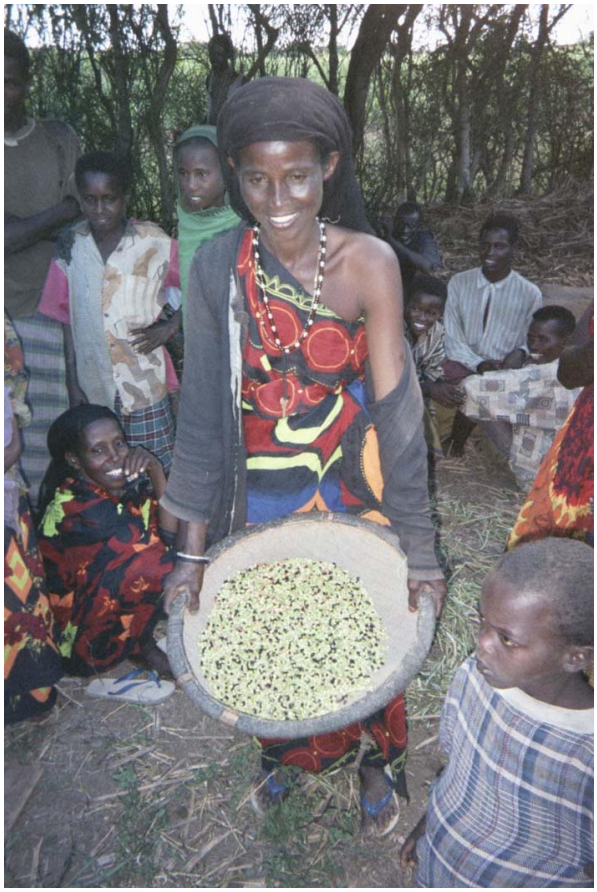
SEED SECTOR STUDY OF SOUTHERN SOMALIA



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Final report submitted to EC Somalia Unit
August 2001

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Executive summary

The present study was commissioned by the Somalia Unit of the European Commission (EC) to assess the impact of relief seed interventions and whether seed distributions are the most appropriate way of providing assistance to farmers in southern Somalia. The report describes the pre-war formal seed sector of Somalia, farmers' present seed management practices (including the role of traders), and the impact of relief seed interventions. The final section of the report puts forward suggestions for an enhanced strategic approach to household seed security.

Seed systems are best understood as an integral part of cropping systems, which in turn form part of wider agricultural livelihood systems. This study is concerned with two main livelihood systems: agro-pastoralism and riverine farming. Agro-pastoralists rely to varying degrees on both crops and livestock; whereas riverine farmers have virtually no livestock and rely predominantly on crops for access to food and cash. The most important areas of crop production in Somalia are located in the southern part of the country, between the valleys of the Shabelle and Juba Rivers. Agro-pastoralists tend to come from the Rahanweyn groups, though in the past 25 years increasing numbers of Marehan pastoral households have shifted to agro-pastoralism in response to drought. Riverine farming has traditionally been dominated by Bantu groups, but opportunities for cash cropping associated with irrigation have led to competition for fertile riverine land by various other groups. Both the Rahanweyn and Bantu farmers have traditionally been regarded as second-class citizens by the four main pastoral clans of the country and have been both socially and politically marginalised over time. **Given the relative powerlessness of the Rahanweyn and Bantu groups, it is important that the allocation of aid resources by those who are politically more powerful does not further contribute to their marginalisation.**

Two very distinct cropping systems are recognised in southern Somalia, irrigated and rainfed. Both riverine farmers and agro-pastoralists undertake both types of cropping. In addition to the more familiar impacts of war, insecurity, drought and flooding, both cropping systems are significantly constrained by farm pests such as birds, army worm, stem borer and crickets. It is estimated that 90% of the rainfed area in Somalia is planted to sorghum, with the remaining 10% being divided between cowpeas, and maize. A lack of crop and varietal diversity is thought to stem from the need for well-adapted, drought-resistant crops and varieties in such a harsh environment, the importance of fodder for livestock, the degree of commercialisation, and the relative geographical isolation of areas in southern Somalia where crop production is practised. **Both cropping systems and seed systems can potentially be enhanced by promoting appropriate pest control measures, together with greater crop and varietal diversity.**

