameworks for Seed Need or Seed Security Determinations

- At the national level, determinations of need for seed aid are not done directly. Rather, they are extrapolated from food security assessments, or 'assumed' from food security assessments. Field analysis shows that food security and seed security are linked, but not the same. Independent, complementary assessments are required.

- The trigger used to signal a 'need for seed aid' is most often a 'harvest failure'. Concrete examples drawn from across Ethiopian crops and regions, show that even a severe production shortfall does not necessarily translate to a seed shortfall.

- While since 2005, there have been initial moves (spurred by the Agricultural Task Force) toward more holistic seed security assessments, the proposed changes exist mostly on paper, and in rough (not sufficiently accurate) indicator formats.

- Without strong seed security frameworks and indicators (as national guides) and without strong leadership ensuring that seed security is given focus (as distinct from food security and other Non-Food Items), seed aid assistance in Ethiopian will likely remain supply-driven rather than demand- or problem-driven.

MOVING FORWARD: RECOMMENDATIONS

General

National reflections on seed security strategy need to be planned so as to distinguish recommended seed system support: for emergency, for chronic stress, and for developmental contexts. Frameworks need to be sharpened so as to give strategic guidance to on-the-ground implementation.

- Recognizing the considerable overlap between acute and chronic stress contexts, specific reflection should be given to programs which link 'relief to development' (or developmental relief), starting in the emergency phase and continuing through recovery and beyond. This reflection should explore which approaches are already known and proven, which ones need to be further tested.

- Seed Security Perspectives need to drive national decision-making, and not more simplistic (or reduced) calculation of seed needs alone.

Specific

- Special seed security expertise (seed *system* expertise) has to be made available with the MoARD, starting at the national level .

- Seed security assessment tools need to be better refined for Ethiopia, capacity needs to be built, and incentives have to be put in place to ensure they are used. National level organizations (such as the Agricultural Task Force) need to be prime drivers behind this.

- Precise seed security indicators need to built into early warning system programs as well as into on-the-ground assessment programs, from woreda up to national levels.

IV: THE POLICY ENVIRONMENT SHAPING SEED AID

This chapter reviews how seed aid practices in Ethiopia are shaped by the policy environment. In the case of seed aid, this policy environment is complex, as seed aid bridges emergency relief with longer-term development, and is implemented both by government and NGOs. Therefore, relevant policies come from different sectors (disaster relief, agricultural development, seed industry) and sources (donors, NGOs, different levels of government).

There is no single set of 'seed relief policies', but rather a range of policies, strategies, and institutions that may influence seed relief. Further, some policies, while on paper connected with seed aid, may little influence how seed aid is actually implemented. In exploring the different areas of policy, this chapter considers:

- How current policies affect the practice of seed aid
- How policies may differ from different sources (e.g. regional/federal, NGO/GO)
- How the policy environment has (or has not) evolved

The policy environment could play an important role in enabling good seed aid practice, leading to less vulnerable seed systems and, in the longer-run, a better base for appropriate development efforts.

Sources of Information

For this analysis, the chapter draws upon policies addressing different sectors and themes. These include: agricultural development; emergency relief; seed supply; and regional harmonization. Besides policies from the GoE, policies from donors, NGOs, and Regional States have also been explored – although these were often less formally-articulated. This work involved collection of published laws and proclamations, and secondary materials from major libraries and agencies. Interviews with key informants were an important source of information. These sought out current and former officials from a range of agencies. In Addis Ababa, this included the Federal MoARD, the Ethiopian Seed Enterprise (ESE), the National Seed Industry Agency (NSIA, now part of NAIA), and EIAR. Interviews with emergency agencies involved officials from the DPPA/RRC, the Agricultural Task Force, and FAO's Emergency Unit, as well as major NGOs that work across regions (CARE, CRS, WVE). Other interviews in Addis included donors, academics, and policy/research NGOs (e.g. PANE). Interviews at the regional level, particularly with BoARD officials responsible for food security, and other practitioners of seed aid, were helpful in understanding how policies affect implementation on the ground, as well as regional variation in policies. Annex **I** lists all those contacted for interviews, and their details. Finally, reviews and analyses of various areas of policy offered useful overviews (e.g. Seboka and Deressa, 2000; Sahlu, n.d.; Mburathi *et al.*, 2004; Bramel *et al.*, 2004; Getachew, 2005; Mulatu, n.d.).

This analysis explores how policies influence seed aid (or not), and so is more interested in how a policy is actually used than what is said in policy texts. Different organizations have their own particular perspectives, and capacities, which affect how they interpret and use policy. Thus, this is an actor-oriented analysis, which considers which organizations are influential in shaping *policy in action* (Keeley and Scoones, 2003).

Policy Developments by Sector

This section summarizes important policy developments in different sectors that potentially affect seed aid. The aim is to highlight major trends, rather than give comprehensive detail for all areas.

Emergency Relief

Ethiopia had a Food Shortage Committee since the start of the 1970s, and seed aid activities started as early as 1974, in response to the crisis in northern Ethiopia. An early warning system, and the Relief and Rehabilitation Commission (RRC) were soon established (GoE, 1974, 1979). At that time, "being Commissioner of RRC was like being a Super-Minister" (Shimeles Adugna, pers. comm., 2007), as the Commissioner chaired an Advisory Council attended by Ministers, including Agriculture, Health, and Water (Zeleke, 1988). Many believed at the time that at most a decade of aid was needed to return Ethiopia to self-sufficiency in agricultural production (Shimeles Adugna, pers. comm., 2007). Following a detailed review (Office of the National Committee for Central Planning, 1988), the strategy for disaster preparedness and prevention was revised, seeking better integration with development, recognizing that "preparedness measures [are] platforms for development" (GoE, 1989: 9). This strategy suggested 17 different areas to develop for increasing preparedness, including strategic seed reserves. Seed reserves were often proposed as a national preparedness strategy (e.g. RRC, 1995; NSIA, 1999). However, seed reserves have never been implemented, possibly due to the challenge of identifying appropriate crop varieties for the seed reserve, or possibly because they are not an economically viable option. Policy updates in the 1990s recast the RRC as the DPPC (GoE, 1993, 1995). More recently, the DPPC has been placed under the Federal MoARD, and restructured as an Agency (DPPA) (GoE, 2004a).

The DPPA (and its precursors) issues appeals, so seed aid comes under its umbrella. However, it has no expertise on seed, and gets all technical advice from MoARD (Mesfin Shiferaw, pers. comm., 2004). There has long been recognition that seed aid needed to be treated distinctly from food aid; for instance, the donors' Seed Meetings in 1986 highlighted the importance of addressing Ethiopia's incredible agro-ecological diversity. Seed agencies (e.g. NSIA) organized an Emergency Seed Committee in the late 1990s, but links with the DPPA remained weak. In the last few years, the emergency agencies have organized National Disaster Management Task Forces for 'Non Food Items', with seed aid advice coming under the Agricultural Task Force (ATF). The ATF is chaired by a MoARD official, and is now the DPPA's main link to the Ministry, and its source of technical advice on seed appeals. Though the ATF has existed at least since 2001, it was not very active before 2005, and mostly met on an *ad hoc* basis (Lautze *et al.*, 2005). One concern is that the ATF may actually weaken the

rather diffuse links between the DPPA and the MoARD regarding seed aid, as it gives emergency officials an excuse for not engaging with any details of seed aid. The DPPA devolves all technical, seed-related matters to the ATF, while the latter leaves emergency issues to the DPPA. This separation of roles risks a situation where no organization is fully responsible for seed aid decisions. The DPPA needs more fully to engage with issues around seed security, and not simply lump seed in with the rest of what it calls 'Non Food Items' (NFI).

A second issue arising from emergency relief policy is chronic stress. The recognition that repeated 'emergencies' often reflected chronic stress, that farmers' assets were declining despite regular aid, and that donors were questioning emergency appeals (sometimes pledging only 60% of requests; Brhane Gizaw, pers. comm., 2007) spurred a fundamental change in non-relief strategy. The Productive Safety Net Program (PSNP) started in 2004, designating roughly 200 woredas as chronically food-insecure, and transferring food or cash to vulnerable households in these woredas in exchange for labor to build community assets (e.g. roads). The assumption is that guaranteed annual transfers help prevent asset depletion (Dercon, 2002; Devereux, 2001), enabling at least some households to invest their assets and eventually 'graduate' to self-sufficiency (GoE, 2004b). This PSNP is one of the Food Security components in Ethiopia's current poverty reduction strategy (the Plan for Accelerated Sustainable Development to End Poverty, or PASDEP). The PSNP signals a significant change in thinking and practice around aid, distinguishing acute emergencies from chronic poverty. The PSNP is significant not only for its scale (its annual budget is roughly 2 billion Birr), but also because it establishes a principle that chronic stress needs to be treated differently from acute stress, and brings concerns with aid dependency into the heart of emergency policy. The PSNP's relation to seed aid is a complex (still vaguely-defined) one: chronically-stressed PSNP woredas receive both 'developmental' as well as emergency seed aid (but seemingly little geared to chronic stress *per se*). This is discussed further below in the section on Agricultural Development.

Seed Policy

The ESE was founded in 1979, obtaining legal status in 1982. Like most seed supply institutions of the time, the ESE did not develop strong links to farmers, but rather focused its supply on a few large users (Table 12). Until the *Dergue's* fall in 1991, nearly half of all MV seed produced went to State Farms, with the MoA and the Agricultural Input Supply Corporation (AISCO) each receiving another quarter, mostly to supply resettlement schemes and Service Co-operatives, rather than individual farmers. Directing scarce MV seed to a small number of institutions reflected the *Dergue* regime's promotion of mechanized State Farms, and peasant collectivization, which was at the core of its agricultural development strategy (Belete *et al.*, 1991; Cohen and Isaakson, 1988). Also, this State Farm bias left little MV seed for distribution to individual smallholders in normal technology-promotion activities. Until ten years ago, extension was also limited in its scope, so most smallholder farmers did not have much exposure to different MVs.

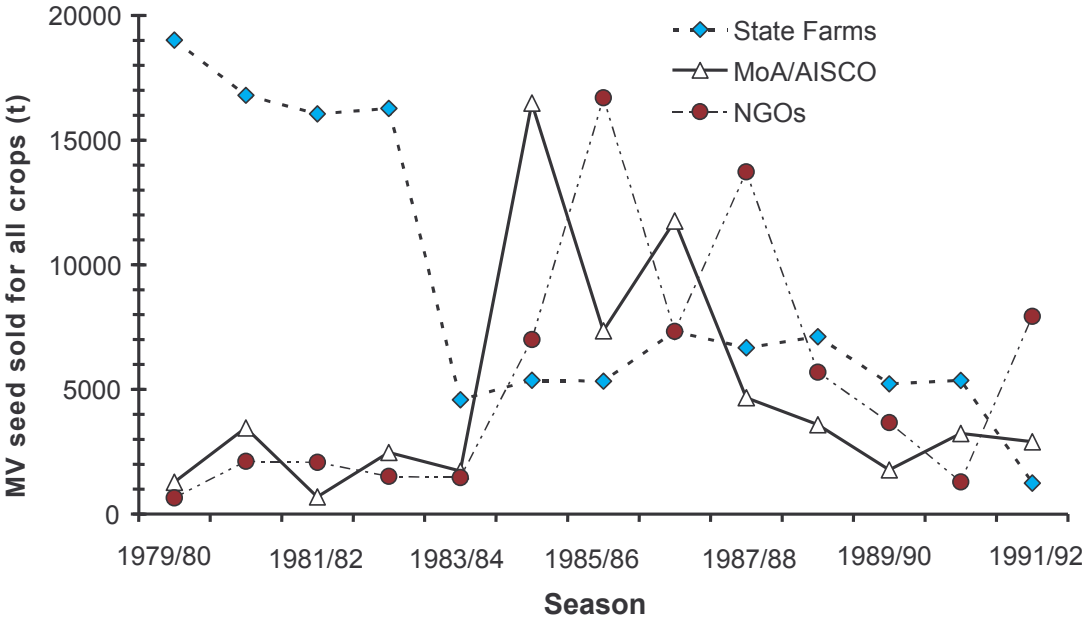
Table 12 ESE sales of all the seed it produced between 1979/80 and 1991/92, and proportion of this production going to State Farms, MoA/AISCO, and NGOs

Year	Total seed sales from ESE (t)	Sales to State Farms (%)	Sales to MoA / AISCO (%)*	Sales to NGOs (%)
1979/80	20928	90.8	6.1	3.1
1980/81	22366	75.1	15.5	9.5
1981/82	18812	85.3	3.6	11.0
1982/83	20254	80.3	12.2	7.5
1983/84	7775	58.9	22.2	18.9
1984/85	28856	18.6	57.1	24.3
1985/86	29375	18.1	25.0	56.8
1986/87	26406	27.7	44.5	27.8
1987/88	25058	26.6	18.6	54.8
1988/89	16386	43.4	21.9	34.7
1989/90	10664	49.0	16.6	34.4
1990/91	9885	54.2	32.7	13.1
1991/92	12070	10.3	24.0	65.7
Mean: 1979-1992	**19142**	**46.8**	**24.7**	**28.6**

Source: Agrawal and Wolde Mariam (1995): (*MoA includes resettlement programs, while AISCO began trading in 1984 and mostly served Service Co-operatives rather than individual farmers).

NGOs are also important clients, purchasing over 28% of all the seed the ESE produced between 1979 and 1992. Much of this was for emergency relief, especially following the 1984-85 famine. NGO purchases peaked in 1986, with NGOs receiving more than 16,000 tons of ESE seed (Figure 2).

Figure 2 Amount of MV seed sold by ESE to State Farms, AISCO/MoA, and NGOs between 1979/80 and 1991/92. Sources as in Table 12.



Since the 1990s, much of the ESE's output has gone to meet (planned) input package programs (NSIA, 1999), as has seed from the farmer-based seed multiplication schemes (Getachew Desta, 2001; Solomon Gebre-Medhin, 2001). Seed production and supply have never been driven by farmers' demands for seed, and marketing remains very weak. The location of ESE production farms and contract growers are mostly in the higher elevations, reflecting the dominance of wheat and maize in MV sales (Sahlu, n.d.). This means there is nearly no seed multiplication capacity within the formal sector for the lowlands (that is, areas generally characterized by significant 'moisture stress', or drought.)

The National Seed Industry Agency (NSIA, now NAIA), established in 1992, gave regulatory and policy oversight to the sector. The Seed Law (GoE, 2000) regulates commercial seed sales, requiring vendors to meet a range of conditions in order to sell seed (e.g. obtaining a certificate, meeting physical quality standards, appropriate labeling, etc.). The only mention of emergency seed in this Law is in Article 26, which relaxes germination requirements (allowing seed germinating 10% below established standards to be sold) in the event of an "acute shortage in the country." This provision has been used by FAO, and NGOs such as CISP (in Beneshangul), buying from the ESE or other vendors (Getinet Gbeyehu, pers. comm., 2006). However, local seed/grain traders involved in Seed Vouchers and Fairs (SVF), for instance, have generally not been required to meet formal seed standards, whether the established or the relaxed standards. Current policy developments foresee increasing seed production and regulation at the regional level, with Seed Testing Labs established in several regions. However, regional seed units rely on Federal authorities for training, and are very thin on staff and resources (Ayenew Arega, pers. comm., 2006). Some regional labs do not function (Yonas Sahlu and Getachew Desta, pers. comm., 2006). Along with decentralization, regional harmonization is also an issue with seed policy, addressing areas such as certification, testing standards, and release procedures. However, some countries will need to dramatically change laws to reach harmonization, and there is little movement right now in this area (Aberra Deressa, pers. comm., 2006).

This review raises a few points about seed policy:

- The system is largely supply-driven, reflecting a past emphasis on serving a few large buyers. The formal seed market is the weakest link in supply system, with no detailed knowledge of demand (Sahlu, n.d.; Mulatu, n.d.).

- The focus of the formal seed sector on a limited range of crops (largely wheat and maize) and on varieties adapted to higher potential areas, puts in question the role of the formal seed sector (and formal policy) for both chronic stress and emergency contexts. As of now, 'seed policy' in Ethiopia, largely translates to seed policy for the agriculturally more productive zones.

- Sales of the largest private sector seed company, Pioneer Hi-Bred Ethiopia, remain small (Raymakers, 2002), and the ESE is being pushed to take a more developmental and less commercial role (GoE, 2004a). The relative weakness of the commercial seed industry in Ethiopia means that there is less pressure for seed

aid to promote it. (which might be an appropriate response, given the crop and variety profiles on offer).

- There seems to be at least one notable exception to the above, in which a commercially seed industry in Ethiopia gets its driving force from seed aid customers: the escalation of the sweet potato cutting use for delivery in stressed regions of the SNNPR. The usefulness of this program for poor farmers has received highly mixed feedback, partly due to the highly variable quality of sweet potato cuttings delivered.

Agricultural Development Policies

Pre-*Dergue* policies generally ignored smallholders (Getachew, 2005; Gilkes, 1975), though success in integrated rural development projects in the early 1970s such as the Chilalo Agricultural Development Unit (CADU), and other local-scale extension projects, helped convince policy-makers that smallholders had potential to increase production (Cohen, 1975). This led to the Minimum Package Programs, and the Peasant Agricultural Development and Extension Program, which promoted input packages to smallholders in the 1970s-80s. Agricultural research was also directed to develop technology packages for delivery. However, the limited scope of extension, and its poor links with research hampered impact here (Deressa and Seboka, 1996). Also, the *Dergue* still centred their food security strategy on State Farms and Service Co-operatives, directing most seed and other inputs to these sectors, while imposing market controls on smallholders (Cohen and Isaakson, 1988; Belete *et al.*, 1991). Thus most smallholders had little access to MV seed, while the policy environment was a dis-incentive to production. Most market controls were lifted soon before the *Dergue's* fall in 1991.

The current government's food security policy is Agricultural Development Led Industrialization (ADLI), which focuses on increasing smallholder production. Demonstrations by Sasakawa/Global 2000 in the mid-1990s convinced policy-makers that appropriate crop technologies already existed, but that promotion of these technologies was the main priority (Keeley and Scoones, 2000). The National Extension Improvement Program (NEIP) was launched in 1995 and grew dramatically to deliver input packages to several million farmers by the end of the decade. Most of the seed production from the ESE, as well as from farmer-based seed multiplication schemes, is to meet this demand (Solomon Gebre-Medhin, 2001). There has been a great deal of comment on this program (see Howard *et al.*, 2003), much of it beyond the scope of this report, but a few points are relevant here. Marginal areas have historically been less served by research, and production increases were less apparent in chronically-stressed areas. Another issue is that some farmers appear to dislike the inflexibility of the packages, since it limits their choice. As one West Hararghe BoARD official noted "Farmers get the MV seed only with fertilizer – in a package – and don't like the fertilizer because it doesn't do well in this area. But that [fixed package] is government policy." (Wandalla pers. comm., 2006). Thirdly, BoARD staff must meet ambitious targets for the number of MV packages distributed, suggesting that MV promotion sometimes reflects supply quotas rather than farmers' demands. This drive to promote MV seed has clearly influenced seed aid in some places (see Chapter VII).

Recent policy development include a renewed interest in farmer co-operatives for improved supply and marketing of inputs (including seed), and greater recognition that rural livelihoods do not solely depend on farming. The 2002 update to the Food Security Strategy (GoE, 2002) gives more attention to drought-prone areas than previously, and clearly distinguishes chronic from more transitory stress. The strategy makes a plea for the development of more drought-resistant crop technologies for vulnerable areas. As mentioned above, emergency relief now uses the PSNP to address chronic stress, and some of these beneficiaries (perhaps 10%; S. Ashley, pers. comm., 2006) also receive technology packages, including MV seed. However, as the MoARD's head of Food Security noted, the available MVs have not changed to meet chronic stress in the same way that food aid has. "Seed interventions could help [chronic stress and safety nets] a lot, but we need a change in input packages towards stress," (Brhane Gizaw, pers. comm., 2006). Despite both the 2002 Food Security Policy and the PSNP calling for more MV technologies that are relevant to chronic stress areas, it appears that this remains an area for development.

Policies of Practitioners, Donors and Regions

As introduced in the section "Broad types of Seed Aid Given" in Chapter III, the actual approach an organization takes for seed aid reflects the institutional philosophy, donors' preferences, and institutional capacity. Actual differences on the ground (in the emergency situation, agro-ecological context) appear to play less of a role here. There are clear differences in approaches among different NGOs, as well as between most NGOs and the GoE. The influence of donors is also apparent in some cases, particularly FAO in promoting DSD of new varieties, and USAID/OFDA in encouraging SVF. In Tigray, REST stated that one donor, Entremonde, had encouraged them to use cash for aid, while WVE's use of cash and SVF in Wolaita "reflected donors' interests" (Moise K. and Asfaw M., pers. comm., 2005). Donors may also influence crop choice – for instance, USAID insists on OPV maize, though the BoARD in Wolaita wanted to distribute hybrids (which they largely did).

There appears to be little formal regional-level policy on seed, though there is some variation among regions. This is most apparent in Tigray, which forbids free seed distributions. For instance, Tigrayan officials specifically linked the use of revolving funds to "a regional policy to reduce dependence and make seed aid demand-driven for farmers to develop a sense of ownership" (Negusse *et al.*, 2006: 7). Tigray's recent history, which helped forge strong links between farmers and local government, may be one reason why its policy seems slightly different. The relatively small number of NGOs operating in Tigray, compared to, say, SNNPR, is also an important difference.