Southern Somalia has a weak bimodal rainfall pattern, with the main planting rains being received in what is known as the *Gu* season from April to July, followed by the shorter and less reliable *Deyr* season from September to November. From the end of the *Deyr* to the start of the next *Gu* season is an intense dry period referred to as the *Jilaal*. Farmers find it much easier to save seed from *Gu* to *Deyr* than over the longer dry season from *Deyr* to *Gu*. Moreover, the unreliability of the *Deyr* harvest is such

that seed saved from the *Gu* harvest must be sufficient not only for the *Deyr* season but also for the following *Gu* season. The most effective and widely-used method for the long-term storage of seed is to mix the seed with ash and place it in sealed 200-litre metal drums. Not all farmers have access to such drums and the lack of more effective seed treatments means that seed (especially maize) is often damaged by pests in storage. **Greater access to storage drums and other appropriate technologies for better seed storage are required – for use by both farmers and those petty traders involved in seed marketing.**

The most common means by which farmers acquire seed off-farm is by purchase from female petty traders. In southern Somalia there exists a very well developed seed marketing system which does not exist in Somaliland. Female petty traders buy grain at harvest time from farmers in the surrounding villages and pay a premium of about 20%–25% for good quality seed which is then stored in drums, keeping different varieties in different drums. The largest of the petty traders in Baidoa have a maximum capacity of about 50 drums of seed (equivalent to approximately 8.5 MT of sorghum or maize seed). The importance of these seed markets is thought to relate to the relative frequency of localised drought, the difficulties of storing seed over more than a few months, and the consequent demand for off-farm seed. Relief seed procurement strategies favoured by humanitarian agencies involve the purchase of seed from large-scale male traders, potentially undermining the livelihoods of small-scale seed traders, most of whom are female. **Rather than undermining these small-scale seed traders, aid interventions should aim to support them.**

In addition to trade networks, social networks also play a central role in sustaining local seed systems. Not only better-off farmers but also poorer farmers regularly provide seed to their neighbours, friends and relatives. Data collected by IPGRI/CINS in 1997 clearly indicate that relatives, neighbours and other farmers within the village form farmers' preferred source of off-farm seed. Yet our survey data for 2000 revealed that close relatives and other farmers were only the third most important source of seed after traders and relief agencies. It is possible that mutual support systems among farmers may have been weakened by reduced asset levels resulting from the cumulative effects of political, environmental and economic instability over the past decade. It is also possible that the free distribution of relief seed has to some extent replaced the reciprocal networks of seed exchange within farming communities.

While social networks are clearly important to local livelihoods, they also have their limitations, particularly over a wider geographical area. Viewed from a broader regional perspective, the predominance of pastoralism over cropping systems and the political marginalisation of Rahanweyn and Bantu farmers have prevented the development of geographically more extensive networks. It is therefore important to promote linkages that extend beyond the inter-riverine area of southern Somalia through which appropriate agricultural technologies (including new crops and varieties) might be introduced. **Aid interventions should aim to enhance links with agricultural research centres. Links with external agricultural markets should also be considered.**

While the overall impact of a decade of relief seed distributions has not been great, there are certainly some situations when an absolute shortage of seed exists and relief

seed is an appropriate response. However, such situations tend to be the exception rather than the rule: e.g. when there has been no cultivation at all over a wide area due to wholesale population displacement; when partial displacement is combined with a widespread loss of assets; or when there is an extended crop failure (say, over more than two years) over a wide area. Provided it is possible to move between surplus and deficit areas and local markets are working, the local seed system in southern Somalia is such that it can effectively provide seed to areas where there may be pockets of crop failure. **A simple key is presented to assist agencies in determining whether seed availability (as opposed to seed access) is likely to be a constraint.**

More often than not, seed is likely to be available, though farmers may require assistance in accessing it. An alternative strategy for enhanced seed security is presented in the form of a matrix which identifies five different entry points – (i) seed users and seed management; (ii) seed providers and seed provision; (iii) local institutions and organisations; (iv) seeds and varieties; (v) external linkages – and three different types of interventions: (i) improved access to agricultural inputs; (ii) the introduction of appropriate technologies; (iii) enhanced input/output marketing. Key aspects of this strategy have been highlighted in each of the paragraphs above. The strategy also indicates where specific projects might be appropriate along the relief-rehabilitation-development continuum of the EC. **The importance of detailed monitoring and evaluation is emphasised.**

Contents

Boxes

Plates

Figures

Acknowledgements

The study team would like to thank the European Commission and in particular Christoph Langenkamp for making the study possible. Rose Jeptoo provided invaluable logistical support. The team was hosted by CINS in Somaliland, by ICRC in Bardera and by WFP in Baidoa – we are most grateful to these organisations and in particular those field staff who directly assisted in the study. The farmer survey would not have been possible without the help of the Food Security Assessment Unit (FAO) and a number of local NGOs supported by CARE: we thank the FSAU Field Monitors and local NGO staff who acted as enumerators. The task of entering the data into the database was undertaken by Mr. Mukono. Finally, we would like to thank the farmers, traders, and aid agency staff who gave their time to answer our many questions. The views expressed in this report are those of the authors, who take full responsibility for any errors or misrepresentations.

Acronyms

ADC	Agricultural Development Corporation
CINS	Cooperazione Italiana Nord Sud
EC	European Commission
ESP	emergency seeds provisioning
FAO	Food and Agriculture Organisation of the United Nations
FEG	Food Economy Group
FEWS	Famine Early Warning System
FSAU	Food Security Assessment Unit
ICRC	International Committee of the Red Cross and Red Crescent Societies
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IPGRI	International Plant Genetic Resources Institute
M&E	Monitoring and evaluation
MT	metric tonnes
NGO	non-governmental organisation
ODI	Overseas Development Institute
SACB	Somali Aid Coordination Body
SCB	seed capacity building
SCF	Save the Children Fund
SPSS	Statistics Package for the Social Sciences
UNDOS	United Nations Documentation Office for Somalia
UNOSOM	United Nations Operation in Somalia
WFP	World Food Programme

1. Introduction

The present study was commissioned by the Somalia Unit of the European Commission (EC), according to the terms of reference detailed in Annex 1. Since 1991, between 2,000 and 4,000 MT of cereal and pulse seeds have been distributed on an annual basis in southern Somalia by ICRC, FAO, and international NGOs (CARE, CEFA, CINS, InterSOS, SCF, Trocaire and World Vision). Seed aid is coordinated by the seed working group of the Food Security and Rural Development Sectoral Committee of the Somalia Aid Coordinating Body (SACB), formed in 1994. Over the years, humanitarian organisations have, in effect, created a seed sector which has developed in response to the complex emergency situation that has existed since 1991.

Concerns have been raised over the effectiveness of the relief seed sector and the sustainability of continued seed distributions. The aim of this study was to assess the impact of relief seed interventions and whether seed distributions are the most appropriate way of providing assistance to farmers in southern Somalia. The need for the study was prompted by a growing awareness within the Somali Aid Coordination Body and some of the agencies distributing seed that relief seed projects are not at all straightforward to implement and that farmers do not necessarily always plant the seed provided to them.

In the long term, repeated emergency seed distributions can unwittingly increase the vulnerability of farmers by promoting dependency on free handouts, disrupting local markets, and limiting crop/varietal diversity. So long as agencies continue to implement conventional emergency seed distributions year after year, there is the risk that a self-perpetuating seed economy may develop. Since the profits and other benefits from large-scale seed trading activities can be high for those involved, the issue of whether or not small-scale farmers actually need the seed provided may become irrelevant in such a scenario.

2. Objectives of the study

The overall aim of the study was to present a comprehensive assessment of the seed security situation in southern Somalia and to suggest strategies for its enhancement. Seed security is an essential component of food security for small-scale farmers, yet it is a term which remains difficult to define precisely. In general, seed security refers to the sustained ability of farmers to access and utilise sufficient quantities of appropriate and good quality seed types. Seed security can be defined at various different levels, e.g. household, national and regional, and incorporates not only the protection and conservation of crop genetic diversity but also the need for effective national and regional seed policies. This study primarily addresses seed security at household level.