Finally, dependency is a concern across NGOs, donors, and government. The requirement to repay loans in PSNP and NEIP programs reflects this concern. With seed aid, dependency is theoretically addressed with revolving funds, where farmers repay seed received at the end of the season. This proposed practice is seen with DSD schemes (GoE or WVE) in Gera Keya, with WVE in Humbo, CISP in Hararghe, and with all actors in Tigray. However, some organizations, such as CARE, do not generally require repayment. While the concern with dependency is very understandable, in practice repayment rates have been very low and in some regions virtually non-existent. Implementers also highlight problems with logistics (collecting and storing seed) and with the generally low quality of 'seed returned' (see chapter V).

When seed aid is so frequently repeated, farmers may feel there are few consequences for failing to repay seed. However, failure to repay government loans (e.g. for package program) has had some serious consequences in practice: one OCHA official recounted that extension forbade NGOs distributing free seeds to some farmers during this 2003 crisis, as they had yet to repay their loans for input packages for the previous (drought) season, and that this restriction may have made the crisis significantly worse for these farmers (anon, pers. comm., 2004).

SUMMARY: MAIN POLICY FINDINGS

- Few policies shape seed aid specifically (except to relax regulations of seed quality in situations of acute need).

- Policies for supporting seed security in acute stress and chronic stress contexts remain inadequately differentiated. In contrast, the GoE's strategy of seed assistance for development is strongly expressed though a number of package programs, including NEIP and its successors.

- The single 'national' suggestion for preparedness around seed security, strategic seed reserves, has not been implemented. This may be with good reason given the diversity of crop and varieties which would be needed, and the unproven economic viability of the operations.

- In terms of general aid appeals and responses, there is a novel trend towards addressing chronic stress differently from acute emergencies. Safety Nets and Resettlement are now the primary strategies for addressing chronic vulnerability. However, the seed security component within these programs is not well articulated.

- Emergency seed aid in Ethiopia is not generally used to promote the seed industry (whose mandate is development as the commercial sector remains limited). Package programs presently absorb most of public-sector seed production, which is dominated by maize and wheat.

- The formal seed industry produces 'other crops' (non-maize/wheat) in small quantities. Multiplication sites are concentrated in the intermediate and higher attitudes and there is little emphasis on lowland crops. This has implications for seed aid, as most of emergency delivery takes place in drought-prone areas.

- Food security policy is presently framed through technology transfer via package programs, which vigorously promote Modern Variety packages. This promotion affects the shape of seed aid directly, in terms of the government's preferred choice of approach (DSD) and the use of emergency aid as the vehicle to distribute MVs .

MOVING FORWARD: RECOMMENDATIONS

- Seed security needs to be treated distinctly from food security within emergency agencies. For this to occur, the integration between emergency and technical agencies needs to improve. Presently, the DPPA does not deal with seeds, while MoARD generally does not engage with emergencies. The current restructuring in the MoARD may offer an opportunity to forge clearer lines of communication between DPPA and MoARD, delineating responsibility so that key decisions are not lost in the "no man's land" between both organizations.

- Crop development for chronic stress areas needs far more attention. Chronically-stressed areas are often 'low-potential', and need types of technologies that recognize the high levels of risk (and large distances from markets and infrastructure).

    - One priority is to review of technologies that perform under stress and under farmers' management for high-risk conditions (i.e. low inputs). Full packages should not be assumed in these cases.

    - A second priority is to address the barriers to the development of these technologies. More resources need to be directed to research for lowland ecologies.

    - Related to the above, seed production for lowland crops needs to improve and become more demand-responsive.

- Seed aid remains an 'orphan' within policy, though the practice affects the farming system, potentially for years to come. International guidelines for seed aid have been recently developed by the FAO (see Box 3, below). Ethiopian policy-makers may wish to initiate a parallel process to develop seed relief principles specific to the Ethiopian context.

Box 3 FAO: Basic Guiding Principles for Seed Relief.

1. A needs assessment should underpin any decisions to undertake seed relief and should guide the choice among possible interventions. This needs assessment should be holistic, putting seed security in the context of livelihood security.

2. Seed relief interventions have to be clearly matched to the context (for example, a crisis caused by drought may require very different actions from a crisis caused by war). By supporting food production, seed relief should decrease dependence on repeated food aid.

3. Seed relief activities should aim to both (i) be effective with the immediate objective of facilitating access to appropriate planting material; and (ii) to contribute to the restoration, rehabilitation, or improvement of agricultural systems in the longer term.

4. Ideally, considerations of seed system sustainability should be built into seed interventions from the beginning. As a minimum, seed aid should do no harm to farming systems. Thus, emergency relief activities should support local seed system development, ideally by integrating long-term needs in the design of the project.

5. Seed relief activities should be built upon a solid understanding of all the seed systems farmers use and the role they have in supporting livelihoods. The local system is usually more important in farmers' seed security and has been shown to be quite resilient. Depending on the context, the focus in an emergency should normally be on keeping the local seed system operational. One practical problem is that seed systems are often not sufficiently understood, especially in emergency situations. Hence, there is a need for more emphasis on understanding seed systems and their role in supporting livelihoods, and on needs assessment.

6. Seed relief interventions should facilitate farmers' choices of crops and varieties. Seed relief interventions should aim to improve, or at least maintain, seed quality and aim to facilitate access to varieties that are adapted to environmental conditions and farmers' needs, including nutritional needs.

7. Monitoring and evaluation should be built into all seed relief interventions, to facilitate learning by doing and thereby to improve interventions.

8. An information system should be put in place to improve institutional learning and as a repository of information gained from cumulative experience. Such information systems should be institutionalized at national levels, to the greatest extent possible.

9. A strategy to move from the acute emergency response to a capacity building or development phase should be included in the design of the intervention.

These guiding principles were endorsed by the FAO Emergency Coordination Group (Rome, 20 June 2003), based on the recommendations of a stakeholders' workshop "Improving the Effectiveness and Sustainability of Seed Relief" (Rome, 26–28 May 2003). The initial draft was prepared by the FAO seed relief discussion group.

V: IMPLEMENTATION - SUPPLY SIDE: GO/NGO SEED AID GIVERS

With this section, the report moves towards examining implementation on the ground. It focuses on insights of Governmental and NGO seed aid implementers within the four regions of intensive field study. The extent of regional seed aid is considered, as well as the range of approaches in use. Implementers also share their own reflections on key processes which shape seed-related assistance: *inter alia:* determining needs, targeting, choosing approaches, as well as monitoring and evaluation.

The implementer focus has been on those organizations with significant seed aid experience. Government officials and NGO managers and field staff have generously shared their experiences on seed aid trends, process strengths and challenges still to be met.

In contrast, there are organizations which engage in seed aid as a one-off activity, who have little agriculture expertise and who approach seed aid as a logistical exercise (procure and distribute seed). Such fly-by-night seed aid practitioners should be banned from the practice—and their comments are not included herein.

Who and Where

Governmental and principal NGO implementers at each regional site were enlisted to reflect on local seed aid practices. Focus group discussions in each region initially brought all implementers together to help structure the regional analysis and share overall observations. Most of the key implementers were also subsequently interviewed in their regional home offices. Table 13 summarizes the organizations most involved in providing on-site analysis (for full list of persons consulted, see Annex I). Select other NGOs shared insights from their headquarter bases in Addis Ababa based, including Catholic Relief Services (CRS), CARE, Save the Children UK (SC-UK) and World Vision Ethiopia (WVE).

Table 13 Government and NGO organizations involved in on-site seed aid analysis

Site	Organizations consulted
Tigray: **Raya Azebo**	Govt: BoARD; Bureau of Agriculture and Rural Development DPPA WARDO: Woreda Agriculture and Rural Development Office TARI: Tigray Agricultural Research Institute Others: Relief Society of Tigray (REST) Adigrat Diocesan Catholic Secretariat (ADCS)
North Shoa: **Gera Keya**	Govt: BoARD (including zonal and woreda level) Others: World Vision Ethiopia Food and Agriculture Organization- (local representative)

Wolaita: Humbo	Govt: WARDO Zonal Planning Office Others: World Vision Ethiopia (WVE) International Medical Corps (IMC) Concern Christian Relief and Development Association- Ethiopia
West Hararghe: Chiro and Miesso	Govt: BoARD Zonal Planning Office DPPA Others: CARE CISP International Rescue Committee (IRC) Ethiopian Red Cross and International Red Cross Goal Hararghe Catholic Secretariat (HCS)

SCALE OF AID

Tables 14, 15 and 16 suggest the scale of seed aid at the local level, the woreda (district) unit of action. Such data were collected at all sites and can be obtained from the site-specific reports.[4] Here we give but two examples to suggest the trends.

As the tables show, seed has been implemented on a significant scale within local zones. Once a zone is identified as a stress one, seed aid tends to be continuous, year after year, and often season after season, for those areas where two cropping seasons are key. The available data from Humbo show 13 distributions in nine years; the available data from Raya Azebo show five distributions in four years. This continuous delivery of seed aid is confirmed also from the recipient view. Chapter VII, on farmer recipients, shows that there are farmers who can recount having received seed aid 10 times, in the not so distant past.

In terms of the aggregate numbers, and the question on trends in seed aid (is it increasing or decreasing?), the tables should be treated with caution. First, while researchers have made substantial efforts, working with implementers to aggregate the data, the overall figures are likely incomplete. There tends to be multiple implementers in many of the zones, sometimes several seed aid rounds by one implementer per season, decentralized records are not necessarily forwarded to one coordination center, and seed aid records overall are rarely kept for more than a few seasons. Simply, the institutional memory is unusually shallow, especially as staff turnover in such jobs also tends to be high. Government implementers also frequently complained of coordination problems, even in the same zone. As one Humbo official lamented:

> *"Sometimes NGOs just do anything, government doesn't even know. At the time of maize planting, they may give sweet potatoes" (DPPA official, anon, Humbo Focus group discussion, 2005).*

[4] contacts for site reports: Tigray - gnegusse@yahoo.com ; North Shoa – wendafrash@yahoo.com; Wolaita – anbes2003@yahoo.com; West Hararghe – myberhanu@yahoo.com

Second, in terms of assessing trends of need, implementers are adamant that seed aid amounts received due not correlate with seed aid needed. Rather the amount of seed aid given correlates with the government or donor funds available during any particular season. So the amount of aid given directly relates to money on offer, and not necessarily 'beneficiary need.'

The continual succession of seed aid in stress zones has been remarked on by aid implementers and farmers alike. On the one hand, both groups work hard to keep the aid machine going (filing requests season by season, and lining up to receive distributions). On the other, implementers and farmers have expressed deep concern over the dependencies which are developing (see quotations below). As an example of this concern, WVE in Humbo makes farmers sign a contract that they really will plant the seed-- so that compelling 'need' is determined.

> *"Seed aid in this area has become like a business" - Official in Humbo)*

> *"Now farmers want vouchers every season" – Official in West Hararghe)*

Table 14 Period {seasons} in last 8 years when emergency seed aid has been given in the Humbo woreda

Year	Season	Number of HH	Seed Aid Approach	Overall Cost (Birr)	Crops	Quantity	Donor
1997	Belg	950	DSD	64,156	S/potato	8 million cuttings	Gov't
		56	DSD	4925.85	Maize	400 kg	Gov't
1998	Meher	1000	DSD	58850	S/potato	11.8 million cutting	WVE
1999	Meher	74	DSD	5572.7	Ch/pea	18.5 Qt	WVE
	Belg	32	DSD	4925.25	Maize	8 Qt	WVE
2000	Belg	3214	DSD		Maize	401.8 Qt	WVE
	Meher	416	DSD		Teff	62.4 Qt	WVE
2001	Belg	1090	DSD		Maize	136.2 Qt	WVE
	Meher	65	DSD		Maize	8.4 Qt	WVE
		169	DSD		Teff	25.4 Qt	WVE
2002	Belg	1800	DSD		Maize	112.5 Qt	Gov't
2003	Meher	1736	Seed fair	28001	Teff	129.6 Qt	USAID
		1196	Seed fair		Teff	180.6 Qt	FAO
		4218	Seed fair		Teff	811 Qt	WVE
		431	Seed fair	28001	H/Bean	107.8 Qt	USAID
		869	Seed fair		H/Bean	391.0 Qt	FAO
		2352	Seed fair		H/Bean	588 Qt	WVE
		132	Seed fair		F/Bean	50 Qt	WVE
		480	Seed fair	30000	Ch/Pea	120 Qt	Gov't
		46	Seed fair		S/potato	92160 cuttings	WVE
		260	Seed fair		Cotton	10 Qt	WVE
		529	Seed fair		S/potato	2.4 million cuttings	FAO
2004	Belg	1200	Seed fair		Maize	150 Qt	WVE
		1000	Seed fair		Sorghum	50 Qt	Red Cross
2005	Belg	7732	DSD		Maize	832.5 Qt	WVE
	Meher		DSD		Ch/pea	500 Qt	WVE

Table 15 Tigray BoARD & WARDO overview through time on what was implemented

Year	Season	Woredas	No. Households	Reason for seed aid	Seed Aid Approach	Overall Cost (Birr)	Crops given + amt. of seed		Donor
2002	Meher	Raya Azebo	1768	Moisture stress	Cash[5]	150,000	Chick pea		FAO
2003	Meher	Raya Azebo	1200	Moisture stress	DSD[6]	717,500	Barley	600 Qt	FAO
	Meher	Raya Azebo	2400	Moisture stress			Teff	1850 Qt	
2004	Residual moisture	Raya Azebo		Moisture stress	DSD[7]	504,000	Chick pea	2464 Qt	FAO
2006	Belg	Raya Azebo	1691 (11 FAs)	Moisture stress	Cash	189,450	Teff Local Market		FAO
	Belg	Alamata	942	Moisture stress	Cash	105,585	Teff and maize		
	Belg	Ofla	1095	Moisture stress	Cash	123,085	Barley and lentil		

Table 16 Tigray overview of seed aid implemented through time (source: ADCS records)

Year	Season	Woredas	#HH	Reason for seed aid	Seed Aid Approach	Overall Cost (Birr)	Crops given +source of seed		
							Crops	Source	Donor
2003	Belg	Gulomekeda	2000	War and famine	Seed voucher	173805.95	Barley, Wheat Bean	Local vender and BoARD	USAID/ OFDA
2004	Belg	Gulomekeda and Saissie	1500	War and famine	Seed voucher	150500	Barley, Wheat Bean	Local vender and BoARD	USAID/ OFDA
2005	Belg	Gulomekeda, Saissie and Irob	532	War and famine	Seed voucher	79800	Barley, Wheat Bean	Local vender and BoARD	USAID/ OFDA
2006	Belg	Gulomekeda, Saissie and Irob	410	War and famine	Seed voucher	72980	Barley, Wheat Bean	Local vender and BoARD	USAID/ OFDA

[5] Due to urgency of the emergency relief it was decided the approach to be cash for seed but still on credit basis (revolving).
[6] Work for seed programme (soil and water conservation activities).
[7] Initially cash was given to BOARD, then seed purchased from different sources (local providers, farmers, and some from Gojjam)

CHOICE OF APPROACH

Implementing agencies interviewed employ a range of approaches, including all those identified as being the main ones practiced in Ethiopia (see Table 7). Choice of use of an approach seems to be most closely linked to the a) institutional philosophy of the implementer; b) donor guidance or stipulations and; c) capacity to implement any one type of response. Seed security assessments are not done (see later section of this chapter), so, in the absence of diagnosis and understanding of the seed security problem on the ground, emergency seed aid is overwhelmingly supply driven.

Approach Choice by Institution

Organizations tend to specialize in one approach or another, although a select few test several delivery options, as their thinking evolves and sharpens. This tendency to specialize means that the profile of approaches used in a zone directly corresponds to the implementers present in a zone. As examples of types of aid approach and institutional linking we sketch the following :

GoE: The government prefers DSD- it allows for large scale delivery, decision-making is often determined centrally, and logistics focus on well-known activities: procurement and distribution. In more recent years, the GoE has also insisted, in theory, on the use of 'revolving funds' as a standard design in seed aid in an effort to stem dependencies .

CARE: This NGO generally promotes rights-based approaches and in seed aid feels giving farmers choice is paramount. Much of its seed aid involves promotion of cash and vouchers approaches.

Catholic Relief Services (CRS): This NGO often favors support for markets-based enterprises. Its experience working with seed/grain traders has also led it to believe that seed is usually available in stress contexts: Hence CRS promotes Seed Vouchers and Fairs as the preferred seed aid option, as this approach benefits farmers, and sellers alike (traders, small farmer entrepreneurs).

Relief Society of Tigray (REST): This NGO embraces a clear philosophy whereby farmer empowerment and citizen choice is key. Its preferred approach is dispensing cash (for seed and other items) directly to beneficiaries. Beneficiaries thus have choice, but also 'remain accountable' for the strategies chosen.

World Vision Ethiopia (WVE). This NGO has strongly allied itself to initiatives on agricultural intensification. Hence, even in its emergency work, WVE often promotes modern varieties, distributed via DSD work.

These summaries represent but general tendencies. Within the last five years in Ethiopia, there has been some experimentation in emergency seed aid response. For instance, The International Rescue Committee (IRC), and Goal, as well as CARE and CRS have experimented with vouchers in seed aid. Some organizations have also

experimented with explicitly linking emergency to development work (see section below, 'Linking Relief to Development').

The major point here is that the broad approach used in emergency seed aid is strongly-shaped by institutional philosophy and not necessarily by specific problems on the ground. In select cases, donors also influence the seed aid content. USAID/OFDA for instance, prefers that aid be given that farmers themselves can maintain. This donor also discourages distribution of hybrid maize in high stress contexts and often suggests that aid implementers diversify away from maize altogether, in sites where the crop has become unusually dominant.

Approach Choice by Seed Security Problem

Current responses are not necessarily matched to on-the-ground problems, implementers are working in contexts of relative ignorance, due to the lack of security assessments. Table 17 suggests useful ways for moving forward to conceptualize more targeted options. The table distinguishes potentially effective response a) by type of seed security constraint encountered, and b) by whether the constraint is a short-term or longer-term one. Certainly the choice of a seed-aid response is not always a straight-forward one as real life constraints intervene, such as timing, capacity, and scale of need. However, the choice of a particular response should always be actively taken (and default options reviewed), and practitioners might usefully sharpen their understanding of what types of problems a particular seed-related emergency response can or cannot address.

Table 17 Types of seed security 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 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: Direct distribution of seed	*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 do not have access to seed	Cash disbursement Voucher disbursement (w/seed fairs)	Poverty reduction programs
Seed of poor quality and/or lack of appropriate varieties	Seed fairs with quality controls 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

source: Sperling et al., forthcoming (2008)

RATIONALE FOR APPROACH PREFERENCES

While seed security problems *per se* do not drive response, implementers do have strong views on why one type of seed aid might be preferred over another. Table 18 summarizes implementer views on why they employ a particular approach. Where possible, implementers' own phrases have been used.

Table 18 Implementers' preferred approaches, and reasons for preferences.

Organization	Seed Aid Approach Preference
GoE- Humbo	**Direct Seed Distribution (DSD)—with revolving assed system** • Allows seed to be purchased in bulk—lowers transaction costs • Office of Agriculture determines crops and varieties • Can include modern varieties for certain crops (maize and chickpea) • Can use local varieties for certain crops (teff, haricot bean) • (In theory), seed is not free—but has to be repaid

REST- Tigray	**Cash** • Given the emergency nature of the intervention, there is no quicker and faster modality for intervention. • Gives an opportunity for farmers to make their own choice on the kind of seed (in terms of crop/crop variety) that are consistent to the local agro-ecology, fertility status of land, the period when the rain starts. • Farmers have a greater control over the quality of seed they purchase • Even if the farmers make mistakes, which are less likely than when the trader provide them with the seeds, it remains farmers' own responsibility (and no one else 'can be blamed'.) • There are no known sources for some seeds like "*Hanfets,*" (mix of barley and wheat) • Only through this method can farmers get preferred seeds • DSD has problems with poor quality seeds of unknown sources • With DSD, there is no system to control the private seed supplies • Generally, extra cost for transportation, loading/unloading and storage facilities incurred in non-cash response
ADCS- Tigray	**Seed Vouchers and Fairs (SVF) (on what SVF avoids)** • Farmers can expend the cash for other purposes like schooling, food, closing, and other expenses • DSD requires detailed assessment follow up, cost and it leads to corruption during purchasing process. • Seed bought from outside the region has adaptation problems, though it is important when there is no seed in the surrounding area at all. • The coupon system can be stopped any time upon mistreatment in terms of price, quality and seed/variety type.
CRS (Ethiopia)	**Seed Vouchers and Fairs (with Livelihood Focus)** • Allows farmers to select which crops and varieties they want • Has two sets of beneficiaries; farmers, but also small traders (many of whom may be farmer-sellers, many of whom are women) • Injects money into the local and regional economies- rather than spending the bulk of funds outside the zone.
CARE- West Hararghe:	**Vouchers- with select Traders** • Gives farmers choice in crops and varieties • Allows farmers to access much-needed local varieties • Works with regional seed/grain traders to improve seed quality overall and hence has lasting effects on local seed system • Logistically much easier than DSD, and much easier than SVF
Across Governmental & NGO organizations	**Revolving funds (Seed)** • Repayment rate is minimal • If seed is returned, it is of low quality (broken with stones, not usable as seed), • The implementers' collecting process from farmers is arduous • GO/NGO capacity to store 'collected seed' is not well-developed or strains their current capacity storage **Revolving funds (Cash- in Tigray)** • There is no transparent and accountable systems that controls the revolving fund for further re-use.