The study had three main objectives:

i. to provide a better understanding of the seed sector and seed systems in Somalia;
ii. to assess the impact of seed interventions;
iii. to propose an enhanced strategic approach to seed security at household level.

Seed systems are best understood as an integral part of cropping systems, which in turn form part of wider agricultural livelihood systems. As such, a seed system can be described as a socio-technical ensemble (Richards and Ruivenkamp, 1997), in which livelihood assets and the social relations of production are as important as the technical inputs required for farming. Seed security depends not only upon agricultural security but also livelihood security. Rather than describing seed systems in isolation from these wider systems of which they form part, this report describes seed systems in their broader perspective.

After describing how the study was undertaken (Section 3), Section 4 provides some background information on rural livelihoods and vulnerability in southern Somalia. Further background information on agriculture and cropping patterns is provided in Section 5. A broad overview of the impacts of insecurity, shocks and stresses is given in Section 6. Detailed information regarding the seed sector and seed systems in Somalia is presented in Sections 7 and 8, which describe the pre-war and post-war seed sectors, farmers' seed management practices and the role of traders. Section 9 analyses the impact of free seed distributions. Building on the background information of Sections 4 to 6, and in the light of the findings presented in Sections 7 to 9, suggestions for an enhanced strategic approach to household seed security are given in Section 10. The strategy puts forward a number of alternatives to free seed distributions and identifies various entry points for such interventions along an adapted relief – development continuum (as defined by EC). The importance of needs assessment and adequate monitoring and evaluation are emphasised as part of this strategy.

3. Study activities and methodology

The study team was composed of a social anthropologist (Longley) and two agronomists (Jones and Ahmed). Additional inputs were provided by an ICRISAT Research Associate (Audi) who did much of the quantitative data analysis. Activities undertaken as part of the study are detailed in Table 1, below.

Table 1 Timetable of study activities

Date	Activity
February 2000	Literature review and preparation of proposal (London)
18 – 22 and 29 September 2000	Consultations with agencies and collection of relevant documentation (Nairobi)
23 – 28 September 2000	Visit to Somaliland (Longley, Jones and Bramel)
October 2000	Pre-testing of survey questionnaire (Ahmed)
November – January 2001	Implementation of survey by Ahmed, FSAU field monitors and local NGO staff
November 2000	Inception report
11 – 16 December 2000	Visit to southern Somalia (Bardera, Baidoa)
5 February 2001	Stakeholder workshop, Nairobi
February – June 2001	Follow up consultations
February - May 2001	Data entry, data analysis and report-writing
8 May 2001	Stakeholder workshop, Baidoa
June 2001	Draft final report submitted to EC

An initial review of the relevant literature was undertaken, and consultations with agencies took place in Nairobi in September 2000. The individuals and agencies consulted are detailed in Annex 2. These initial consultations allowed for the collection of information regarding the seed and agricultural activities undertaken by different organisations (Annex 3). Whilst existing documents tend to report on the quantities and locations of seed distributions, few of these reports provide any impact assessment due to a lack of detailed follow up of seed distribution projects[1].

Due to delays in the start of the project caused by the security situation, Longley and Jones made an initial field visit to Somaliland in September 2000, accompanied by Paula Bramel, a sorghum breeder from ICRISAT specialising in biodiversity issues (Annex 4). Whist the data collected in Somaliland are not directly relevant to the focus of the study, the visit allowed for useful insights to be made and provided

[1] In general, it is rare that detailed monitoring and evaluation (M&E) is undertaken following conventional relief seed distributions Implementing agencies tend to report on only the logistical aspects of such projects, i.e. the amount of seed distributed and the number of beneficiary farmers. Whether or not the seed is actually planted is rarely followed up in detail. See section 10.5 for further information regarding M&E.

background information. A number of contrasts between seed systems in Somaliland and those in southern Somalia are highlighted in the report.

All three members of the study team visited southern Somalia (Bardera and Baidoa) in December 2000. In Bardera, the team was hosted by ICRC and visited three villages in both rainfed and irrigated farming systems. In Baidoa, the team was hosted by WFP and also had considerable interaction with CARE. Two villages near Baidoa (also included in the survey – see below) were visited. In each village visited, both focus group discussions and key informant interviews were conducted. Most of the key informant interviews took place on the farm, allowing for detailed observations to be made.

In addition to the information collected from farmers, the study team interviewed staff from various relief agencies in both Bardera and Baidoa (Annex 2). In Baidoa, members of the study team visited plots containing CARE's sorghum varietal trials. A small number of traders (both large-scale businessmen and female petty traders in the marketplace) were also interviewed.

The qualitative information gathered through discussion, interviews and personal observation was complemented by quantitative data collected by a farmer survey (Annex 5) that was managed by Ahmed and implemented by FSAU Field Monitors and local NGO staff affiliated with CARE. Field enumerators were instructed to interview five farmers (heads of household) per village, including two better-off farmers and three poorer farmers. Information regarding household characteristics, *Gu* and *Deyr* season farming activities for 2000, seed sources of the crops planted, and seed provided to other farmers were recorded. Details of the relief seed distributions for each village were also noted. The survey data were entered onto a SPSS database and analysed by Patrick Audi (ICRISAT Research Associate). The number of farmers covered by the survey are shown in Table 2.

Preliminary study results were presented to stake-holders in both Nairobi and Baidoa. Annex 6 provides the lists of participants attending each of these workshops. Feedback from both workshops has been incorporated into the present report.

Table 2 Farmers surveyed by region

Region	Number of farmer interviewed
Hiran	15
Bay	15
Middle Shabelle	22
Lower Shabelle	28
Gedo	11
Galgadud	5
Bakool	30
Middle Juba	3
Lower Juba	2
Total	131

4. Rural livelihood systems in southern Somalia

This section describes livelihood systems in terms of livelihood strategies (what people do) and livelihood assets (what people have, both tangible and intangible). Some of the characteristics of the sample households are described, and the concept of vulnerability is examined in its economic, social and political aspects.

In describing what people do, reference is made to Food Economy Groups, as defined by the Food Security Assessment Unit (FSAU). In Somalia, a total of 20 Food Economy Groups are used to describe the different types of terrain (e.g. riverine, pasture, highland, etc) and the various forms of livelihood (e.g. pastoral, agro-pastoral), together with the dominant crop or livestock types in each area. Within each Food Economy Group, FSAU distinguishes three wealth groups according to tangible assets such as land or livestock ownership. Much of the information collected by FSAU is primarily concerned with food security.