While there is a diversity of views, both government and NGO seed aid implementers seem to have near-universal consensus on one seed aid practice: that of the proposed use of revolving funds. For a range of reasons offered in Table 18, implementers do not consider revolving funds as a viable operational option. As summed up by one implementer in Humbo:

> *"We no longer even bother to ask for repayment --- and farmers don't offer". So now, "we understand each other".*

In terms of implementation, there is great variability in content even within a single approach. DSD has been used to distribute both local and modern varieties; and vouchers have been used to help farmers obtain seed from formal sector stockists as well as from local seed/grain traders.

Likewise, there is scope for both 'good practice' and 'bad practice' in processes of implementation. In the course of field investigation, there were numerous accounts of DSD procurement being tied to favored interests, of seed arriving late and of targeting towards progressive farmers. Similarly, use of vouchers has opened the way for traders (and even community elders) to abuse their roles; charging prices that are too high, putting on offer second rate or non-desired seed. The converse also unfolded: in both these approaches, supplies were delivered that met farmer-consumer needs in a timely fashion.

A point to emphasize is that the strengths and weaknesses of an approach do not just lie in its overall structure. The end-value also depends on how it has been implemented. Policymakers and implementers might be cautious about making blanket statements about the superiority of one approach over another. Some approaches have clear design advantages for some contexts (particularly in terms of the seed security problems they aim to address). However, their on-ground value also hinges on how they are implemented. Strangely, precise guidelines for shaping field seed aid implementation are lacking in Ethiopia, a point highlighted later in this chapter.

Quality issues: a prime point for discussion

Finally, in terms of overall approaches used, the cross-cutting issue of quality is introduced. Seed quality embraces two aspects; *seed* quality *per se*, and *varietal* quality. Seed quality consists of physical, physiological and sanitary attributes (such as the germination rate, and absence/presence of disease, stones, sand, broken seed or weeds). Varietal quality consists of genetic attributes, such as plant type, duration of growth cycle, seed color and shape, etc. [8]

The quality of seed delivered through seed assistance is an important concern – for all: donors, governments, seed aid implementers, farmers. Poor quality seed, that fails to emerge or flower and yield, can leave farm families even more food insecure. In unusual cases, it can also introduce longer-risk, as the oft-cited food aid example whereby an aid delivery in Ethiopia has been held responsible for introducing the invasive and toxic weed, *Parthenium hysterophorous, or* 'Congress weed' (Aberra Deressa, pers. comm., 2005; Berhanu Gebre-Medhin, 1992). Hararghe farmers call it

[8] This section draws from L. Sperling et al. 2006e.

feremsis, meaning 'sign off' (and leave your farm), and the weed has become a serious constraint to farming in the last 15 years.

Issues of seed quality very much shape the types of seed assistance that can unfold. In emergency seed procurement, quality issues most often focus on whether the seed is healthy and physically pure (as several donors require formal certification prior to seed procurement.). Quality stereotypes equate seed coming from the formal sector commercial sources as being of high performing varieties with high germination and good seed health, and seed coming from the informal sector (home-produced or procured from the market) as being of poor quality of low performing traditional varieties. Recent field studies show that such labels can be deceptive (Otsyula *et al.*, 2004). The quality of formal-sector seed may not be as advertised and emergency-grade seed overall is of both variable health and genetic quality. Farmer seed and market seed has also proven to be 'objectively' of good quality, as assessed in laboratory analyses (Rubyogo, 2006; Otsyula *et al.*, 2004).

The focus on the seed health parameter of "quality" in emergency has diverted attention away from what might be the more important quality issue: the seed on offer must be adapted to the stress conditions at hand, and have farmer- acceptable crop characteristics. While relatively few crops and varieties are multiplied by the formal sector, those emerging from formal research sectors or on offer from commercial companies are assumed 'good enough' for emergency distribution, whether or not they have been selected for use in the regions of stress or for growing under the management conditions practiced by recipient farmers. So in the relief business, there are often trade-offs to accessing seed with a given varietal quality versus seed with a given health/physical quality (Sperling *et al.*, 2006e).

In commenting on quality in specific Ethiopian field sites, many practitioners have given priority to 'getting the variety right.' Thus in the Humbo area, officials prefer to use local varieties in aid for some crops, but seek maize, chickpea and sweet potato from formal systems. In contrast, implementers in Gera Keya have almost exclusively focused on formal sector varieties and hence restrict their distributions largely to modern varieties wheat.

Formal seed sector certification is not the only way to promote good seed quality (and, as indicated, varieties of such seed may be sub-standard for emergency situations.). NGOs, such as WVE in Wolaita ask for competitive bids on seed procured by traders from the local markets, specifically so WVE can review seed quality issues. Within the voucher or seed voucher and fair system, seed quality issues are also built into the process in several ways. In the CARE approach, NGO personnel screen the traders to be involved in the initial procurement: in addition to having a license, traders have to agree to separate out varieties, have a warehouse, and maintain specific seed stores. In the CRS approach, local farmer-based seed committees are engaged to assess the quality of seed lots prior to their purchase or to recruit seed sellers with locally respected seed. One advantage of empowering local communities to plan and implement seed aid programs is that it enables *social certification*. Precise individuals, identifiable within the community, are held accountable for the quality of seed. Further, if farmers do not like what they buy—they will boycott that trader for many seasons to come. Ensuring seed providers are accountable for the product they put on offer can be a powerful monitoring tool.

Lastly, the ideal clashes with the real, when seed aid implementation is delayed. When programming reaches the stage of 'too late', local chickpea, from any source available, is overwhelmingly the crop/variety of choice in seed aid programs. Quality issues during late implementation may fall by the wayside.

Underlying Themes Guiding Seed Aid Approach Choice

Underlying the choice of an approach, there are two more recent aid strategy thrusts which bear mention: moves to empower communities in the aid process; and efforts to link the relief phase with more developmental gains.

Empowerment

This empowerment thrust manifests itself in a) giving farmers choice in selecting crops and varieties so as to strategize on their own sowing needs during stress periods and b) giving them cash, to allot among seed and non-seed needs post- disaster. It comes from a dual logic: that farmers have the real expertise and the right to decide what is needed or not; and, second; that with rights come responsibilities, so farmers should be held accountable for the choices made. This more empowering or rights-based perspective contrasts markedly with some of the more top-down agriculture packages programs promoted by the GoE and NGOs throughout the countryside.

Linking Relief to Development

The second thrust shaping some types of seed aid comes from the recognition that seed aid is often being given in chronic stress areas, and in areas where only modest development initiatives may exist. Some implementers consciously promote developmental perspectives under the umbrella of relief. Whether the process is done well or not (and whether the specific programs chosen are the right ones) presents one set of questions. Whether a more 'developmental relief' perspective is needed is beyond question.

Three types of more developmental relief identified during the fieldwork are summarized below.

A) Local level seed enterprise/ Improving seed quality

Some NGOs, during emergency, aim to improve seed quality or stimulate seed enterprises by working through local seed systems. As examples, the International Rescue Committee (IRC) routinely sources its bean relief seed from small scale farmer producers in the Alemaya area (Berhanu Amsalu, personal communication). Similarly, one of the big traders linked with CARE's voucher program buys some of his emergency supplies from small-scale, community based seed initiatives in the Boffa area. Both these initiatives support fledging small-scale seed enterprises.

B) Stimulating local economies

Other NGOs use the seed aid vehicle to support agro-enterprise in the economy more generally. CRS, for example, stresses that local small scale traders and farmers are equal beneficiaries in its seed voucher and fair (SVF) programs. In terms of its seed sellers at fairs, CRS gives priority to smaller traders, women traders and even farmer traders, in efforts to keep the money circulating within the local region and to give the first-cut benefits to those with incipient or small-scale businesses. (The approach contrasts somewhat with CARE's voucher approach as the latter ends up working with somewhat larger traders, due to its procurement stipulations). (see Chapter VI, on Traders.)

C) Introducing modern varieties[9]

Third, a major aid vehicle perceived as a developmental one focuses on distributing modern varieties within DSD programs. Whether this approach indeed links relief with development greatly depends on how the activity is designed and implemented during the emergency phase.

Introducing new varieties can play a role in restoring food security in times of crisis. Crises may be caused by crop/variety breakdowns (e.g. spurred by plant disease or sharply declining soil fertility). More routinely, crises may be seen as an opportunity to introduce new varieties to promote what are considered more 'modern' practices to strengthen systems plagued by low production.

Regardless of the potential for improving smallholder productivity through new variety introduction, it is important to first evaluate possible limits to such introductions in crisis times. In periods of emergency and prolonged stress, small farmers are already at levels of increased risk: they are generally poorer, having lost household assets, livestock or crops in the field; and cannot afford to waste further often scarce land or labor resources.

Emergency seed aid which is considering possible crop/variety introductions has to be programmed along a well-planned set of steps. Among the key elements: the crop and variety have to be 'proven' for the context (both adapted and farmer-acceptable); farmers have to be given a choice as to whether or not they want to test the new materials or not (and these should be test sizes, not seed amounts to cover large surfaces); and subsequent monitoring and evaluation has to be built into the 'aid project', at least long enough to see field performance and whether farmers want to sow such varieties again (see Box 4 for full set of steps).

Disturbingly, as will be seen in a following section on seed assessments, emergency seed aid in several regions in Ethiopia is sometimes used as *the* main vehicle whereby farmers get access to modern varieties. This practice shows a clear confusion of the

[9] This section draws heavily on the published seed security and seed aid practice brief, "Using seed aid to give farmers access to seed of new varieties." Sperling *et al.* 2006e

between the relief process and much needed- development programs. It also represents a very costly (uneconomical) way of promoting modern varieties, by randomly distributing them during high stress periods. Seed aid should not be used to fill in for failed or non-existent development programs. Selectively making modern varieties on offer, within relief programs, can however, make a positive different in well-planned cases.

Box 4 Introducing new varieties in acute stress periods: key steps. (source: Sperling *et al.*, 2006c)

- **Conduct a Seed System Security Assessment**
    a. What are the current seed system weaknesses and strengths?
    b. Would new varieties open up *promising* opportunities: why, how, for whom?
    c. What are the potential risks?

- **Work with farm communities and other informed personnel to choose possible new varieties**: Is there sufficient *prior evidence* that varieties:
    a. are adapted to the specific agro-ecological zones?
    b. meet farmers' acceptability criteria (harvest/post harvest. for subsistence/market)?
    c. can be successfully used under farmers' own management conditions (e.g. without fertilizer) ?

- **Design introductions so as to minimize risk and maximize farmers' *informed* choice**
    a. Offer 'test size' packets: introductions should be small-scale.
    b. Give farmers choices to use variety or not, and if possible, put several varieties on offer
    c. Provide sufficient accompanying information to allow farmers to make variety choices and management decisions (planting time, levels of input use, crop associations)

- **Build in explicit monitoring and evaluation of new varieties: are they performing? for whom? where?**

- **Count on a multi-year process:**
    a. Can the new introductions be successfully integrated into stressed farming systems?
    b. If yes, is further fine-tuning needed?

Having given an overview of approaches in use by the GO and NGO implementers at the field level, the report briefly reviews salient seed aid-related issues in three key implementation realms: targeting, evaluation and needs assessment. These are addressed in order of increasingly complexity, as perceived by implementers.

Implementation Issue I: Targeting

Targeting of Recipients for Seed Aid

Targeting (at all levels) presents its own challenges, the scope of which go beyond this seed-aid report. A number of documents on targeting reports exist for Ethiopia, giving overall trends, and NGOS themselves often reflect on their site specific conditions in the course of follow-up. This section highlights what may be seed specific concerns; i.e. issues related to seed aid targeting which are not necessarily related food or other non-food item delivery.

Targeting: seed aid specific needs

In terms of seed aid, three distinct points bear emphasis. First, a family having food shortage does not necessarily have a seed shortage (see Chapter III) While, implementers may find it logistically easy to deliver food aid and seed aid as a package, such a practice is often uneconomical. Common wisdom suggests that the subset lacking seed is much smaller that the subset lacking food.

Second, to use seed, key conditions need to be in place. A household has to have access to land (but not necessarily own it); needs labor to ensure sowing is on time (a constraint if one is working first to help others seed their plots) and, in Ethiopia, a household often needs access to oxen to prepare the fields. During study investigations, farmers frequently complained that while they received seed on schedule, but they could not rent oxen—so sowed late, or did not sow at all. For some regions of Ethiopia, implementers might consider how a 'seed and oxen-use voucher' program can be tested systematically.

Third, as modern varieties are often the input delivered in aid, particularly by government officials, implementers might reflect which type of household (land profile, input access) can or cannot absorb this type of seed aid. This issue of 'tied seed aid' (that is aid which is useful only if rigorous conditions are met) should lead to more refined targeting processes. Types of seed aid should be distinguished for chronic stress recipients, for acute stress victims (flood, intermittent conflict), and for developmental recipients (stratifying here also between those who do or do not have access to inputs.).

Seed Aid Recipient Criteria

As with other items, seed aid targeting takes place at two levels: area targeting and beneficiary targeting

Area targeting: Usually done at woreda level by team from office of administration, agriculture, DPPA and NGO to identify the specific seed needy area/location within the woreda.

Beneficiary targeting: This is often done by a committee comprised of key informants, development agents, elders and church leaders. The committee selects beneficiaries using set criteria (e.g. Box 5) but final approval may be via a community meeting. A complaint settlement committee at each Farmers' Association may also address issues of any missed targeting (absent beneficiaries).

Box 5 summarizes one recent targeting negotiation between FAO and REST for distributing seed in 2005. The list is one of the more comprehensive lists available, although most of the indicators are associated primarily with poverty (and the harvest threshold is quite high!). It is quite challenging and potentially time-consuming to target specifically for seed aid. One procedure used by WVE in Humbo helps participants themselves self-select who does or does not need aid. Simply, farmers who take seed aid have to sign a contract that they will plant it and not sell it. This procedure stems from the experience that seed aid often is not used as expected. It may be eaten or sold, as highly valued seed can fetch good prices, In a concrete example again from Humbo, a farmer with 81 Birr of coupons (vouchers) sold to another for 60 Birr, and both benefited. In this case, the seed aid activity proved one of income generation)..

Box 5 FAO - REST Agreements : Tigray: Targeting Seed Aid Recipients (source: FAO, 2005)

Non-negotiable entry points

A. Families who had little or no harvest (>50% crop failure) as a consequence of drought;

B. Families falling in to the poorest category, 30% of the community;

C. Families who have "access" to sufficient land for planting (generally minimum of 0.25ha) not necessarily owned.

Other criteria to be followed in the screening of beneficiary lists

1. Priority to elder (>60) and child headed families (≤18);
2. Priority to women headed households;
3. Priority to households with large family size (≥6 members);
4. Priority to families with chronically ill or disabled members;
5. Priority to families with orphaned children;

Implementation Issue II: Evaluation

Within this study, even the very basic 'logistical' evaluation figures were hard to trace beyond several seasons: how much seed was delivered, to whom and where, or how many farmers were reached with vouchers across a zone. Such a shallow institutional memory is disturbing given the length of time seed aid has been implemented in Ethiopia, the scale on which it has been practiced and the amount of money which has been spent. This lack of monitoring and evaluation also means that very little learning (feedback) is taking place in seed aid practice.

Isolated examples of different types of evaluations were located. They are mentioned here so that practitioners (and government) might start to share experiences. In terms of real time evaluations (as the event is unrolling), CRS is a prime implementer doing

this routinely, during the period when its seed voucher and fairs are taking place. At a slightly later stage, after seed delivery CONCERN (Humbo-Wolaita) regularly conducts post-season distributions, as does REST (Tigray). REST, in particular, seems to monitor the growth cycle quite closely: emergence, flowering, grain filling, and harvest. WVE (Humbo) also did a revealing follow-up after a 'cash for relief distribution', where money was given to help farmers replace lost assets (c. 2004) It found that farmer recipients had spent most of the aid money given to acquire livestock (cows, goats) and that virtually none of the funds had been allotted to seed. The results promote reflection on whether seed aid is priority activity for this context.

Lastly, a few select donors have been the driving force for promoting more extensive evaluations within the past couple of years. The USAID/OFDA, in particular, has solicited specific evaluations to compare different types of seed over one season, and to look more closely at the effectiveness of its vouchers program, (Brandstetter, 2004; Gregg, 2004). Again, overall, only a paltry number of seed-aid related evaluations can be located, for more than three decades of aid.

In brief, there is a real need for integrated monitoring and evaluation, at various levels in Ethiopia, through time and across zones, if seed aid practice is to evolve in positive ways. This means that practitioners have to be willing to reflect on went well- or not; and donors have to be open to accepting (and lauding reports) which suggest mistakes had been made. Box 6 outlines the diverse types of evaluations which should be associated with seed aid programs through time, and the specific types themes which need to be addressed within each. Such evaluation will only take place if the GoE and donors promote them, if funds and human resources are made available to conduct them, and if the lessons subsequently learned are then fed into evolving policy and program design. No implementer wants to spend time conducting evaluations if the results are not subsequently used.

Box 6 Seed System Relief and Evaluation Overview (source: Sperling *et al.*, 2006d)

Type of Evaluation	Agency's assessments of	Recipients' assessment of
Real-time **(during intervention)**	Insights (from diverse perspectives) on: • products on offer (crop/variety choice, seed quality, seed amounts) • the immediate intervention process (--whatever is signaled as important, e.g. length of intervention, incl. waiting time; number and order of farmers served, adequacy of support personnel)	
Output **(about one-month after)**	Insights on the efficiency of intervention: its organization and general logistics (from diverse perspectives): • timing (especially in relation to subsequent planting) • targeting (process and perceived 'fairness') • choice of locales • choice of crops and varieties • adequacy of seed quality on offer (and validity of process guiding quality verification) • adequacy of preparatory information or sessions • scale (numbers served, overall amounts of seed or products delivered or made accessible) (What worked? What was missing? What modifications should be made in future?)	

Outcome
 	
(after first season)
	Insights on first effects of intervention.
	
	<u>Recipient Focus:</u>
	• Yield performance and farmer satisfaction with crop/varieties obtained as aid (qualitative and quantitative variety attributes
	• Importance of seed aid in relation to farmers' other seed sources
	  ○ what proportion of the aid given was sown and why?
	  ○ what proportion of the total seed sown came from aid (versus , home-saved seed, local markets, exchange) and why?
	
	<u>Farming System/Implementer Focus: some key guide questions,</u>
	
	• Was the impact of the disaster on farming systems sufficiently understood to guide planning (looking with hindsight)?
	• Was the general choice of intervention valid (and linked to a specific seed security need?)
	• Was the intervention actually needed (what evidence)?
	• Did the intervention strengthen or protect seed security (evidence)?
	• Which broad groups were reached via the intervention (and which not)?
	• Where there any unanticipated positive effects?
	• Where there unanticipated negative effects?
	
	(What worked? What was missing? What modifications should be made in future?)	

Impact evaluations **(after several seasons)**	Impact of intervention on: (including possible negative as well as positive effects.) Stability of production and food security Crop and varietal diversity (positive and possible negative effects) Household income - local economy. Seed channel functioning , incl: local grain market functioning and commercial enterprise development System resilience to possible next set of shocks?	

Implementation Issue III: Seed Needs Assessment at the Local Level

As the third key theme, we consider seed needs assessments, or what might be better labeled seed security assessments. Basically the question being asked is whether farmers have seed security during a crisis period. More explicitly, this involves three sub-questions: is seed available? can farmers access it? and is it of the right quality (right varieties, with good health and germination potential)? Assessing 'seed needs', the more common term, unfortunately carries with it the connotation that the process is about seed counting. It includes an assumption that seed is needed (that seed is not available), and that the challenge is to determine how much seed is needed.

The overall framework used in Ethiopia for assessing seed security has been described in Chapter III. Seed security is assessed (or seed need is assumed) based on the Crop and Food Supply Assessment Missions, (although experts here confirm that the CFSAM method has no seed security component *per se*; H. Josserand, pers. comm., 2007). The overall trigger for seed aid need is near-universal pronouncement of a 'harvest failure' or crop production loss. Again, the usefulness of the 'harvest failure' indicator has been questioned. (Chapter III) and data clearly show that only in extreme cases would a production shortfall necessarily directly lead to a seed shortfall (Box 1).

In this section, the report looks how the *processes* of seed security assessment unfold at the local woreda level. It is this unit of analysis which subsequently informs all those above it, as seed needs are amalgamated from the woreda upwards – to the zone or region – and then to the national levels. If the seed security assessment process has weaknesses at this pillar unit of analysis, it has flaws all the way up the assessment chain. While some argue that the woreda is an inappropriate unit of assessment as it rarely corresponds to a well-defined agro-ecological zone, the woreda has the advantage that it is a concerted zone of action. Government officers can likely accommodate (and know well) any agro-ecological variations.