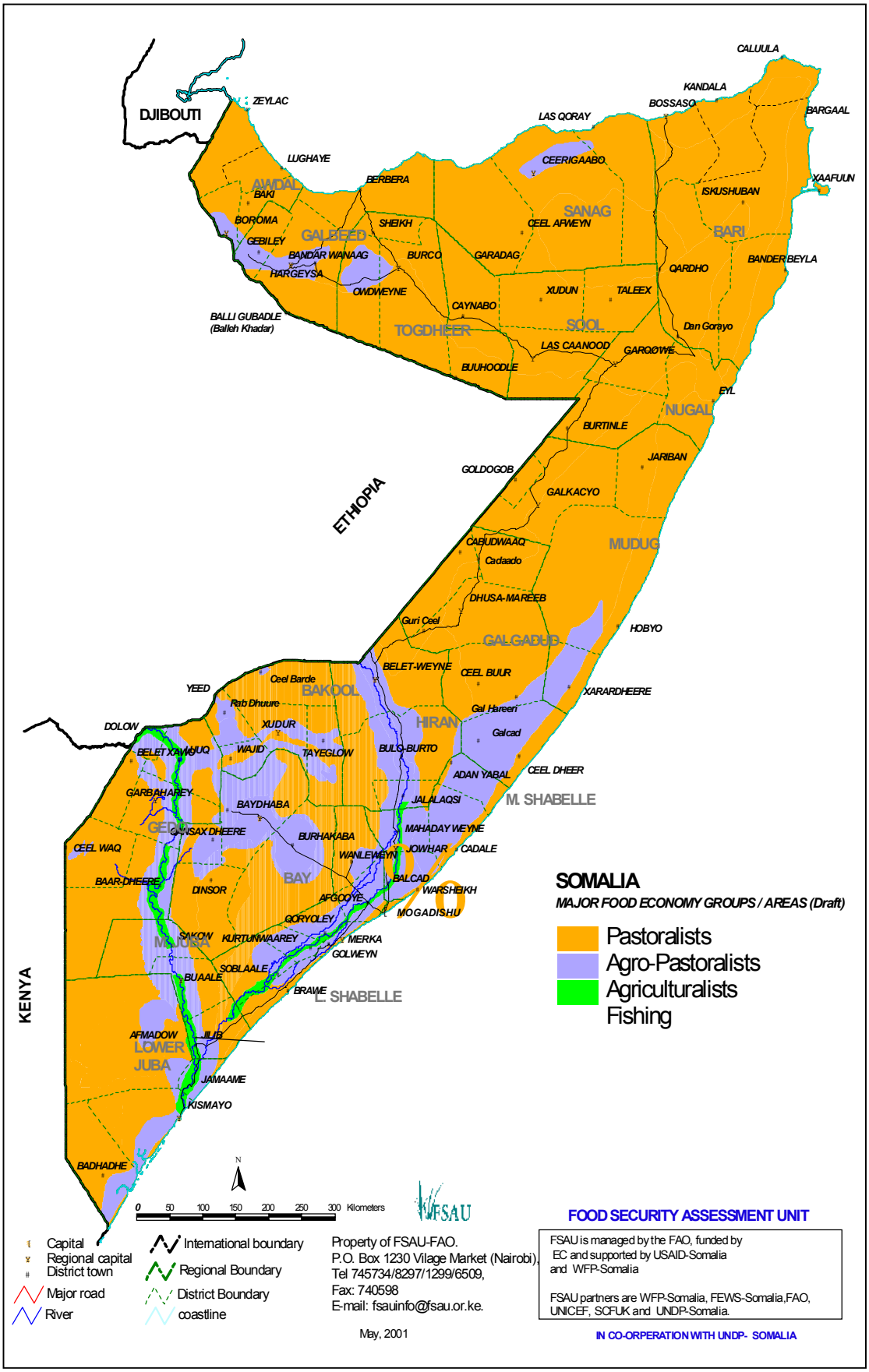
Although food security undoubtedly forms one of the most important aspects of livelihood security, it is important to note that the latter is a complex and dynamic web of interactions that enable people to meet not only the need for food but also water, shelter, education and health (FSAU et al., 1999). The description of livelihoods in this report is concerned with only those aspects that relate to agriculture, and cropping systems in particular. In Somalia, the ethnicity and level of wealth of a household are important factors in understanding the relative importance of agricultural production to local livelihood strategies.

The most important areas of crop production in Somalia are located in the southern part of the country, between the valleys of the Shabelle and Juba Rivers. Farmers in this area tend to come from the Rahanweyn and Bantu groups, though in the past 25 years increasing numbers of Marehan pastoral households have shifted to agro-pastoralism, primarily as a result of drought (UNDOS, 1998a). Both the Rahanweyn and Bantu farmers have traditionally been regarded as second-class citizens by the four main pastoral clans of the country and have been both socially and politically marginalised over time.

4.1 Food Economy Groups and livelihood strategies

In terms of agricultural production, the three main types of livelihood strategies or food economies generally defined for southern Somalia are pastoralism, agro-pastoralism and riverine agriculture (Figure 1). Pastoralists rely on animals (camels, cattle, goats and sheep) and animal products (e.g. milk, ghee) for both sale and consumption; agro-pastoralists rely to varying degrees on both crops and livestock; whereas riverine agriculturalists have virtually no livestock and rely predominantly on crops for access to food and cash. The present study is concerned with agro-pastoralists and riverine agriculturalists.

Figure 1 Map of Somalia showing main Food Economy Groups.
Source: Food Security Assessment Unit, FAO.