Seed Needs Assessments: the process officially outlined

The normative (theoretical) process for security assessment contains a number of basic features across zones.

Crop assessment is carried out twice to four times a year i.e. in 'Belg' and 'Meher' seasons. In some cases, there are both pre- and post-harvest assessments. In others, mainly a post-harvest focus. Depending on the zone, the crop assessment done for Belg season might be around May or June and for Meher season at October.

A team from offices of agriculture (agronomist, animal husbandry expert) and DPPA carry out this crop assessment by area. Health and education officers might also be involved. Farmers and Development Agents often offer advice as to which areas may be most affected as well as insights into specific crop or livestock problems. In Tigray, a level below the woreda, the *Tabia*, helps monitor and feed information back to woreda officials throughout the cropping season.

The crop assessment is done using farm questionnaires, physical observation, market survey and farm survey. In some cases specific grain yield loss assessments are effected. From the yield assessment, a food gap is calculated (e.g. 15 kg of some crop bases per individual per month). The food gap then vaguely translated into a seed gap. At all field sites this process of translation from food to seed gap remains unclear.

Other select non-crop information may also be collected. For instance, the market price of live animals and milk products may be assessed. It will then be translated in terms of money /income/ a farm household might obtain—and translated again into the amount of food which can be purchased. Where safety programs are operational, monthly stipends might also be factored into the final 'food gap tally.' At no point, in any of the field zones, was a specific seed security assessment or even a seed need assessment procedure described. Further, in three of the four zones, two factors were described as shaping the demand for seed: a) the seed gap (as extrapolated from the food gap); and b) the quantities of modern varieties wanted, so as to introduce more promising materials into the zone.

In brief, no seed security assessment is effected at the woreda level: Further, seed figures are based on a) estimates of seed shortage, plus b) desired quantities of modern varieties which implementers' hope to acquire via the seed aid process.

Seeds Needs Assessment: process as implemented

The actual process of seed security/seed needs assessment is somewhat different from what is officially described. In terms of several variations from the norm, government officials reported:

> *"Government asks us if we need seed, -- and we say yes." (DPPA: Humbo)*
> [no assessment is made].
>
> *"We try to visit a few fields- but transport is problem and the needed profile of personnel is not available. (BoARD- Hararghe)."*
>
> *"Seed aid since I have been here has been going on since 1993. There have been no assessments" (BoARD - Humbo)*

Other, more technical challenges became more evident on a routine basis. Officials are not clear what degree of harvest loss might represent a problem for future sowing needs (30% loss? 50%? 70%?). Further, not knowing specific land areas cultivated per crop, officials frequently base crop-specific estimates on full hectarge being farmed, not on the hectarage of the crop *per se*.

Two field examples illustrate further problems and challenges shaping seed security assessments at the woreda level.

Miesso: Hararghe

Officials in Miesso transparently shared records of three seed aid requests and receipts. They also projected the 2007 season. Their comments of the process helped clarify the seed aid mechanics.

The figures on seed aid below suggest in the Miesso case that most of the seed requested was indeed received, for the three seasons indicated. However, as signaled by woreda officials, the amounts requested were relatively small (except in 2003, when the full request was not met.) Officials emphasized that they specifically limited requests so that their modest targets would be met.

Of equal interest are the yield loss projections which spurred seed aid. In all four cases, they hover around 60% loss. However, seed aid requests, when specified in terms of households to be served, show a steady increase across the season, going from 562 to 3048 households, despite the same estimated yield losses across years. It becomes clear that seed aid in this high stress zone in not about yield loss *per se*, but rather about technology transfer. Seed aid is an important vehicle for moving modern varieties. It is local officials who offered this insight.

Table 19 Miesso seed aid requests and receipts in 2003 Meher.

Crop	Seed requested (Qtl)	Seed received (Qtl)
Sorghum	1000	900
Maize	1250	115
Teff	100	100
Chickpea	400	450
Haricot bean	400	200
Sesame	6	0

Notes:

The sorghum sourced was local, from traders and farmers (varieties not specified). Tests with the agronomist from local office showed >85% germination.

Teff was MV from Debre Zeit station, obtained with FAO money.

Table 20 Miesso seed aid requests and receipts in 2005 Meher.

Crop	Seed requested (Qtl)	Seed received (Qtl)
Maize	256.2	256.2
Sesame	11.24	11.24

Notes:

Fast-maturing maize planted mostly when early sowings fail, for late planting

Sesame is a 'development' crop—high value for cash.

This aid request was in response to a **60% yield loss** before that season, which would put **51,374** farmers (presumably including all family members) in food deficit. From these figures, they planned seed provision for **562 households.**

Table 21 Miesso seed aid requests and receipts in 2006 Meher.

Crop	Seed requested (Qtl)	Seed received (Qtl)
Maize	167	167
Haricot bean	134.3	34

Notes:

Maize was 'Katumani' or 'Melkassa 1', beans were 'Mexican 142' (MV).

A **production shortfall** for beans was why they said they received less beans than requested (presumably means MV seed production).

yield loss again "not more than **60%:** gave seed aid to **1 011 households**. .

FAO-supported Community-Based Seed Enterprise were source of some seed, as they have two sites in Miesso woreda

This present year (2007), officials again predict a yield loss of 60%, and this time have requested seed aid for **3,048** households. Among the varieties requested is the sorghum MV 'Meko'.

Raya Azebo: Tigray

Seed Aid requests and receipts in Raya Azebo show a somewhat separate pattern. Table 22 summarizes seed requests and seed received for three years.

Table 22 Raya Azebo seed aid requests and receipts

Year	Season	Crop	Seed requested (Qtl)	Seed received (Qtl)
2005	Meher	Teff	250	217.1
	Meher	Chickpea	-*	80
2006	Belg	Teff	750	78.4
	Meher	Chickpea	850*	272
2007	Belg	Teff	603	-
	Meher	Chickpea	-*	110

Source: Raya Azebo woreda office (*cases where Meher rains were too late, so chickpea was brought in to grow on residual moisture)

In all cases, the seed received was significantly less than that requested In terms of the seed requested, 86%, 32%, 11% and 0% was received, for the varied requests from 2005-2007. Reductions in the amount delivered were explained by the limits in the overall funding eventually received. However in two cases, crops not requested completely replaced other crops requested (chickpea was substituted for teff). Perhaps there was a complete shift in seed aid strategy in the middle of the season? Certainly if the rains unexpectedly stop, a short cycle crop, such as chickpea, would be needed. Alternatively, if the distributions were late, chickpea may have been offered as a stop gap measure.

In terms of the discrepancy between amounts received and requested, officials in Addis Ababa recounted that cuts are the norm for this woreda rather than the exception. As stated by one member of the Agricultural Task Force, "*We have never accepted what they have provided: we always adjust their figures"* (anon, 2007).

This tendency to negotiate amounts was confirmed to the research team at several points. As an FAO officer frankly stated, "we are often required to reduce amounts requested dramatically, so we get on the telephone to woredas and start to negotiate: 'why don't you reduce this number on this or that'. Simply, this is not professional and we need to rethink this whole seed assessment process." (Amare Mengistu, pers. comm., 2007.)

Seed Needs Assessments at the woreda level

In sum, in reference to seed security assessments at the woreda level:

1) There are none. Food security assessments are conducted.

2) Seed need calculations are skewed, based on seed shortage being extrapolated from 'food gaps'

3) Seed calculations are additionally skewed: based on implementers' frequent practice to use seed aid as the vehicle to acquire new varieties.

4) Maneuvering all along the chain (lack of trust in accuracy of figures and alternate agendas) shapes all technical calculations. Knowing that figures may be cut, initial seed estimates may be inflated.

Some of this information may not be 'new' (especially to those on the 'inside' of these processes). However, it is past time to address the technical challenges in getting rigorous seed security assessments, with the woreda at the node. Equally important will be putting in place political processes, which encourage accuracy. This would mean that decision-makers would aim to deliver seed requested, if seed were shown to be needed, and if funds were available to cover that need.

SUMMARY: GO/NGO IMPLEMENTER INSIGHTS

Historical records show seed aid to be continuous in areas considered as stress zones. In the site of this field study where records were most complete, investigations found seed given 13 times in a period of nine years.

It is not possible to state if the amount of seed aid needed in any one zone is increasing or decreasing. Records are fragmented. As important, seed aid received is related only to the level of funds available, not to the level of seed aid necessarily needed.

Emergency seed aid approaches used are strongly shaped by institutional philosophy, rather than by concrete problems encountered on the ground. Hence, seed aid approaches used in a zone seed directly depend on which implementers are present in the zone.

The GoE generally uses a Direct Seed Distribution (DSD) approach, sometimes coupled with a demand for repayment (labeled as revolving funds). GO and NGO implementers near-universally assess the 'revolving funds' approach as a non-viable system: "It just doesn't work".

The NGO implementers have taken the lead in testing non-DSD approaches, cash, vouchers, seed vouchers and fairs, although some NGOs still also favor DSD, particularly to promote new varieties.

Two themes shape some of the novel trends in seed aid programming:

- Approaches to empower farmers within the seed aid process;
- Approaches to link relief response to more developmental initiatives. Explicitly programming a 'developmental relief' perspective might be particularly important for chronic stress contexts.

'Developmental relief' work presently encompasses: support to small scale business enterprises during the relief phase; support to local traders as beneficiaries in relief via the SVF system; and introduction of new varieties as part of relief aid.

Seed aid targeting is little differentiated from food aid targeting. In one effort to encourage that seed received is actually used, one NGO asks that recipients sign a 'contract' to plant and not sell.

Evaluations are few and far between. Seed aid is often treated as a logistical exercise (buy and distribute seed). Little learning is taking place in seed aid particularly on even its short-term effects. There are a few notable exceptions. Overall, the list is paltry in comparison to the thousands of emergency seed programs.

Seed security assessments by NGOs are not conducted.

Seed security assessments at the local government (woreda) level are not conducted. At best, seed needs are extrapolated from food security assessments.

Seed need estimates at the woreda level are calculated for two different factors: 'possible seed shortage'; and requests to acquire modern varieties for the zone. Seed need requests may be particularly inflated so as to obtain modern varieties.

In sum, seed aid approaches are overwhelming supply-driven. Need for seed is often not determined nor do seed security assessments take place which might identify concerns beyond immediate seed availability. Seed aid is used to meet mixed agendas: to help with possible seed shortages and to obtain development inputs (new varieties), as these may not be easily obtained otherwise.

MOVING FORWARD: RECOMMENDATIONS

The overall goals of seed aid in emergency need to be defined—and implementation strategies should directly be tailored to those goals. (Implementers should be strongly encouraged to stop using seed aid mainly to obtain new varieties.)

- Given that seed aid is mostly going on in chronic stress contexts, a broader set of 'developmental relief' strategies needs to be articulated and tested on the ground.

Seed-related responses have to be better matched to actual seed security problems encountered on the ground. This can be encouraged by building capacity to conduct seed security assessments (point below); and also by building capacity among implementers to implement a greater range of response options.

Seed security assessment capacity needs to be built at the woreda level. Technical tools are already in development to help agricultural officials move forward. These include harvest/seed tables, and field 'seed system security assessment' (SSSA) guides. An explicit technical process needs to be put in place to:

- raise awareness of seed security versus food security issues
- set up woreda level seed security indicators
- train woreda level staff in seed security field assessments

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.

The complete gap in seed aid implementer guidelines for Ethiopia needs to be addressed. An initial set of issues for inclusion in guidelines has been suggested by seed security experts (Box 7). These need to be sharpened through wide consultation.

Box 7 Proposed guidelines for the implementation of seed relief in Ethiopia.

SEED RELIEF GUIDELINES FOR ETHIOPIA: (proposed items)

- Seed security assessment needs to be effected prior to intervention
- The type of aid response should be matched to the seed security problem at hand
- Implementing organizations need to have agronomic expertise (seed aid is not just a logistical exercise). Such aid intervenes at the heart of a farming system.
- IF seed is to be provided, *Minimally* (examples)
  1. adapted crops and accepted varieties need to be put on offer
  2. the quality should be at least as good as what farmers normally use
- Modern varieties should be introduced in crisis periods only after a well-programmed set of steps has been followed (see Box 4)
- Monitoring and evaluation should be built into all seed relief interventions- to promote learning by doing, and improve practice. Such a commitment to follow-up should be a pre-condition to receipt of funds
- If seed aid in any one zone continues for multiple seasons (3 or more) a review process should take place. The review should either a) to justify the continuance of emergency aid, or b) stop the aid and plan an explicit exit strategy.
- Implementers should be held accountable for the products they deliver (whether from formal sector or from traders). Processes need to be devised for ensuring this accountability.

VI: IMPLEMENTATION - SUPPLY SIDE: TRADERS

Seed/grain traders, those who sell in open markets and move supplies within and across regions, are critical actors in helping farmers achieve seed security. During normal times, Ethiopian farmers are increasingly using local markets to source some of their seed (Dalton and Lipper, 2007). This may be to top off seed from their own harvests; to get new, local or modern varieties which they want to test; to renew seed stocks; and, occasionally to fill empty seed stores.[10] During crisis times, such traders are also critical suppliers of seed to GO and NGO implementers engaged in seed aid, as farmers may seek a larger proportion of their seed off-farm. (Note that we use the term "seed/grain trader" to refer to those suppliers who sell crops largely for use as grain, but a subset of which can potentially be used as seed - assuming it is adapted, and of farmer-acceptable quality.

This section draws on trader expertise to get additional insight into trends in seed security and seed aid assistance. Via traders, we also aim to understand better what happens to seed supply and markets during periods of stress: that is, how do drought, floods, civil strife affect seed availability, farmers' access to seed (including prices) and seed quality?

TRADERS AND SEED SUPPLY

To conduct this work, investigations first sketched out the broad seed/grain supply chains in the two select regions of Menz Gera Midir (part of former Gera Keya, in North Shoa) and West Hararghe. Trader interviews were then conducted at the various levels of these supply and purchase chains. It is necessary to differentiate among levels of traders for two reasons directly related to seed security. First, in terms of seed quality, one need to find out if traders deal in seed (and potential seed) as well as grain. Hence it important to differentiate among: those who collect directly from farmers and may keep potential seed separate; those who bulk grain and seed; and those who source crop materials from further away. Second, in terms of seed security, one needs to understand the degree to which traders can influence overall supply or seed availability. Naturally, traders who have large and reliable transport and storage facilities (large trucks, well conditioned storage units), define their territory of potential action (i.e. getting supplies) differently from, say a local seller, who brings her own-produced seed to markets on a bicycle or donkey. Bigger traders (regional traders or wholesalers) need to be interviewed, as these business people may be able to bring seed/grain from areas quite distant. Likewise, it is also important to work with traders who engage in direct transactions with farmers—as they can give insight into local seed availability (as well as distinguish what can usefully be planted, and what

[10] While emergency aid reports may often state that "Farmers ate all their seed", as a justification for the aid request, field evidence shows that this happens much less often less assumed. As farmer lore comments, "No one wants his daughter to marry someone who is silly enough to consume all his seed stocks."

not). During the course of investigations 21 extensive interviews were conducted in the Asebe Teferi/West Hararghe area; and 14 in Gera Keya /Menz Gera Midir).

Seed / grain: do traders know to distinguish between the two?

Interviews in two regions showed that traders, as a group, can theoretically distinguish seed from grain along a number of parameters, but only occasionally manage the two clusters separately. Much depends on the traders' customer base: where the seed/grain products will be sold and what the customer demands.

As Box 8 shows much of traders' potential management of seed quality (for those who calculate seed purchasers as one customer base) focuses on post-harvest actions. This involves selecting out visibly damaged grains and then selecting out non-seed or inert material (pebbles, dust). Additionally, some traders give considerable weight to variety choice, particularly those who focus on export crops, such as haricot beans, those who deal in modern varieties (e.g. of maize, of wheat), and those who deal with varieties especially adapted to harsh zones. As would be expected, trader knowledge on specific variety names varies greatly according to his/her proximity to a farming community and scale of operation. Those working directly with farmers nearly always distinguish among named varieties. Even the big traders (wholesalers) however, including those residing in towns, may group varieties together by visual characteristics, such as red or white sorghums, or by geographic origin: e.g. sorghum from Miesso versus sorghum from Jijigaa. So while the biggest traders, for the non-commercial crops, may not recall specific varietal labels, they all showed a strong sense of variety adaptation within broad zones. Maybe this is because those traders interviewed work within stress regions.

Interestingly, specific seed knowledge, and specific seed management practice seems to change dramatically in cases when seed *per se* is demanded. Government officials sometimes contract farmers to multiply modern varieties (maize, wheat) or highly adapted local ones (sorghum). Within West Hararghe, even at the lowest level of routine seed acquisition, a 'collector', the person who buys directly from farmers, may pay 5-10 Birr/quintal premium for good seed of local crops, such as sorghum. For export crops, such as the white haricot beans, traders higher up the chain pay as much as a 33% premium for pure, clean seed/grain, 4 Birr versus 3 Birr for kg (or 100 Birr premium per quintal). So, while seed may not take the lion's share of a traders' business, it is something of a market niche traders address explicitly. (In terms of the scale of a traders' food versus seed business: one trader interviewed suggested a 95/5% food/seed divide for his business, and another 99/1% food and seed, respectively).

Box 8 SEED/GRAIN TRADERS How they potentially distinguish between Seed and Grain (comments from West Hararghe).

Visual appearance (physical properties): seed has to look mature, not broken, not attacked by insects/pests discolored varieties removed. Seeds of a certain size might be sought, or specific shape.

Selection before sale: inert matter may be removed (such as dust, sand pebbles, grain).

Variety type: in some cases specific varieties are sought by traders (when for export or modern varieties); varieties might also be rigorously clustered by zones of adaptation (e.g. highland and lowland sorghums), or by maturity dates (e.g. short and longer-term maize); minimally, seed traders sort varieties by color classes, although some traders, also distinguish varieties clearly within color classes (e.g. within white teff, more and less drought tolerant). Trader knowledge of varieties differs greatly by crop.

Defined, proven sources (provenance): It is those crops grown and sourced locally, which are generally considered to have 'seed potential'. Beyond an agro-ecological zone, general only more commercial crops or modern varieties (of maize, wheat, beans) are considered by traders to have seed potential.

Seed Treatments: larger traders may use phostoxin (fumigant), not normally used for food.

Germination Tests: limited, but found with some traders. Also, caution to choose seed that has not started to germinate (not has contact with moisture).

Conditions of Storage: *Not* in pits for sorghum, maize, barley.

Length of storage: one year or less, for crops such as bean and wheat.

Levels of traders and the seed/grain distinction

To interpret traders' potential seed and grain expertise, but also to understand better traders' ability to supply large amount of seed, it is also crucial to gain insight into the broader seed/grain market flows. Sketches of such flows were traced for two sites, West Hararghe and Menz Gera (with diagrams and accompanying notes appearing below).

Several general comments are in order. First, at the level closest to farmers, the collectors, the seed and grain distinction is made very clear. Collectors are often tasked by their employers (medium and larger scale traders), to find specific varieties of a certain quality type. Collectors, often having lived in the 'buying community' much of their lives may seek out farmers known for producing good seed (even seed harvested separately in the field from grain), and may have 'standing orders' for 'this type of bean', or 'this quality of sorghum'. With such specific demand, farmer-producers know in advance that they are producing 'seed' from the moment the crop is sown, and they manage the crop accordingly.

At the initial stages of study, researchers had assumed that the higher one goes up the seed chain, the less specific the seed-related knowledge, and the more 'crude' or poorly managed the seed and grain distinction. This gross categorization proved *not* to hold in a well-defined number of cases. There are very large traders (e.g. 1000 Qtls sorghum any one season), who acquire their seed only from clearly defined agro-ecological zones, and through direct contacts with large numbers of farmers: hence one trader in Chiro basically monopolizes the seed/grain supply over three full woredas. His scale is large but fairly uniform in terms of the varietal adaptability of the goods he puts on offer. So, even as he bulks up, he aims not to mix varieties. Further, those traders who deal with export and internally- commercial crops (haricot beans, wheat and maize) may also aim to maintain strong standards even as volumes rise. Simply, this makes economic sense: losses become too great if too much grain has to be sorted out so as to deliver their high quality product. Finally, there seem to be traders (often medium level, not the largest) who respond to select demands, usually dictated by the agro-ecological specificity (that is, need to adapt to harsh conditions). For example, CARE reported a case from the woreda 'Achar' where a specific pearl millet variety ('Dekuny') was in high demand after the 2003 drought but apparently not locally available. The trader serving the community provided seed from his storage houses, seed which had been separate and well-maintained throughout the year. In some sense, this trader was serving not only to fill a possible seed availability gap during a stress period but also a 'plant genetic resource' gap. This trader backup function for the community is an important one.

So in sum, traders do distinguish seed and grain routinely, but to different degrees according to crop. Minimally in these stress zones, all have basic knowledge of what types of varieties may be adapted for sowing. In addition, when presented with site specific requests for 'seed', whether from government officials, urban dwellers or exporters, trader seed knowledge, and seed management can become a good deal more refined, and traders might even be ready to pay a 'seed' premium.

Figures 3 and 4 sketch initial seed flows for two sites. Both diagrams need to be further elaborated but can presently serve to show that the seed/grain divide among traders partly depends on their position in the supply and purchase chain, as well as the customer base they aim to serve.

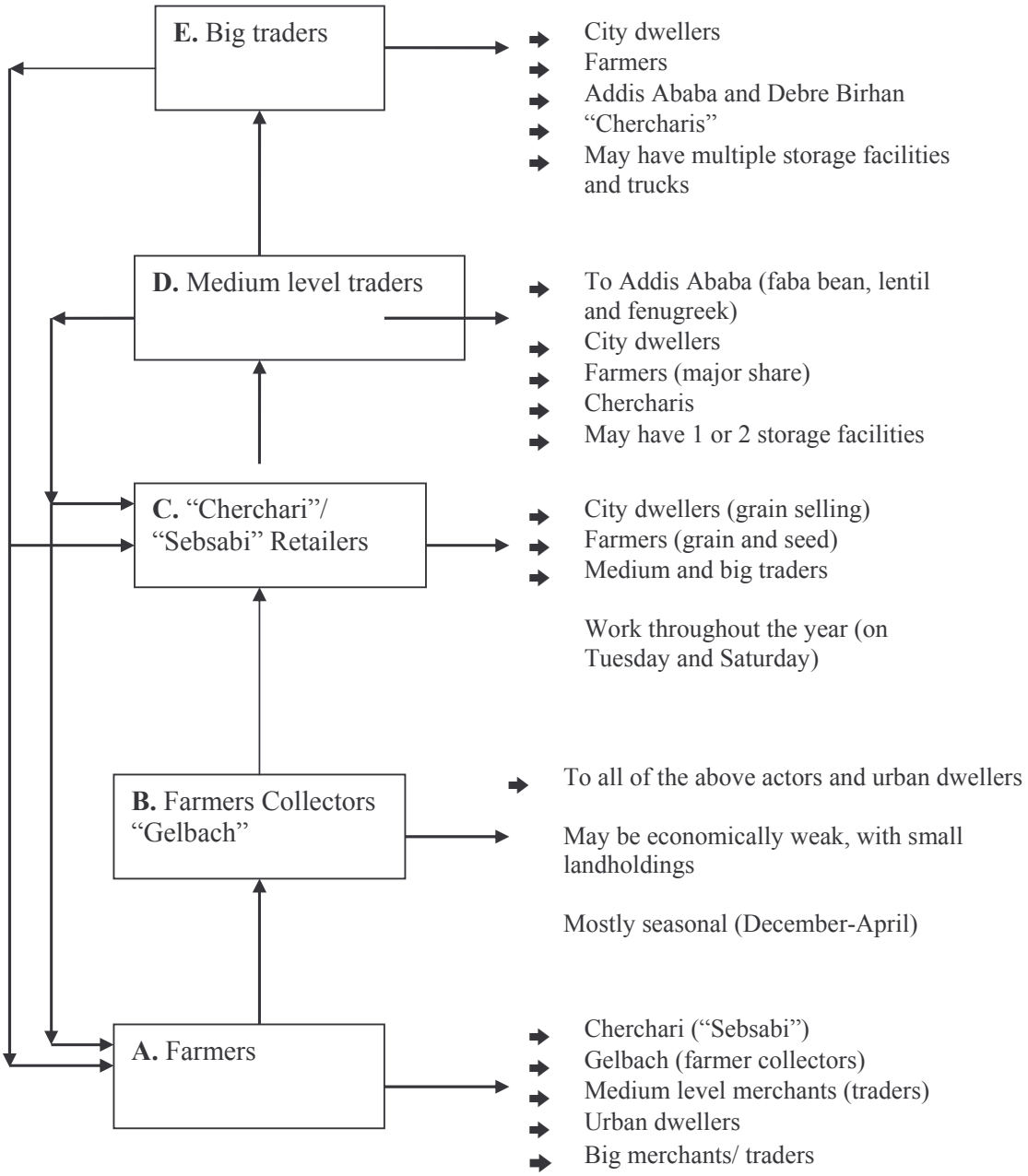


Figure 3 Flows of Seed/Grain (potential seed) in informal market flows: in Menz Gera woreda (Amhara - draft).

The up-ward movement (acquired locally) is for faba bean, lentil, chick pea, field pea, fenugreek, barley and a small amount of wheat. In contrast, sorghum and maize are completely acquired from outside the zone, as is the large majority of the wheat, which comes from Ataye (Ephratana Gidim), Addis Ababa, Debre Birhan and other places depicted by the down-ward movement.

Notes on figure 3:

A. Farmers

Farmers sell for all the hierarchies above them depending on the amount they hold and the profit margin they believe to get from each. When they deal in small amounts of grain, they may aim to sell directly to urban dwellers. With larger supplies, they may sell to other actors in the grain market system.

B. "Gelbach" farmer collectors

They collect grain from the surrounding farmers. They give often give premium prices for quality grain because it helps them mix high quality with those low quality grains so that their overall average price becomes more elevated. In Menz Gera, it seems that collectors do not give special price for seed (in contrast to West Hararghe).

"Gelbaches" do not work for a single trader in the town. Rather, they shift their customers based on the profit margin they obtain in each market day. But, to some extent there are some Gelbaches/farmer collectors who work with specific traders for a longer-term based their establishing certain levels of trust, particularly in relation establishing grain market price.

Collectors are named as "Gelbach", if they are from farming community and "Sebsabi"/ "Cherchari" if they are from the urban dwellers. Note that direct links between Gelbach and Chercheri are relatively rare.

C. "Cherecharis"/"Sebsabis" or retailers

These are small town-based traders, who, using their own capital, purchase from farmers, medium and big traders. For maize, sorghum and wheat, they may buy from medium and big traders and sell to farmers and urban dwellers who purchase small amounts. In contrast, for barley, faba bean, lentil, chickpea, and fenugreek, they may purchase from farmers and sometimes from "Gelbaches", and then sell 'up' to medium level and bigger traders. Local lore suggests that these retailers do not use balances, but rather use a dish believed to be equivalent with 1.5 kilogram (which, in practice, might vary from 1.35 to 1.4 kgs, so as to profit from non-standard measures).

D. and E. Medium and big traders

Both medium level and big traders purchase sorghum and maize grain (not sown) primarily from Addis Ababa, Debre Birhan and Ataye areas. Wheat may be purchased from Debre Birhan area. Those crops potentially used for seed, barley, faba bean, lentil, chick pea and fenugreek, are obtained from local markets (farmers, "Gelbaches", and from "Sebsabis"/ retailers). Both medium and big traders transport barley, faba bean, lentil and fenugreek out of the immediate region, to Debre Birhan and Addis Ababa.

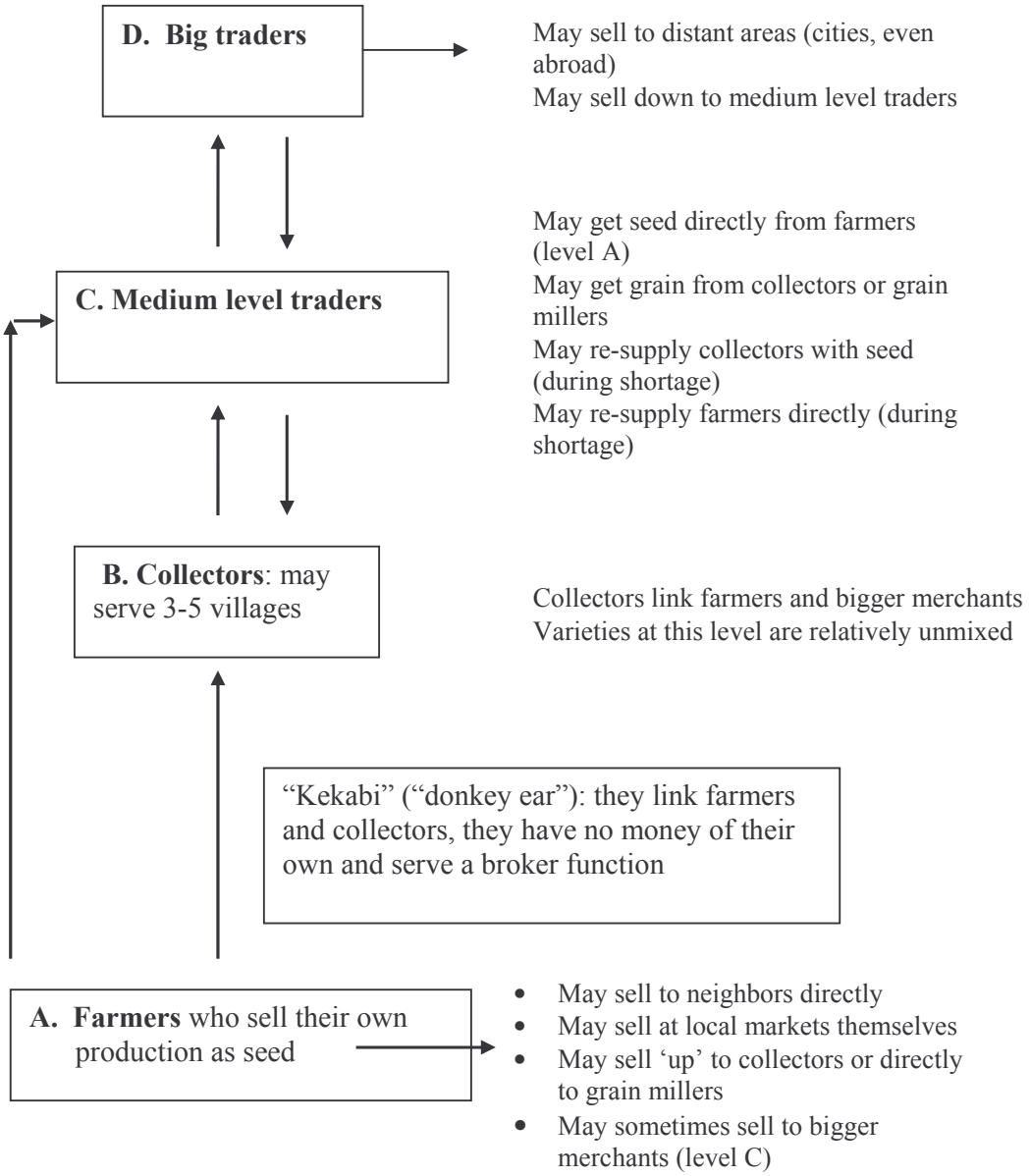


Figure 4 Flows of Seed/Grain (potential seed) in informal market flows in West Hararghe (Draft)

The precise mapping of these chains differs by crop. For instance, beans and coffee would start from farmer producers and go up and out of the region: there would generally not be re-sale downwards. In contrast, sorghum, teff, maize and wheat have upward and downward flows, A to D and D to A.

TRADERS' ASSESSMENT OF SEED STRESS CONDITIONS

The traders interviewed in the Hararghe area had a particularly long-term view of the seed/grain commerce within the high stress region (which is a classic seed aid area). The medium to larger scale traders, those with a regional and occasionally national seed/grain commerce view, had been working an average of 18 years in the trade, with a range of six to 40 years. The collectors, those closest to farmers, with an ability to assess particularly local supplies, had been in the trade an average of slightly over 8 years (with a range of 5 to 12 years). As important, 10 of the 12 collectors had been living in their respective farming communities all their lives so had first-hand experience of the crop production fluctuations for a period of three to five decades.

Seed Availability during stress periods

Traders were interviewed on the issue of seed availability during stress periods. In terms of the types of stresses, all traders had conducted business during periods of extensive drought and insect and pest attack, and several had worked through isolated periods of civil strife.

All traders, at all scales mapping their extensive history, asserted that *there was no time, not a single season, when seed was not available directly within the region or within reach of the region for all key crops.* (For the last four years of seed aid, the CARE senior project manager similarly confirmed that for his seed voucher programs in West Hararghe, 100% of the seed had been obtained locally). So, in theory, through time, no seed had to be brought into the region in the form of aid.

The confirmed availability of seed does not mean that there were not constraints within the seed system during times of stress. Among the stresses or changes signaled by traders, four were particularly important:

- Volume changes in seed supply
- Price fluctuations
- Changes in geographic sourcing of seed
- Changes in the scale of seed loans

Changes in seed quality were also mentioned as a signal, but no clear trends emerged across crops or sites. Assessments were split as to whether quality was the same or worse, and in several cases for beans, 'better', as when a larger proportion of trader wares was obtained from the Nazret area. So changes in seed quality could potentially be used as a seed security stress signal, but in this specific case study, focus on their variable gave no particular insight.

Each of these is four main stress signals is briefly discussed below.

Seed System Stress during periods of Crisis

Insights on changes in seed security in the region during periods of stress were obtained exclusively through trader interview. Given the limited field frames, cross-check methods could not be employed to match trader recall against other forms of potentially objective data, for example, records from marketing information systems.

As such, findings below should be considered as 'indicative'. The trends are real (and confirmed by many): however, the precise magnitudes of change (for instance in trading volumes or price) would need to be further verified through method triangulation.

Volume changes in seed supplied

Traders were asked to refer to the trading years in which they had firmest recall and to compare a specific stress season versus a specific non-stress season, and to highlight as much as possible seed-specific information. Most chose years related with the period between 2001 and 2004.

Table 23 indicates the volume of the trader business (seed obtained) in a stress versus non-stress period. The focus is on the three crops most involved in seed transactions.

Unexpectedly, the findings showed that for the medium and larger traders, seed supplies substantially *increase* during periods of stress, directly in response to farmers' demand. (Several even commented that they may not even work in the seed business in normal times, especially in relation to sorghum). This increase in supplies obtained occurred in 12 of the 17 cases examined in Table 23 – and most frequently in the case of maize. The magnitude of these increases was generally very high: on average, these medium and larger traders more than tripled the volume of (potential) seed sold for each crop.

For local grain collectors, the trend was the opposite. The volume of seed they directly obtained from the countryside *decreased* for nearly every case examined (21 out of 23 cases in examined in Table 23, or 30 out of 32 cases, if all crops are included). These decreases were large – on average, seed volumes obtained by local collectors dropped by 65% in crisis years. Collectors commented that local farmers during stress years prefer to keep the bulk of the harvests they obtain. Hence 'extra' supplies for sale are greatly reduced.

Table 23 In West Hararghe, cases where traders increased the amount of (potential) seed supply, compared to a normal season, by type merchant (medium/large traders, or smaller collectors), and crop.

Crop	Medium to large grain traders			Small grain collectors		
	N cases	Increased sales in crisis	%	N cases	Increased sales in crisis	%
Maize	6	5	**83.3**	6	1	**16.7**
Sorghum	6	4	**66.7**	10	1	**10.0**
Haricot beans	5	3	**60.0**	7	0	**0.0**

Price Fluctuations

Traders were also asked to recall price patterns, in specific stress and non-stress years. Note for most crops, medium and larger traders cited a routine 20 to 30 Birr/Qtl difference between seed and grain of the same crop, with such seed and grain difference translating to between 5 and 10 Birr at the collector level. Again, intensive

seed market investigations would be well worth pursuing. For now, more indicative trends appear in Table 24.

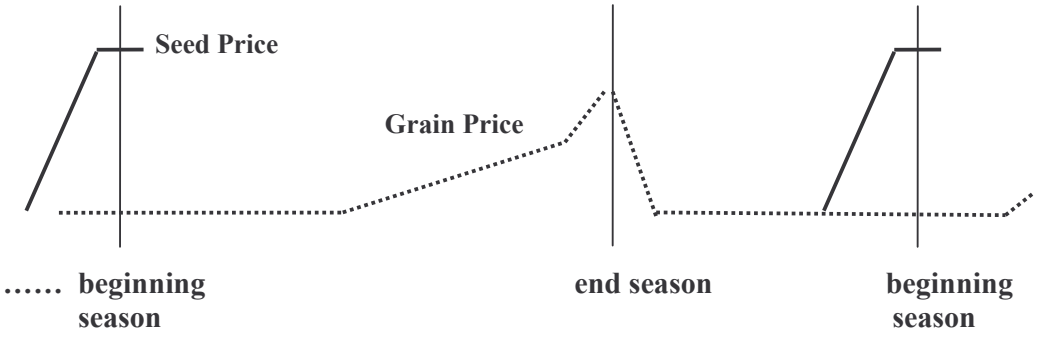
Across the board, for all, prices significantly go up during stress periods, again focusing on the three major crops sown in the region. Prices rise at a relatively higher rate as one goes up the trader chain, as larger traders also seek seed from distances relatively further away. Interviews with larger traders suggest that transport costs are the biggest factor affecting seed price during crisis times, not rise in the price in the crop material *per se*. Also of note is that traders indicated that substantial price fluctuations were often not related to any local crisis at all, but, as in the case of the export crop white haricot beans, global and national demand patterns largely shaped the local price changes.

Table 24 For all traders and collectors interviewed, the percent increase in mean buying and selling prices for seed of different crops between a normal and a crisis year.

Crop	Large grain traders			Local grain collectors		
	n	Price increase in crisis year (%)		n	Price increase in crisis year (%)	
		Buying	Selling		Buying	Selling
Maize	8	92.8	79.6	7	49.4	44.0
Sorghum	7	89.9	96.4	11	28.0	25.6
Haricot beans	6	62.8	56.9	7	20.7	19.3

As an 'early warning system indicator', it would be well worth examining seed and grain price differences more systematically. This should be done at one point in time, through the course of an agricultural season, and across stress and non-stress seasons. Even during normal times, one would expect the seed price and grain patterns price to be substantially different. Field evidence from elsewhere (western Kenya; Otsyula *et al.*, 2004) shows that prices for potential seed rise steeply only during the period immediately prior to sowing (and may extend some four to eight weeks). Unlike grain prices, seed prices do not rise during the hunger gap periods (and immediately pre-harvest). For this reason, standard price information collected on food commodities is not an adequate monitoring indicator for seed price trends. Figure 5 conceptually suggests the seed and grain price trend differences. (Note that grain price trends are highly variable by crop and environment: the pattern below is sketched mainly for didactic reasons

Figure 5 Trends in crop and seed prices in local seed/grain markets through season, showing seed price peaks at sowing time and grain price peaks before harvest.



Seed sourcing areas

While collectors continue to source seed locally, even in stress times, medium and large traders, aiming to greatly scale up commerce, adopted several strategies so as to increase their seed supplies. Some worked with a greater number of local collectors, some simply emptied their existing stores (and particularly for sorghum existing storage stocks were often deemed sufficient); some actively decided *not* to export from the zone, and, instead, given greater attention to locale clientele. As stated by one trader:

Instead of exporting during stress, I consciously decide to focus on local markets, and even sell my own stored wares there. This might look like I am doing something 'good' but it is also in my own self- interest. I need to give priority to providing local farmers seed as they are the ones, who through their own next harvests, who guarantee my own future supplies. (Mohammed T., pers. comm., 2007)

There were, however, a select number of cases where traders elected to go outside their normal zones to obtain seed they sense would be sufficiently adapted. In West Hararghe, traders mentioned obtaining larger proportions of their bean supply from the Central Rift Valley areas, and particularly sourcing Nazret; and for maize, select varieties were sought from Wollega, Nazret, Jijigga and even Addis Ababa.

Scale of Seed Loans

Finally we mention changes in the scale of seed loans. Among the nine medium and larger-scale traders (that is business people with considerable financial standing within the community), only one, considered somewhat of a true 'do-gooder among the poor' gives seed load during normal times. Simply, traders firmly state, that such loans generally are not need and not requested. In contrast, during stress periods (and 2003 was used as the reference point) seven of the nine gave substantial loans, with a single trader giving up to 50-60 quintals of seed reaching up to 500 farmers. Sometimes these loans are paid back—and sometimes not.

Reflections on Stress Periods: Traders' view

Interestingly several of the traders interviewed questioned the entire rationale of bringing in seed aid, during purported stress periods.

Stated one: *"In fact, there is no situation we have experienced where you have to bring in seed. I have never had to import it from elsewhere. Those aid organizations that do this practice more often than not also come late, and then they come to purchase seed from us*." (Gashaw, pers. comm., 2007)

Stated another: "*No aid should be given. Traders can take care of fluctuations."* (Mohammed T., pers. comm., 2007).

These comments may partially reflect a position of 'self-interest'. They may also contain a strong element of realism.

TRADERS' ROLE IN SEED AID

Lastly, we turn to the specific role of traders in providing seed for relief work. The role of traders in providing seed particularly for use in emergency direct seed distributions has been well documented and has been among standard practice in Ethiopia. Because of Ethiopia's great agro-ecological diversity, seed for aid, has long been sourced partly from local channels (at least since 1985; see Table 6, Chapter III). Procurement from local systems has also long been the norm, particularly for high stress areas, as the Ethiopian Seed Enterprise, supported by government policy, has given priority to crops and varieties which produce well mainly in medium to higher potential zones.

This section briefly signals recent developments in emergency seed assistance which aim to expand the role of traders beyond their use as procurement intermediaries.

Seed /Grain Traders, Seed Vouchers, and Seed Vouchers + Fairs

As indicated in the preceding Chapter V, on GO and NGO implementation, traders have been identified not only as 'aid providers' but also as a potentially important group of beneficiaries within emergency seed aid operations. Using a seed voucher or seed voucher and fair approach, NGOs in particular have sometimes sought to spread the benefits of seed procurement (and seed sales) among many in the community, including many traders. In one model, local traders on a given set of days will be asked to bring their seed supplies to select 'fairs', and farmer aid recipients will then choose the crops and varieties they want to sow themselves, using an aid voucher to reimburse the seller. In another model, farmer aid recipients, armed with vouchers, may themselves make the journey to select trader stores, again to choose from the crops and varieties on offer. In both cases, a relatively greater number of traders (greater than in standard DSD operations) capture part of the seed aid market. Traders associated with the voucher approach may be larger ones, but in some NGO implementation models (notably that of CRS), smaller-scale traders, women traders and even farmer sellers

(vending their home production) are encouraged to participate. One supposition is that the more local the traders, the more likely that the voucher monies received will be recirculated within the local economies. The seed voucher and fair approach has been spearheaded by the CRS worldwide and particularly in Africa, including Ethiopia (Bramel *et al.*, 2004). CARE, in Ethiopia and especially Hararghe, also has extensive experience in using the SVF approach, and more recently, the seed voucher approach alone.

Traders as current vehicles to improve seed quality?

One aspect of seed voucher approach is of particular interest for this analysis of seed security and seed stress, and the role of traders. Here we highlight specific seed management requirements for traders involved in voucher aid operations.

To reemphasize points briefly mentioned previously (Chapter V), seed quality issues are built into the seed voucher and seed voucher and fair system in several ways. In the CRS approach, locally based farmer committees take charge of seed quality screening, and provide potential cus tomers with detailed information on variety features, seed production and storage conditions of crops and varieties put on offer. In the CARE model, the onus of providing quality seed is put on traders themselves, pre-fair, through a series of formal procurement and management stipulations. As summarized in Box 9, CARE, requires that potential voucher seed be maintained in specific seed stores (clean, insect free), and in several cases, has requested traders keep batches of potential seed in separate locations.

Box 9 Traders associated with CARE's seed voucher program (* depending on market may vary from 30,000 to 100,000 Birr worth of seed.)

Formal Criteria Demanded (Contract, selected items)

- Those who have paid the current season tax for their license
- Those capable of putting an insurance deposit (1000 Birr for one market, 5000 Birr for 3 markets or more)
- Those capable of constructing sufficient seed warehouse (clean, insect free)
- Those having a balance cleared by the Ethiopian grading and standardization authority
- Those who can provide seeds of sufficient quantity and quality *etc.

Other Criteria (as guided by Project Manager)

- Known by/local acceptance within community
- Transaction with multiple crops (e.g. 5 to 6)
- Ability to move to sites (have transport) if sites more distant

In terms of looking at the evolution in 'seed quality', the CARE model has been the easier one to trace, as traders comment on their own changing practices. Through working over progressive seasons with CARE in their seed aid-seed voucher program, participating traders claim:

to have a better sense of the specificity of variety adaptation;
to have mastered the logistics of seed storage (fumigating, sealing storage spaces, sorting inert material); and
to have gained greater appreciation of farmers' seed demands, in contrast to food demands.

One key trader even now aims to seek out actively the early-maturing varieties of especial interest to his west Harerghe client base (Berhnau Aberra, pers. comm., 2005). While CARE does 'train' traders in seed quality issues, it also engages in punitive action (i.e. withdraws contracts) from those who deliver substandard material. Perhaps both thrusts are helping to improve seed quality standards of vast quantities of local materials.

Traders as future vehicles to improve seed quality?

The issue being raised here is if seed/grain traders, those business people who routinely supply farmers with the bulk of their off-farm sowing materials, might be more actively engaged in gradually improving the quality of local seed system material.

One trader raised this issue herself in the context of helping farmers gain access to new varieties:

Commented Asnaketch Tadesse: "I know some of the new varieties, like the Katumani variety of maize. Simply, they are just not available here. If I were given two quintals, I could distribute these to many farmers I know—then collect the harvest—and then re-distribute."

Her insights that the varieties are not readily available locally, [although they may be desired by farmers] are confirmed by senior Miesso woreda agricultural officials.

So given that the general government systems, as well as ESE more specifically, have had difficulty meeting farmers' demands for new varieties (in formats farmers find acceptable), perhaps alternate modes of routine distribution or sale might be tried. Giving test samples to stimulate farmer demand, and selling small, non-risk size packets are several of the approaches that have been proven useful elsewhere (Sperling *et al.*, 1996).

But beyond enhancing variety quality, the issue remains about whether traders can be encouraged to deliver better seed quality *per se*, routinely. This is not to infer that the seed quality of normal farmer produce is bad (laboratory tests show otherwise). Simply this is to suggest that small improvements in quality can be achieved, and have been achieved via seed fairs and when associated with export crops. Can incentives not be conceived to extend these known practices more widely?

In brief, traders often serve as the backbone of the seed system in crisis times (including helping farmers to gain access to specific plant genetic materials). Cannot their considerable commerce also be harnessed to gradually improve seed quality and variety quality during more stable periods?

SUMMARY: SEED/GRAIN TRADER INSIGHTS

Seed/grain traders are key for stabilizing farmers' seed systems during both normal and stress periods. Farmers routinely rely on markets to fill seed gaps and traders may be sought as suppliers for select emergency operations (both DSD and SVF).

Trader at all levels, from collectors to large-scale traders, distinguish between seed and grain routinely, but to different degrees according to crop and according to their intended customer base. When presented with specific requests for seed (from local clients, government or exporters), traders can greatly refine their seed management practices and often negotiate premiums when obtaining better quality and selling better quality materials. At a minimum, traders have solid knowledge of variety adaptation.

Traders' assessments give strong insights into what happens to seed systems in periods of stress. Mapping their extensive history in West Hararghe, across periods of drought, severe insect and pest attack and civil strife, traders (at all levels) asserted that there was *no time*, not a single season, when sufficient seed was not available directly within the region or within reach of the region for all key crops. Seed did not need to be brought in as a form of aid.

While in times of stress, seed availability is not generally a problem, traders did cite other signals which indicate seed system stress. These can be quickly and easily monitored at regional and more local levels.

- Volume changes in seed supply
- Seed price fluctuations
- Changes in geographic sourcing of seed
- Changes in the scale of seed loans
- Seed quality shifts (both positive and negative)

In terms of precise trends, unexpectedly, among larger traders in West Harerghe, seed commerce and volumes obtained *increased* during periods of stress, as traders aim to capture increased demand. Prices also increased from 50-100%, with the rises reportedly due more to increased transport costs than rises in the value of the planting material itself.

Experience with traders involved in the CARE seed voucher program shows that incentives can be put in place which encourage traders to improve seed (versus grain) management across a short number of seasons.

MOVING FORWARD: RECOMMENDATIONS

Given that local markets, and traders are the backbone of farmer seed supply, much more attention should be given to ensuring that these markets can supply the kinds of seed farmers need. One major challenge is how to leverage traders' efforts to gradually improve the quality of seed on offer in normal market channels.

- Seed/grain traders could be potentially powerful partners in helping to move *new modern varieties* widely within and among stressed farming communities. Methods should be tested for directly linking formal sector seed supply with informal trader seed/grain sellers. Distribution of variety samples (to stimulate demand); sale of small packets of seed; and more systematic sale of modern varieties in bulk are options that might be tested and closely evaluated.

- Seed/grain traders are also potential partners in improving the *seed quality per se* of sowing materials put on offer to farmers. While the quality of farmer seed overall is often shown to be quite adequate, procedures for (*inter alia*) segregating among varieties and reducing percentage of sub-standard grains could give farmer clients a better return for their purchases. Awareness-raising, capacity building and incentives might all be possible measures for encouraging gradual seed/grain quality improvements.

Seed/grain traders have unique insight into seed systems in stress and normal times. This is particularly the case when assessing supplies, that is, seed availability. Traders have particular skills in assessing seed availability, and their expertise should be incorporated as a feature within seed security assessments. Procedures for differentiating among traders and their assessment strengths are well established.

Indicators for seed market fluctuations need to be systematically built into seed security assessment data bases (e.g. volume changes in seed supply; seed price fluctuations). These can potentially be used as seed security stress indicators for both regional and local field assessments and in early warning data bases.

VII: IMPLEMENTATION - DEMAND SIDE: FARMER AID RECIPIENTS

This chapter looks at the effects of seed aid from the users or farmer recipients' perspective. It draws from intensive study in four sites, and interviews with 399 farmers in all.[11] The chapter traces farmers' history with seed aid, the different kinds of aid received, and their evaluations of the usefulness of assistance. In addition, it objectively analyzes the importance of the aid received in relation to local strategies for coping with stress, which include farmers acquiring seed on their own from local channels.

The four intensive study sites differ markedly in terms of agro-ecology, farming systems, and implementer profile. They also represent four different regions (see Chapter I on rationale for site selection). Sites are intended to be indicative, and were selected in order to explore a range of different contexts and approaches to seed aid, rather than cover every zone that had received seed aid.

Sites selected include:

- Miesso and Chiro woredas in West Hararghe (Oromiya)
- Raya Azebo woreda in Southern Tigray (Tigray)
- Humbo woreda in Wolaita (SNNPR)
- Gera Keya woreda in North Shoa (Amhara)

The first two of these sites represent 'classic' seed aid scenarios, where chronic drought stress has led to low crop production and repeated emergency aid. The latter two sites have also received repeated aid, though their primary stresses are different (population pressure and soil degradation, respectively). A wide range of crops has been distributed across these sites by the government and different NGOs, using diverse approaches – DSD, seed vouchers, and cash for seed.

To capture distinct insights , the chapter first presents findings site by site. Cross-site comparisons are then elaborated to identify broader, more Ethiopia-wide trends.

Methods

This farmer recipient analysis is primarily based on farmers' responses to detailed surveys, administered in 2006. Additional information comes from focus-group discussions with farmers, and information collected from seed aid practitioners (presented in Chapter IV).

[11] Note the original survey was done among a larger sample, about 120 farmers at each site. Questionnaires showing strong evidence of interviewer bias (i.e. too many comparable answers) were eliminated to ensure rigor.

The surveys asked farmers about their experience with seed aid, seeking details of all events they could recall. Farmers gave detailed descriptions of the crops and varieties involved in recent seed aid events, the quantities received, and all other seed sources used that season. Farmers also gave their opinion on many different aspects of seed aid (e.g. the appropriateness of varieties supplied, and longer-term impacts of aid). Thus, the surveys combined qualitative and quantitative data, using both closed and open questions. Sampling was purposive, seeking out Farmers' Association (FAs) and individual households that had received seed aid repeatedly.

West Hararghe – Chiro and Miesso woredas (Oromiya)

Context

West Hararghe Zone provides a 'classic' example of a vulnerable region where a crisis can affect many households. For instance, in 2002/03, 600 000 people, a third of the total zone population, were assessed to be food insecure. Many households in the zone are chronically vulnerable, due to poor crop production and low asset ownership, and frequently receive assistance (Piguet, 2003). Seed aid has occurred here since 1984 at least, and nearly every year since the mid-1990s.

Mixed crop-livestock farming is the main activity, with sorghum, maize, and haricot beans the main crops (Storck *et al.*, 1991). Unlike elsewhere, the survey covered two woredas, Miesso and Chiro, as both receive frequent seed aid, yet represent distinct agroecologies: Miesso in the lowlands, and Chiro in the densely-populated Chercher Highlands. Variable and uncertain rainfall affect both woredas, though Miesso is especially drought-prone, and land degradation is a major constraint in Chiro (ICRA, 1996). Surveys interviewed 77 farmers in Miesso and 40 in Chiro, thus 117 overall.

Seed aid is a common intervention in West Hararghe. Individual households received aid on as many as ten different occasions (sometimes more than once a season), and on average three times overall (Table 25). Both government and a wide range of different NGOs have been active in the area, using DSD, as well as vouchers (with or without seed fairs) to provide seed.

Table 25 Number of times farmers in West Hararghe recalled receiving seed aid.

number of times seed aid	Woreda	
	Chiro (N=40) % of total	**Miesso** (N=77) % of total
1	2.5	-
2	40.0	33.8
3	40.0	37.7
4	5.0	19.5
5	10.0	2.6
6	-	3.9
7	2.5	-
8	-	1.3
9	-	-
10	-	1.3
Total	100.0	100.0
Average	**2.9 times**	**3.2 times**

West Hararghe: seed aid and other sources of seed

Farmers detailed all seed sources used for two crops provided by a recent aid (Table 26). In only nine cases (7.7%) was seed aid their only source in that crisis season. So over 92% of seed aid recipients obtained at least some of the seed they planted from channels other than aid. This makes it clear that, even in this highly-stressed region, the vast majority of aid recipients still had access to other sources of seed.

Table 26 Number of farmers for whom seed aid supplied all the seed sowed for two crops in a specific seed aid season.

Measure	Woreda		
	Chiro	**Miesso**	**Both**
Number of farmers	40	77	117
Cases where aid supplied all seed	5	4	9
% of total	**12.5**	**5.2**	**7.7**

Most of the cases where seed aid supplied 100% of farmers' seed were for haricot bean and maize. Many farmers do not save seed of these crops, but rather purchase seed when needed from local markets. Home storage of haricot beans can reduce seed quality (due to Bruchid problems) and local markets provide specific varieties that fetch the best prices, while short-season maize is normally only sown when long-season sorghum plantings have failed. Thus seed for these crops is locally available – seed aid here simply takes the place of market purchase for some farmers. Farmers' own seed channels still provide much of the seed for both these crops.

> *"I usually have a small amount of seed in stores and the government adds. If I do not get seed, I can sell a goat or hen... So with seed aid, I now have livestock offspring." – West Hararghe farmer*

Table 27 summarizes 201 different seed aid events, giving the relative contribution of different sources to what was actually planted in the season seed aid was received. Seed aid met 49.3% of seed needs for West Hararghe farmers for the crops it provided (in Miesso, this was 42.8%). Thus, seed aid recipients still obtained over half their seed from other sources in the informal or local seed system: a third of all plantings came from their own stocks, while local markets were also important, particularly in Miesso, where markets supplied 19.6% of seed.

Seed aid, especially DSD, assumes that vulnerable farmers have no available seed in a crisis. Table 27 shows that the assumption here is incorrect. Both traders and farmers interviewed in West Hararghe indicated that seed has been available locally over all the last drought seasons recalled (including the harsh 2003 season). Farmers (and local traders) in West Hararghe have well-developed strategies for coping with seed insecurity (McGuire, 2007). Seed aid could support seed security here by helping farmers to *access* appropriate seed.

There are three reasons why 49.3% is a high estimate of seed aid's contribution to overall seed security. Firstly, seed aid generally provides one or two crops per household, though West Hararghe farmers grow a wider range than this: crops not provided by seed aid would still need to be sourced from the local system. Secondly, the households not targeted by seed aid also must rely on their own sources for seed. Finally, some farmers might over-state the importance of seed aid in interviews for strategic reasons, possibly hoping for future assistance.

Table 27 Importance of seed aid, in relation to other sources of seed for the same crop during a specific seed aid season in Chiro and Miesso woredas in West Hararghe.

Seed Source	Woreda		
	Chiro (n=68)	**Miesso** (n=133)	**Both** (n=201)
	% of all seed planted	% of all seed planted	% of all seed planted
Seed aid	**59.0**	**42.8**	**49.3**
Home stocks	28.6	34.8	32.3
Local market	10.2	19.6	15.8
Gift	1.6	2.5	2.1
Exchange	0.6	0.2	0.3
Extension	0.0	0.0	0.0
Other source	0.0	0.2	0.1
All sources	100.0	100.0	100.0

West Hararghe: crops supplied by seed aid

Table 28 shows seed aid by crop. In West Hararghe, maize and haricot beans comprise the majority of seed aid, with 44.8 % and 33.1 % of all seed supplied, respectively. Though sorghum is the dominant crop in the region, a much smaller amount is supplied.

Table 28 Details of recent seed aid in West Hararghe, showing proportion of all seed aid received by crop, and the proportion of each crop's seed coming from aid.

Crop	N of cases	Crop's proportion of all aid (%)	Seed aid as proportion of crop planted (%)
Maize	88	44.8	43.3
Haricot bean	58	33.1	56.4
Sorghum	32	13.0	41.2
Barley	8	3.6	68.4
Chickpea	3	1.0	100.0
Faba bean	3	1.7	100.0
Lentil	6	0.7	80.0
All crops (*)	201	100.0	49.3

(* Totals include small amounts of other crops not shown here.)

For each crop, Table 28 also shows the proportion of what was planted in the crisis season coming from seed aid . The local system still supplied the majority of maize and sorghum, the main local crops, in a crisis season, as aid only covered around 40% of sowings of these two crops. Aid provides a high proportion of seed for chickpea, faba beans, and lentils, though sample sizes and total amounts are small in these cases. However, some of these crops may not normally be saved by many farmers, such as chickpea. Farmers *hope they do not have to plant* chickpea, as this usually means their main cereal sowings had failed. So it is unsurprising that seed aid supplied all the chickpea seed for the three cases recorded.

West Hararghe: crop varieties supplied by seed aid

Table 29 The proportion of Modern and Farmer Varieties supplied by seed aid for each crop in West Hararghe.

Crop	N of cases	Modern Variety (%)	Farmer Variety (%)
Maize	88	52.3	47.7
Haricot bean	58	86.2	13.8
Sorghum	32	40.6	59.4
Chickpea	3	0	100.0
Barley	8	0	100.0
Faba bean	3	33.3	66.7
Lentil	6	66.7	33.3
Groundnut	2	0	100
Teff	1	0	100
All crops	**201**	**56.7**	**43.3**

Table 29 shows that a slightly higher proportion of seed aid comes as modern varieties than as farmer varieties. DSD emphasizes MVs more: for the 86 cases with DSD, 54 (62.8%) involved MVs; in contrast, the 115 cases involving vouchers had MVs on 60 occasions (52.2%). With vouchers, farmers have a degree of choice, and opt for a different mix of crops and varieties than DSD provides. Seed aid, especially DSD,

sometimes is used for promoting new MVs to farmers; BoARD officials in the region confirmed that they used seed aid as a way to get hold of MV seed for farmers. This is a clear example of where seed for emergency relief blurs with seed for development. As Chapter V points out, distributing MV seed to a few farmers in a stress period may not be the best way to promote them.

West Hararghe: seed availability

Despite repeated stress, the evidence here indicates that the major crops are still available locally. Farmers routinely seek seed from neighbors or from local traders to meet household-level shortfalls. The vast majority of farmers (95%) felt that there would be enough seed available in local markets for them to purchase, if they had the means to do so (vouchers or cash).

There is very little formal seed supply in West Hararghe, especially in Miesso, since the ESE has limited capacity in lowland seed production. Woreda BoARD say they receive little MV seed for developmental programs, and emergency seed is one way to get seed to pass on to farmers. Seed aid here may not be explicitly about addressing seed insecurity *per se,* but about accessing MV seed for promotion.

> *"People don't want or need seed aid. They want new varieties. The only time they see the people from the Ministry of Agriculture is when they come and ask 'who needs seed relief?'" – W. Hararghe farmer*

West Hararghe: approaches compared

In addition to DSD, some NGOS, such as CARE and IRC, used vouchers (sometimes in conjunction with fairs). Comparing DSD with vouchers:

- Chickpea and sesame were more frequently supplied by DSD, while haricot bean, sorghum, and barley were more often provided by vouchers.
- Farmers receive significantly more crops with vouchers (**2.1** crops on average) than with DSD (**1.5**)[12].
- As indicated above, DSD practice leaned more strongly towards supplying MVs than voucher practice (which focused on FVs).

Thus, when farmers can choose crops and varieties with vouchers, they sought a wider, and different range of crops. It is interesting to note that some farmers sought Belg crops (teff, barley) with vouchers, or long-season crop varieties for planting with the early Belg rains (e.g. sorghum FVs such as 'Abdelota'). These crops are clearly intended for sowing the following season, rather than the season when seed aid was supplied (with the late Meher rains). This suggests that some farmers may not use vouchers to meet immediate needs, but rather strategically prepare for the coming season.

[12] A similar pattern was seen with number of varieties received: mean of 2.2 with vouchers, and 1.5 with DSD. Trends statistically significant ($p<0.001$) across both woredas.

West Hararghe: farmer preferences

Farmers in West Hararghe were split over preferring DSD or vouchers as a seed aid approach. Of those who preferred vouchers, many said they appreciated being able to choose the crops and varieties themselves. Some farmers distrusted traders, or found going to market time-consuming, and said they preferred DSD. Note it is difficult to get frank opinions from farmers in an interview setting, as the quote below indicates: many are hesitant to criticize any assistance they receive.

> *"The seed was given late. But I do not want to complain. If I am given seed free I must not complain. I am poor. I have to take what I am given."* – West Hararghe farmer

South Tigray – Raya Azebo Woreda

Context

The second study site, Raya Azebo in South Tigray, is also a fairly 'typical' example of a vulnerable, drought-prone farming system. Rural livelihoods depend on mixed farming, with sorghum, teff, maize, and barley the most important cereals. In good seasons, the area is productive, but rainfall onset and extent is erratic, particularly for the Belg rains, affecting crop production. As it faces recurring environmental stresses, and is far from major centers, Raya Azebo is considered among the more vulnerable woredas in Tigray to food insecurity (Negusse *et al.*, 2006).

Raya Azebo has received seed aid on many occasions since the mid-1980s. Seed aid was given to at least some of the 108 farmers surveyed virtually every year since 1997, with the earliest reported case in 1986. REST and the BoARD are the main organizations involved in seed aid in the woreda. DSD is used, but in recent years REST has started to provide cash for seed, following the encouragement of one of its donors (Entremonde). With this, farmers are given money (recently, 112 Birr/ household, about US$12.50) to purchase seeds on the local market. Farmers in this sample recalled receiving aid on average three times, though seed aid reached households as often as seven times (Table 30).

Table 30 Number of times farmers in Raya Azebo, Southern Tigray recalled receiving seed aid.

Number of times seed aid	**Raya Azebo** (N=108) % of total
1	3.7
2	25.0
3	46.3
4	17.6
5	6.5
6	-
7	0.9
Total	100.0
Average	**3.02 times**

South Tigray: seed aid and other sources of seed

Table 31 shows that there were only 12 cases (11.1% of the sample) where seed aid provided all the seed for two crops sown. So nearly 90% of aid recipients had at least some seed from another source in an emergency season for one of their major crops.

Table 31 Number of farmers for whom seed aid supplied all the seed planted for two crops in a specific seed aid season in South Tigray.

Measure	Raya Azebo
Number of farmers	108
Cases where aid supplied all seed	12
% of total	11.1

For an individual crop, Raya Azebo farmers received (or purchased) over 22 kg of seed, on average. Table 32 shows proportions supplied by different sources in the seed aid season, covering 176 cases across a range of crops. Seed aid provided 62.3% of the sowed seed for these crops, with 24.5% coming from home stocks, and 13.1% from the local market. A larger proportion of seed came from aid in Raya Azebo than in the other study sites. This may be because many farmers received cash; 76% of the seed provided by aid was purchased on the local market. If this is accounted for, local traders actually supplied more than 60% of the seed planted. Cash for seed aid may simply be substituting for seed purchases farmers would otherwise have made.

Table 32 Importance of seed aid, in relation to other sources of seed for the same crop during a specific seed aid season in Raya Azebo woreda in South Tigray.

Seed Source	**Raya Azebo** (n=176) % of all seed planted
Seed aid	**62.3**
Home stocks	24.5
Local market	13.1
Gift	0.0
Exchange	0.2
Extension	0.0
Other source	0.0
All sources of aid crop	100.0

South Tigray: crops supplied by seed aid

Table 33 breaks down the amount of seed aid supplied by crop. The vast majority of seed aid is either teff or chickpea, representing 78% and 19% of all aid. Other important crops in the region, such as sorghum, maize, and haricot bean, were supplied in very small amounts. This may reflect the timing of seed aid, coming too late for the sowing of Belg cereals or too late even for fast-maturing maize or sorghum.

Table 33 Details of recent seed aid in Raya Azebo, showing proportion of all seed aid received by crop, and the proportion of each crop's seed coming from aid.

Crop	N of cases	Crop's proportion of all aid (%)	Seed aid as proportion of crop planted (%)
Teff	127	78.2	57.8
Chickpea	44	19.2	84.5
Maize	1	0.6	79.3
Sorghum	2	0.9	73.8
Haricot bean	1	0.4	100.0
Barley	1	0.7	50.0
Totals	176	100.0	62.3

Of the teff sowed in the aid season, 57.8% came via seed aid, with the balance coming from home stocks or local markets. In contrast, 84.5 % of chickpea seed came through aid. Similar to West Hararghe, chickpea is not a major crop in South Tigray, but is mainly planted after other crops fail. Therefore many farmers would not have seed stocks in their home. Seed aid provides relatively high proportions of seed for other crops in Table 33, though overall quantities are small. As mentioned above, cash provides most of the seed aid here, so most teff seed is purchased locally. Most of the teff planted in a stress season came from farmers' own stocks or the local market (purchased by farmers on their own, or with cash from seed aid); only 14% of teff came in from outside the area (with DSD).

South Tigray: approaches compared and varieties supplied

Farmers obtained more seed with cash (26 kg, on average) than with DSD (16 kg); these differences were most pronounced with teff. Whether farmers had DSD or cash for seed, their own home stocks or local markets provided broadly similar proportions of all the seed planted.

Farmers using cash to buy seed got a slightly, but significantly, wider range of varieties than with DSD (averages **1.12** and **1.04**, respectively). However, the key difference with cash over DSD was choice and flexibility. Cash for relief allows farmers to strategize. As explained by one farmer:

> *"'Manga' takes longer to mature than 'Buni' [Both are local teff varieties]. If the rains are good, I sow the former, and if poor I go for the latter." – Raya Azebo farmer*

With cash relief, farmers can delay choosing which variety until they know the rainfall patterns, and select the appropriate variety.

DSD and cash differ markedly around the range of crops and types of varieties supplied (Table 34). DSD gave out a wider range of crops, and strongly (>90%) leaned towards MVs. In contrast, only 17% of the crops farmers purchased themselves with cash for seed were MVs. Farmers largely purchased teff and chickpeas, presumably for immediate sowing. A few purchased sorghum and barley, crops not

supplied with DSD. These are usually sown with Belg rains. Hence such purchases show that some farmers do not use seed aid to meet immediate needs but rather to prepare for the next season.

Table 34 The proportion of Modern and Farmer varieties supplied for each crop according to approach of seed aid used (DSD or cash) in Raya Azebo, South Tigray.

Crop	DSD			CASH		
	N cases	Modern variety (%)	Farmer variety (%)	N cases	Modern variety (%)	Farmer variety (%)
Teff	**104**	97.1	2.9	**117**	18.8	81.2
Chickpea	**46**	80.4	19.6	**36**	13.9	86.1
Maize	**7**	42.9	57.1	**0**	-	-
Sorghum	**0**	-	-	**5**	0	100.0
Haricot bean	**7**	100.0	0	**1**	100.0	0
Barley	**0**	-	-	**5**	0	100.0
Faba bean	**1**	100.0	0	**0**	-	-
Wheat	**1**	100.0	0	**0**	-	-
Oil crops	**1**	100.0	0	**0**	-	-
Cotton	**7**	100.0	0	**0**	-	-
Total	**174**	**90.8**	**9.2**	**164**	**17.1**	**82.9**

Three quarters (78%) of Raya Azebo farmers preferred cash to DSD. This was for several reasons. One was seed quality: for example, many complained about receiving a chickpea variety via DSD from Gojjam, which failed to germinate. With cash they can go to local, trusted sources of seed. Also, cash gives farmers choice and flexibility, allowing them wait until rains have established before choosing appropriate varieties (as seen with teff FVs). Some, however, complained of inflated prices when using cash aid to buy seed. In general, not much is known about the effect of cash/vouchers on markets.

This site shows that, even in a chronically-stressed area, significant quantities of locally-adapted seed are available from local markets. Most of the seed purchased via relief was teff and chickpea, though this may reflect cash arriving late in the season, rather than a particular desire for these crops. When given a chance to buy seeds, farmers select different crops and varieties (often FVs) from DSD, and strategize according to immediate rainfall patterns, and to their own needs.

Wolaita – Humbo Woreda (SNNPR)

Context

The Wolaita Zone is one of the most densely populated areas of Ethiopia. The area is known for 'green famine', where very small holdings mean that production does not always meet food needs (Tadesse, 2002). Humbo woreda, in south-east Wolaita, is mostly lowland and of mid-altitude agro-ecologies. Maize, beans, and sweet potatoes feature in a very diverse crop repertoire. Food aid occurs regularly in Humbo, is a significant source of annual consumption, especially for poorer households (Famine

Early Warning System, 2006). Officials here are concerned with dependency. As one official noted

> *"Humbo never misses any aid, including seed aid, but no significant change is observed." – aid implementer, Wolaita*

Records show that seed aid has occurred in Humbo at least since 1986, and at an intensive level since 1997, following El Niño. Apart from the government, WVE, the Red Cross, and IMC have supplied aid. Main approaches used in the area include DSD (with and without revolving seed), as well as seed vouchers and fairs. The 113 farmers surveyed recalled receiving seed aid an average of 3.59 times, with over 27% receiving aid five times or more, and one farmer recalling ten different seed aid events (Table 35). There is serious concern about ineffective targeting and fear that seed aid is mis-used, so both government and WVE, the main NGO in Humbo, have started asking farmers to sign an agreement that they will plant the seed, and not sell vouchers on to someone else. This atmosphere of control or regulation around seed aid may have influenced their responses to the survey.

Table 35 Number of times farmers in Humbo woreda, Wolaita recalled receiving seed aid.

Number of times seed aid	**Humbo** (N=113) % of total
1	8.8
2	22.1
3	24.8
4	16.8
5	15.9
6	4.4
7	2.7
8	2.7
9	0.9
10	0.9
Total	100.0
Average	**3.59 times**

Wolaita: seed aid and other sources of seed

For 16 cases (14.2%), seed aid provided all the seed used for the two crops given (Table 36). Thus, over 85% of the farmers who received seed aid still got at least some of their seed from non-aid sources.

Table 36 Number of farmers for whom seed aid supplied all the seed planted for two crops in a specific seed aid season in Humbo, Wolaita.

Measure	Humbo
Number of farmers	113
Cases where aid supplied all seed	16
% of total	14.2

Table 37 summarizes 130 specific cases of seed aid, showing the proportions of all seed sowed provided by different sources. Seed aid provided 59.9% of all seed sowed in the aid season, with home stocks and local markets each providing about 17%. To interpret these figures it is important to note that seed aid is often used in Humbo to promote MVs of maize or sweet potato. Second, many farmers signed a commitment to plant the seed received, so may be over-stating importance of seed aid. Finally, Humbo farmers grow many crops, though seed aid only supplies one or two crops. Thus, in reality, seed aid likely meets much less than 59.9% of a household's seed needs.

Table 37 Importance of seed aid, in relation to other sources of seed for the same crop during a specific seed aid season Humbo woreda in Wolaita.

Seed Source	**Humbo** (n=130) % of all seed planted
Seed aid	**59.9**
Home stocks	17.2
Local market	17.7
Gift	1.8
Exchange	0.7
Extension	2.8
Other source	0.0
All sources of aid crop	100.0

Wolaita: crops supplied by seed aid

Table 38 shows crops and varieties supplied by aid. Maize and chickpea are the most important, though haricot bean and teff are also significant. The small mass of sweet potato cuttings understates their importance in seed aid. In fact, promoting large numbers of sweet potato cuttings has been a regular feature of seed aid in Wolaita, including in Humbo. FAO, in particular, has funded a number of large-scale distributions since the 1990s, supplying many millions of sweet potato cuttings as emergency aid. This use of vegetatively-propagated species for an emergency is very unusual, and the quality of cutting provided by aid has been unusually uneven (anon., pers. comm., 2005). Private businesses usually supply cuttings to aid providers, though local markets also sell sweet potato cuttings.

Table 38 Details of recent seed aid in Humbo woreda, Wolaita, showing proportion of all seed aid received by crop, and the proportion of each crop's seed coming from aid.

Crop	N of cases	Crop's proportion of all aid (%)	Seed aid as proportion of crop planted (%)
Maize	62	35.4	41.4
Chickpea	28	34.2	84.8
Haricot bean	10	12.3	90.1
Teff	13	15.0	94.5
Sweet potato	13	1.8	51.2
Sorghum	4	1.4	100.0
Total	**130**	**100.0**	**59.9**

Seed aid supplied 41.4 % of sowed seed for maize, the main crop (Table 38). Figures are higher for other crops, but some of these (such as chickpea or teff) are less significant in the local repertoires, and may not be saved by all farmers in a normal year (Famine Early Warning System, 2006).

Table 39 breaks down recent seed aid by MV and FV. Overall, MVs dominate seed aid in Humbo woreda: 72.3% of aid comes as MVs in Humbo. This is especially striking for maize, where F_1 hybrids are often promoted over open-pollinated ones. Most of the sweet potato varieties supplied were 'Gadissa'. This is an MV variety (Awassa-83) released long in the past and well-established in Wolaita, so some farmers regard it as a local type (Million Tadesse, 2002). DSD also supplied cash crops such as cotton, fruit, vegetables, and sesame, which are not normally associated with emergency relief. Table 39 again shows how seed aid in Humbo overlaps with development goals around the promotion of new crops and varieties.

Table 39 The proportion of Modern and Farmer varieties supplied for each crop in Humbo woreda, Wolaita.

Crop	N cases	Modern variety (%)	Farmer variety (%)
Maize	62	100.0	0
Chickpea	28	39.3	60.7
Haricot bean	10	20.0	80.0
Teff	13	53.8	46.2
Sweet potato	13	76.9	23.1
Sorghum	4	50.0	50.0
Total	**130**	**72.3**	**27.7**

Wolaita: comparing DSD and vouchers

Many Humbo farmers have experienced both DSD and SVF. How do they compare these approaches? Slightly more than half (55%) preferred to be given seed directly, rather than to purchase the seed with vouchers or cash. Some preferring DSD felt the seed from DSD had better yield potential than seed from traders. It may be that these individuals are thinking of MVs (hybrid maize, cash crops) that are only supplied by DSD. In a separate question, farmers were significantly more positive about the quality and yield potential of seed from SVF than from DSD, so there is not any

obvious difference with respect to seed physical quality between the two approaches. Local traders usually can supply seed of acceptable quality, and certainly better quality than the sweet potato cuttings supplied by DSD in 2004 (which dried out before delivery and failed to produce). On a different note, some farmers, particularly women, preferred DSD as it involved less travel, negotiation, and bureaucracy to obtain seed than did the voucher approach. Clearly, for some, the more straightforward the transaction the better.

The 45% preferring vouchers highlighted the ability to choose crops and varieties themselves. Farmers using SVF chose maize and sweet potatoes far less frequently than DSD had supplied, opting instead for chickpea or haricot beans. Some farmers also preferred the greater quantities available with vouchers: vouchers DSD supplied 19.1 kg per crop, significantly more than DSD (8.9 kg).

Finally, there is no evidence of any restrictions to seed availability in local markets. Farmers recounted being able to obtain seed for all staple food crops using vouchers.

North Shoa –Gera Keya Woreda (Amhara)

Context

The final site is Gera Keya woreda, a remote region in the highlands of North Shoa Zone. Though not a classic drought-prone region, it nevertheless is vulnerable as 60% of land is sown to Belg crops, and the Belg rainfall is becoming less dependable. Other acute stresses include frost, hail, and water-logging, which can lead to harvest failure, while land degradation is a chronic challenge. Gera Keya has received regular assistance, including seed aid since at least 1985. The main crops here are barley and wheat, followed by beans (Integrated Food Security Program, 2000).

Surveys interviewed 61 farmers in Gera Keya. As elsewhere, most of this sample had received seed aid more than once, averaging 3.15 times, and on as many as seven occasions. The BoARD and WVE were the sole organizations providing seed aid here, and DSD was the only approach used.

North Shoa: Seed aid and other sources of seed

Seed aid here was the sole source of seed on 20 occasions (32.8% of the sample; Table 40). This is a higher proportion than elsewhere, though this represents only one crop, compared with two crops in other sites. This is because Gera Keya farmers almost never received more than one crop for seed aid. Table 40 shows that more than two thirds of farmers had other seed sources for the crop supplied.

Table 40 Number of farmers for whom seed aid supplied all the seed planted for two crops in a specific seed aid season in Gera Keya, North Shoa.

Measure	Gera Keya
Number of farmers	61
Cases where aid supplied all seed	19
% of total	31.1

On average, Gera Keya farmers each received 51.3 kg of seed, some getting over 100 kg. Table 41 traces seed sources for 61 cases, showing that seed aid provided 52.4% of the seed sowed in the emergency season for the crop supplied. Home stocks also contributed a high proportion (37.9%) of seed planted, with these 61 farmers saving over two tons of seed. High quantities reflect the dominance of wheat here, which has a very high sowing rate (>150 kg ha^{-1}). However, it is still notable that 'emergency' aid is being given to farmers who still have so much home-saved seed – 37.9% is the highest proportion of all four research sites.

Table 41 Importance of seed aid, in relation to other sources of seed for the same crop during a specific seed aid season Gera Keya woreda, North Shoa.

Seed Source	**Gera Keya** (n=62) % of all seed planted
Seed aid	**52.4**
Home stocks	37.9
Local market	8.8
Gift	0.9
Exchange	0.0
Extension	0.0
Other source	0.0
All sources of aid crop	100.0

North Shoa: crops supplied by seed aid

Three quarters of all seed supplied in Gera Keya is wheat (75.5%), with chickpea comprising much of the rest (Table 42). For wheat, seed aid provides 48% of the seed in an aid season. Though a much higher proportion of seed for chickpea comes from aid, this is a minor crop, sowed mainly when others fail, so farmers are unlikely to save much in anticipation of a poor year.

Table 42 Details of recent seed aid in Gera Keya woreda, North Shoa, showing proportion of all seed aid received by crop, and the proportion of each crop's seed coming from aid

Crop	N of cases	Crop's proportion of all aid (%)	Seed aid as proportion of crop planted (%)
Wheat	40	75.5	48.0
Chickpea	14	17.2	81.6
Faba bean	1	1.6	45.5
Barley	1	1.6	55.6
Total (*)	61	100.0	52.4

(* totals include small amounts of other crops not shown here).

Table 43 shows that nearly all (98%) seed aid is MV in Gera Keya, mostly wheat. Officials claim that FVs are unavailable in the market, though farmers in the woreda grow a diverse range of FVs of wheat and barley (Integrated Food Security Program, 2000). Also, in one part of Gera Keya, intensive surveys showed that only 6% of

farmers sow MV wheat exclusively, with the rest mixing FVs with MVs (Molla, 2006). It may well be that some FVs are no longer appropriate for conditions in Gera Keya (as some officials say), but this would be an unusual situation, and would need further investigation. In any case, the complete emphasis on MVs with DSD in Gera Keya is striking.

Table 43 The proportion of Modern (i.e. formally released) and Farmer varieties supplied for each crop in Gera Keya woreda, North Shoa.

Crop	Total	Modern variety (%)	Farmer variety (%)
Wheat	40	100.0	0
Chickpea	14	92.9	7.1
Faba bean	1	100.0	0
Triticale	3	100.0	0
Teff	1	100.0	0
Barley	1	100.0	0
Lentil	1	100.0	0
Total	**61**	**98.4**	**1.6**

Table 43 shows that seed aid in Gera Keya clearly emphasizes MVs and new crops. In some cases, DSD in Gera Keya supplied crops that were completely new to the area, such as Triticale, grass pea, or enset. Seed aid here appears to be driven by factors possibly in addition to those addressing farmers' seed insecurity. This sample includes two Farmers' Associations (FAs), one (Tsehaysina) which received seed aid much more frequently than the other (Gumer). Aid to Tsehaysina was almost exclusively wheat, in large quantities, while Gumer farmers received small amounts of a wide range of crops (including wheat). Such marked differences in seed aid strategy between two FAs in the same woreda are not easily explained by objective differences in seed security at the FA level. There are farmer co-operatives present in the area, but it is unclear how much they have influenced seed aid supply.

The assumption that local seed is unavailable in Gera Keya needs to be reviewed. There are ample home stocks, and clearly a resilient seed system for the major local crops. However, the strong orientation towards promoting new varieties and crops deflects from any attention to local seed availability, whether in home stores or local markets.

Comparisons Across Regions

All sites: number of seed aid events

The nearly 400 farmers interviewed across the four regions received seed aid on average over three times, some recalling up to ten separate seed aid events (Table 44). The repeated use of seed aid in all these regions is noteworthy. This gives a clear example of the problem of dependency, where farmers have come to expect that an 'emergency' intervention will occur most years.

Table 44 The maximum and mean number of seasons respondents recalled receiving seed aid in each study region.

Measure	Region				All Regions
	Oromiya (Miesso/ Chiro)	**Tigray** (Raya Azebo)	**SNNPR** (Humbo)	**Amhara** (Gera Keya)	
N farmers surveyed	117	108	113	61	399
Maximum number of times seed aid	10	7	10	7	10
Mean number of times seed aid	**3.08**	**3.02**	**3.59**	**3.15**	**3.35**

All sites: contribution of seed aid to all seed planted

Farmers received or purchased slightly more than ten kg of seed for each crop addressed by seed aid (Table 45). Gera Keya is the exception here, where over 50 kg of seed was distributed, which reflects the high seeding rate of wheat, but also the clear emphasis on MV in this site. Across all sites, seed aid provided slightly more than half the seed of the aid crop that was sown in the intervention season. However, the actual contribution of seed aid to local seed security will be much lower than the percentages in Table 45: much of the seed aid in the latter two sites is for MV promotion; farmers grow a range of crops not covered by seed aid; and seed aid vouchers or cash may simply have financed actions (getting seed from local markets) that farmers were going to undertake anyway.

Table 45 Tracing specific cases of seed aid, with quantities received, as well as uses and other sources of seed for the aid crop and season.

Measure	Region				All Regions
	Oromiya (Miesso/ Chiro)	**Tigray** (Raya Azebo)	**SNNPR** (Humbo)	**Amhara** (Gera Keya)	
N seed aid events measured *	201	176	139	62	578
Total seed aid received in sample (kg)	2384.0	4019.1	1483.7	3163.5	11050.2
Mean amount received per crop (kg)	11.9	10.7	10.7	51.3	19.0
Aid as proportion of that crop's seed (%)	**49.3**	**62.3**	**59.9**	**52.4**	**55.4**

(* some farmers detailed two separate instances of seed aid, so the sample size here is greater than the number of individual farmers surveyed)

All sites: seed sources used in emergency

While some farmers may face challenges with seed access, availability is only a problem in rare cases. As Table 46 attests, even in an 'emergency' situation, seed aid supplies around half (55.4%) of the seed planted for the crop supplied. Home stores still supply 30.1% of seed, and markets 12.8%. The widespread use of vouchers or cash means that, in reality, local markets supplied much more than 12.8% of seed – over 60% in the Tigray case, for example.

Table 46 For crops given in seed aid, the proportion of all seed of that crop planted in the aid season from different sources, across four study regions.

Seed source for aid crop	Region				All Regions
	Oromiya (Miesso/ Chiro) n=201	**Tigray** (Raya Azebo) n=176	**SNNPR** (Humbo) n=139	**Amhara** (Gera Keya) n=62	n=578
Seed aid (%)	**49.3**	**62.3**	**59.9**	**52.4**	**55.4**
Home stocks (%)	32.2	24.5	17.2	37.9	30.1
Local market (%)	15.7	13.1	17.7	8.8	12.8
Gifts (%)	2.1	0.0	1.8	0.9	1.0
Exchange (%)	0.3	0.2	0.7	0.0	0.5
Extension (%)	0.0	0.0	2.8	0.0	0.4
Other sources (%)	0.1	0.0	0.0	0.0	0.0
Total (%)	100.0	100.0	100.0	100.0	100.0

All sites: crops and varieties supplied in seed aid

Table 47 shows that MV promotion is often a goal of seed aid – it occurs 60% of the time in practice. In Humbo and Gera Keya, in particular, it seems to be the main goal of aid. While promoting MVs to farmers can be very useful, MVs may not always be appropriate following a crisis, or in chronically-stressed contexts. It is significant that when farmers are given the choice, through vouchers or cash, they choose a much higher proportion of FVs for themselves, as well as a wider range of crops overall. This was especially the case in West Hararghe (Chiro/Miesso) and in Tigray.

Table 47 Proportions of crops distributed by recent seed aid in each study region, broken down by Modern Varieties (MV) and Farmer Varieties (FV).

Crop	Region								All Regions %	
	Oromiya (Miesso/ Chiro) %		**Tigray** (Raya Azebo) %		**SNNPR** (Humbo) %		**Amhara** (Gera Keya) %			
	MV	*FV*	**MV**	*FV*	**MV**	*FV*	**MV**	*FV*	**MV**	*FV*
Maize	**52**	*48*	**100**	*0*	**100**	*0*	**-**	**-**	**72**	*28*
Teff	**0**	*100*	**42**	*58*	**54**	*46*	**100**	*0*	**43**	*57*
Chickpea	**0**	*100*	**45**	*55*	**39**	*61*	**93**	*7*	**49**	*51*
Haricot bean	**86**	*14*	**50**	*50*	**20**	*80*	**-**	*-*	**76**	*24*
Sorghum	**41**	*59*	**0**	*100*	**50**	*50*	**-**	*-*	**38**	*62*
Wheat	**-**	*-*	**-**	*-*	**-**	*-*	**100**	*0*	**100**	*0*
Sweet Potato	**-**	*-*	**-**	*-*	**77**	*23*	**-**	*-*	**77**	*23*
Barley	**0**	*100*	**0**	*100*	**-**	*-*	**100**	*0*	**10**	*90*
Lentil	**67**	*33*	**-**	*-*	**-**	*-*	**100**	*0*	**71**	*29*
Total*	**57**	*43*	**42**	*58*	**72**	*23*	**98**	*2*	**60**	*40*

(* Totals include crops not shows here, such as Triticale (Amhara), and groundnut (Oromiya)).

All sites: farmer opinions on seed aid by approach

Sample of farmer quotes:

> *"Poor farmers prefer vouchers. I prefer vouchers. You know my daughters and sons may see money in my hand, and we have problems. So better I get the voucher so I do not spend money."*
>
> *"With vouchers, you are tied to 1 or 2 traders – with cash you can select the seed you really need."*
>
> *"I like DSD, if it is crops and varieties I know."*
>
> *"The seed of our ancestors was very good, but this new seed [DSD] we just don't have confidence in it."*
>
> *"Seed aid helps us get new varieties. That is a good thing."*
>
> *"A good farmer, even in the very worst year, will have seed. I do not need to go to the market, and I do not need seed aid."*
>
> *[On revolving funds] "Why should I pay for varieties I don't know? I am already taking a risk."*

Farmers' preferences for how they received seed aid were divided fairly evenly between DSD and buying their own seed with cash or vouchers (Table 48). Tigray farmers preferred to buy their own seed (reflecting their recent experience with cash), while farmers in Gera Keya only knew DSD. Some of the reasons behind these preferences relate to how seed is delivered: some farmers would rather avoid the trouble of traveling to, and bargaining with, traders, and would rather have the seed brought to them. In contrast, others appreciate being able to decide which varieties they purchase for seed. This desire for control may also be why 80% of farmers across all sites preferred cash over vouchers in order to purchase seed. However, some farmers prefer vouchers to cash, as they are so poor that they fear the cash would be spent for other purposes.

Table 48 Farmers' preferred means to obtain seed aid in each study region.

Preferred means of getting seed	Region				All Regions
	Oromiya (Miesso/ Chiro)	**Tigray** (Raya Azebo)	**SNNPR** (Humbo)	**Amhara** (Gera Keya)	
DSD	56.4 %	21.5 %	55.0 %	91.8 %	183
Buy own (cash / vouchers)	43.6 %	78.5 %	45.0 %	8.2 %	171
N responding	117	107	69	61	354

Farmers clearly do not feel availability would be a problem: in the 'classic' chronically drought-prone sites (Miesso/Chiro in West Hararghe, and Raya Azebo in South Tigray), over 95% of farmers (n=225) felt that seed would be available if they had been given the means to purchase it.

Farmers' opinions of seed aid event differed according to whether they had DSD, or bought seed with vouchers or cash. Across the four sites, a *higher proportion of farmers who bought seed* felt that:

- They had the *correct crop* for the emergency
- They had the *correct variety* for the emergency
- The *seed quality* was at least as good as the seed they normally use
- The *yield* was at least as good as the yield of seed they normally use
- Seed delivery was *on time* for their needs.

However, a higher proportion of farmers who bought their own seed felt that they had to travel too far to get it.

These findings show that, when farmers can choose their own seeds with cash or vouchers, they are better able to select appropriate crops and varieties, responding to specific rainfall events or field conditions, for example. Over 90% felt that the seed they purchased was as good, if not better, than their normal seed, and they were also highly positive about yield. Vouchers or cash also supplied seed on time more often than did DSD. Overall, farmers are quite positive about receiving support to buy their own seed. However, Table 48 shows that many farmers still prefer DSD. Some feel that buying seed from markets involves too much hardship or travel time. Others complain about cheating from traders over price or quantity. Others complain about the involvement of local FA leadership, who they claim collect their vouchers, purchase the seed, and then redistribute it on their behalf. Whatever approach is used, it is important to have safeguards to ensure that farmers are dealt with fairly, that barriers to individual participation are addressed, and that farmers have a full and free choice in the seed they acquire.

Enduring impacts

Finally, farmers gave their views on the long-term impacts of repeated seed aid in their area. One key impact of seed aid is the delivery of novel crops or varieties to an affected region, whether as part of a program of MV promotion, or simply because seed aid links traders to other actors, such as crop researchers, in the seed chain. Table 49 shows farmers' views about this type of impact. Though only 20% stated that seed aid had supplied a new crop, over 70% of farmers associate seed aid with the supply of a new variety to the area. Most of these farmers say they are still using this variety. For some, this was the most significant, and useful, outcome of repeated seed aid. For instance, one Humbo farmer, who received aid five separate times since 1996, felt he only really benefited when he was able to get a teff variety through a voucher, as teff could withstand moisture stress.

Table 49 Farmers' views on long-term impact of seed aid, across each study region.

Impact of seed aid		Region				All Regions
		Oromiya (Miesso/ Chiro)	**Tigray** (Raya Azebo)	**SNNPR** (Humbo)	**Amhara** (Gera Keya)	
Supplies a new crop?	Yes	13 %	30 %	23 %	13 %	**20 %**
	No	87 %	70 %	77 %	87 %	**80 %**
Supplies a new variety?	Yes	63 %	72 %	74 %	84 %	**72 %**
	No	37 %	28 %	26 %	16 %	**28 %**

More general opinions about the impact of seed aid were harder to obtain. Farmers tend to be cautious, and few wished to be critical in an interview setting. Surprising site-specific effects were highlighted. For instance, in Tigray, farmers say that cash aid saves them from exploitation by local money-lenders, who may lend 1 Birr at sowing time, but expect 4 Birr repayment six months later. However, overall, no conclusive patterns of long-term changes were identified, for instance in practices or seed sourcing, or in farmers' relationships with others. In some 400 interviews, obtaining new varieties was the single clear positive impact; and widespread concerns, from farmers, traders, and aid implementers, were cited as the single clear negative impact.

SUMMARY: FARMER INSIGHTS

Farmers receive seed aid repeatedly. The average household sampled received seed aid 3.35 times, with a high of 10 separate seed aid receipts. There is little evidence that recurring seed aid decreases their vulnerability.

Seed aid supplied about half the seed a household actually planted, for the crop supplied, in any given emergency season. This was the case across all four regions sampled. The seed aid figure should be interpreted as elevated for three reasons:

- Aid was frequently given specifically to introduce a new variety or even a new crop so farmers may not have parallel local stocks;
- Seed is distributed in some regions as a 'third' season, after the normal rains (so farmers already sown their stocks in the 'season before'). Chickpea, in particular often given for such later planting. Many consider this a crop of 'last resort' and do not have their own stocks.
- Seed aid usually provided one or two different crops, but farmers generally grow a range of species. Therefore, seed aid's contribution to overall household seed supply is less than 50%.

Fourteen percent of aid recipients relied on seed aid for 100% of their sowing needs (for the crops distributed). Even in an emergency season, seed aid recipients obtained over 30% of their seed from their own stocks, with another 12% coming from markets.

- For their staple crops, such as maize, wheat, or sorghum, a higher proportion of seed came from the local system (own stocks and markets).

- In Tigray, cash for seed was a common seed aid approach, and 'seed aid' obtained from the market. In this site, over 60% of the seed planted in an aid season came from local markets.

Seed aid provides a mix of Modern Varieties (MVs) and Farmer Varieties (FVs). Across all regions (with 578 cases examined) 60% of seed aid cases involved MVs and 40% FVs.

- The balance of MV/FV varied between sites: in the Tigray site, 58% of cases involved FVs; in the Amhara site, only 2% involved FVs.

- The balance also varied by approach: DSD tended to emphasize Modern Varieties. When given a choice (with SVF, or cash), farmers opted for a much higher proportion of Farmer Varieties, and a wider range of crop species.

In some places, such as Humbo and Gera Keya, seed aid largely serves to promote MVs. This approach seems to give priority to development goals (and might be reviewed in terms of its ability to address seed security for a vulnerable household).

Over 95% of farmers indicated that seed was available in their respective regions in periods of stress. (in concurrence with traders' assessment of seed availability, see Chapter VI).

Farmer preference for aid approaches, was not directly linked to the problem identified (i.e. seed availability, seed access, for seed quality). Rather preference varied, by region and the way that an approach (DSD, cash, voucher, or SVF) was actually implemented. Generally those wanting to buy their own seed highlighted that they preferred having choice of crops and varieties. Generally, those preferring DSD found transactions with traders difficult, or sought access to modern varieties.

Overall, no conclusive patterns were identified of long-term changes linked to seed aid (for instance possible changes in seed sourcing practice, or in farmers' relationships with others). In some 400 interviews, obtaining new varieties was the single clear positive impact identified; and widespread dependency, from farmers, traders, and aid implementers, were cited as the single clear negative impact.

MOVING FORWARD: RECOMMENDATIONS

Even though farmers are 'recipients of assistance', it is important that they be treated as active, not passive players in this aid process. Procedures need to maximize farmers' ability to strategize even during an emergency, and especially in vulnerable areas.

Concretely, this might include

a) Farmers should have right to say 'no' to any one type of crop and variety, especially if not previously used in system (such as MVs). A range of crop and variety options should routinely be put on offer.

b) There should be vigorous efforts to get seed aid out early. Early knowledge of what crops and varieties might be on offer increases farmers' flexibility to respond to changing conditions (e.g. rainfall).

c) Overall standards for 'fair dealing with farmers' should be reviewed, no matter what the approach.

This might involve:

- maximizing information to farmers on expected procedures in advance
- increasing competition among providers (traders and sellers)
- setting up procedures for 'farmer feedback' to refine aid processes
- setting up transparent procedures for allowing farmers to redress grievances: —in cases where the aid process or aid product is significantly substandard.

For the supply side (implementers) and from the user side (farmers), learning has to accelerate in seed aid practice—towards more effective forms of relief and recovery.

VIII: CONCLUSIONS

This report has presented an overview of emergency seed aid in Ethiopia. It has reviewed its history, the policies shaping seed aid, and examined how the practice unfolds on the ground, in four separate regions (Amhara, Tigray, SNNPR, and Oromiya), and from the perspectives of implementers (GO, NGO and traders) as well as recipients (farmer seed-aid receivers). .

Each chapter includes it own summary and recommendations for 'moving forward' (improving practice) in regard to the specific theme presented. Below, the six central thrusts needed to focus and sharpen seed aid in Ethiopia are re-emphasized.

1. PUT SEED SECURITY ON THE AGENDA AS DISTINCT FROM FOOD SECURITY

Intervening in seed systems represents serious business. Seed is the input at the heart of agricultural production and determines what farmers grow, when and if they will harvest. As seed is often replanted, even short-term seed-related interventions can have effects over many seasons. Good seed-system assistance can help; poor assistance can make farmers even more vulnerable.

Those professionals intervening in seed systems must have comprehensive understanding of what seed security might entail and how to achieve it. Investigations have clearly shown that achieving seed security is different from achieving food security. The two are linked, but far from the same.

In Ethiopia, seed security has to be put on the development, emergency, and chronic stress agendas as a central theme in its own right. This needs to happen at the policy level, in national planning and all along the chain down through to the district (woreda) and Farmer Association-level implementation.

<u>More specifically in reference to emergency aid:</u>

Seed aid has to be given a separate identity, distinct from food aid practice.

Seed aid has to be removed from the ill-defined cluster of 'Non-Food- Items (NFI). Seed-related interventions demand explicit concepts, expertise and planning. The shopping list of NFI often translates into simplistic supply side operations (tallying the amount of seed aid which should be given).

2. DEVELOP POLICY AND STRATEGY FOR SEED SECURITY SUPPORT FOR THREE MAIN CONTEXTS

Seed system- related assistance is taking place in three main contexts in Ethiopia; in areas characterized by acute stress (e.g. flood or short-term civil strife); in areas suffering chronic stress (e.g. areas of repeated drought, or 'green famine'), and in

medium to higher potential zones where initiatives to intensify agriculture are paramount. In terms of farming and seed systems, these contexts largely represent distinct challenges and opportunities.

For each context, there needs better definition of: a) the goals to be achieved; b) the strategy for achieving them; and c) the support policies needed to enable effective action. Such strategic thinking might best spearheaded at the national level.

At present:

- Acute aid (and repeated acute aid) is being implemented mostly in chronic stress areas;
- Acute (emergency) aid is being used as an important vehicle for moving new, modern varieties (which, when used alone, is a developmental type of assistance);
- The seed system support component for chronic stress areas is near-completely undefined.

Given the overlap in reality between acute and chronic stress contexts, novel approaches explicitly promoting 'developmental relief' might also be considered.

3. SUPPORT PROCESSES FOR REAL SEED SECURITY ASSESSMENT: EMERGENCY AND CHRONIC

It is hard to implement effective seed system response if the seed security context is not well understood, in normal as well as in stress periods. At present there are no seed security assessments conducted at any level in Ethiopia. Rather, food and crop supply assessment missions, food security assessments, or no assessments at all are used to justify seed–related responses. At its most common, a drop in harvest is directly linked to a lack of seed, and seed is delivered in a region. So across the board, in stress periods, seed availability is usually assumed to be a problem, and direct seed distribution is assumed to be the solution. In contrast, actual field evidence, presented within this report and elsewhere, from farmers and from traders, shows seed to be widely available in crisis periods under the large majority of circumstances.

Advances, particularly in the last five years, have allowed experts to understand better the three prime dimensions of seed security, that: seed has to be available; farmers need to gain access to it; and the seed quality must be sufficient to promote healthy seed systems. Methods have also been developed to assess such seed security in the short and long-term (acute and chronic contexts). So, insecurity does not just involve one problem and one potential response.

Capacity to assess seed security and to implement such assessments has to built widely in Ethiopia, from national to district (*woreda)*. Further internal policy initiatives as well as donor influence, have to encourage that such seed security assessments (as distinct from food security assessments) become standard requirements for subsequent action.

More specifically:

i. Seed Security expertise has to strengthened with the MoARD and has to guide emergency, safety net, as well as more developmental decisions.

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ii. Seed security indicators have to be integrated into early warning system data bases.

iii. Seed security assessment methods have to be implemented at the field level.

iv. Seed security awareness raising (as distinct from food security) has to be encouraged widely—so as to shape policy, national level strategy and local implementation.

v. Political environments need to encourage realistic seed security assessments. (Seed need figures will continue to be inflated if such figures are routinely cut and seed aid continues to be the conduit to obtain new varieties).

The report contains specific guidance on developing seed security indicators and seed security field method procedures (see also CIAT/CRS, 2007). The knowledge exists to move forward on seed security assessment, even in the short-term.

4. ESTABLISH PROCEDURES TO MATCH THE TYPE OF RESPONSE TO ASSESSMENT RESULTS

Seed-related responses are now supply-driven and shaped mainly driven by current institutional philosophy and institutional capacity. They are not primarily driven by seed security problems encountered on the ground.

- The GoE generally uses a Direct Seed Distribution (DSD) approach.
- The NGO implementers have taken the lead in testing non-DSD approaches, cash, vouchers, seed vouchers and fairs, although some still also favor DSD, particularly to promote new varieties.

Among governmental and non-governmental organizations, capacity needs to be built to implement the range of appropriate responses or to forge links with specialized partners with such capacity.

More specifically:

Developing greater response capacity will involve:

- establishing a two-way learning among practitioners about the intricacies of different approaches
- explicit in-field training on approach implementation;
- awareness raising within government and donor circles of the variety of response options;
- financial support for more targeted action;
- policy support for more targeted action.

5. DEVISE NATIONAL GUIDELINES TO IMPROVE PRACTICE

Seed aid is not a logistical exercise (and in many cases should not involve procurement and delivery at all). Given the consequences of poor intervention, there is a need to for basic Ethiopian guidelines to shape and promote 'better seed aid practice'.

Guidelines for seed relief exist at the United Nations level and guidance for in-the-field implementation has recently appeared in varied forms (see Sperling *et al.*, 2006a-e). The challenge is to develop Ethiopian-specific better practice principles.

Box 7 presented an initial list of better practice principles suggested by Ethiopian professionals. The list needs to be expanded and might best be discussed in national fora, with strong regional representation and representation from key stakeholder groups. Such guidelines would be indicative, and non-binding, so debate and consensus are important for achieving subsequent advances on the ground.

6. PUT INCREASED EMPHASIS ON STRENGTHENING AGRICULTURAL PRODUCTION IN CHRONIC STRESS ZONES

Finally, even thought the focus on this report as been on emergency aid, the real spurs for such aid, repeated over 34 years, have been chronic stresses, natural, as well as man-made.

At a fundamental level, crop development for chronic stress areas needs far more attention in the Ethiopian research and development systems. Chronically-stressed areas are often 'low-potential', and require types of technologies that recognize the high levels of risk (and large distances from markets and infrastructure). In terms of priorities:

i There is a need to review technologies that perform under stress and under farmers' management for high-risk conditions. Full input packages should not be assumed in these cases.

ii Barriers to the development of these technologies need to be explicitly identified and addressed. *Inter alia*, more resources need to be directed to research for lowland ecologies; and seed production for lowland crops needs to improve and become more demand-responsive.

As evidenced within this report, all six thrusts have an associated clear set of activities at the national through to local levels. All involve policy and implementation changes. There are no quick solutions for restructuring and refining seed aid in Ethiopia, and a significant overhaul is what is needed.

There are, however, multiple concrete steps which can be implemented even now, which can launch or accelerate positive seed security changes among vulnerable farmers. Some positive changes — such as refining emergency response — can be envisioned in the short-term (1-3 years). Others will demand more long-term and concerted action. New strategies for addressing seed security in chronic stress need to be developed, tested and implemented.

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ANNEXES

List of Persons Consulted / Contacts

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Mattewos Hundie	Chair of Agricultural Task Force, MoARD, Addis Ababa
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Mesfin Shiferaw	Head of Relief Co-ordination, DPPA, Addis Ababa
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2. West Hararghe

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3. North Shoa

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4. Wolaita

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Belay	BoARD, Raya Azebo
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Dagnew Menan	REST, Tigray
Debas	BoARD, Raya Azebo
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