Agro-pastoralism in southern Somalia has been defined as 'a subsistence mode of production combining fixed settlement and seasonal cultivation of rain-fed crops with open-range livestock herding' (Merryman, 1996:80). It forms the predominant livelihood strategy throughout the Rahanweyn-inhabited inter-riverine zone, and is also becoming more common among traditionally pastoralist Marehan communities. Agro-pastoralism includes a broad range of agricultural strategies, from the keeping of a small number of milk animals by farming households to pastoral households which opt to farm opportunistically. This very broad definition of agro-pastoralism is reflected by the survey results, in which household livestock ownership ranged from 0 to 180 for shoats, 0 to 70 for cattle and 0 to 65 for camels. Whilst the household itself is permanently located in the village, some household members move with the livestock to and from the village according to seasonal cycles. Although the labour demands of a mixed economy may reduce overall productivity in both livestock and crop production, agro-pastoralism is generally regarded as a risk-averse livelihood strategy on account of its flexibility of resource use. Some agro-pastoralists use animal traction for particular field operations in rainfed farms, allowing them to cultivate larger areas than if they were totally reliant on hand tools.

Plate 1 Irrigated fields in the Juba River valley, Gedo Region

For riverine farmers, livestock ownership is much lower (Table 3). Risk minimisation strategies depend upon having access to enough land of different soil types and in different locations (Besteman, 1996). The various types of riverine farms include rainfed (suitable for maize and beans), flood recession (for sesame, maize, beans, squash, pumpkins, watermelon), riverbank (for fruit trees), and irrigated (for cash crops such as onions, tomatoes, tobacco) (Plate 1). Since the civil war, however, access to these diversified farm types has reportedly declined. For example, in Middle Juba, very little rainfed agriculture is practised by riverine villagers, due in part to the easy availability of nearby flood recession land (SCF-UK/FEAT, 1996:1) and also the prevailing insecurity which discourages Bantu farmers from using rainfed areas which

tend to be located some distance from the village (UNDOS, 1998b)[2]. The looting of pumps has also reduced the area available for irrigated agriculture. Where irrigated agriculture does occur, it is generally organised through sharecropping arrangements.

Although agricultural production provides the predominant means of livelihood for rural dwellers in southern Somalia, additional livelihood strategies include petty trading, artisanal activities, wage labour, collection/sale of bush products, and charcoal production, among others. These activities are generally undertaken alongside agricultural activities or on a seasonal basis and their relative importance in terms of household livelihood strategies often corresponds to the wealth of a household. Relatively better-off households might engage in petty trading, whereas poorer households tend to rely on the collection and sale of bush products. Receipt of remittances may also form an important means of income to some rural households[3] (Ahmed, 2000).

Plate 2 Women using a grinding stone to make sorghum flour

Both riverine farmers and wealthier agro-pastoralists are closely connected to local markets through the sale of surplus agricultural outputs. With irrigation, riverine farmers can produce cash crops such as onions, tomatoes, and tobacco. Such production is often organised through share cropping arrangements in which the water pump is owned by a local businessman or trader. Although agro-pastoralists tend to maximise subsistence by storing their surpluses in underground pits and thus ensure

[2] FSAU studies conducted more recently in Lower Shabelle, however, have found that the area of land cultivated along the riverbanks has expanded in recent years as Marehan pastoralists have moved in to take up crop production (Nisar Majid, personal communication). Whilst the land closest to the river is cultivated by Bantu farmers, land further away from the river is cultivated by Marehan.

[3] Data collected by Ismail I. Ahmed in Somaliland revealed that, on average, remittances accounted for 64% of household income. While international remittances are heavily concentrated in urban centres, among rural agro-pastoralists remittances tend to be internal, from migrant workers in urban areas. Though remittances in S. Somalia are not as significant as in Somaliland, a very effective telephone and radio communication system allows for money to be easily transferred to rural areas.

against poor harvests, it is not uncommon for agro-pastoralists to market grain during periods of prolonged drought to nomads whose bargaining power is substantially diminished in times of scarcity (Merryman, 1996).

In the 1970s, state control over grain marketing was effected through the Agricultural Development Corporation (ADC) which forcibly purchased farmers' surpluses at low prices fixed by government. Agricultural markets were liberalised in 1983–4 and the higher prices encouraged farmers to increase their production (von Boguslawski, 1986). Fluctuations in current agricultural trade levels are caused by blockages in trade routes caused by insecurity, the availability of surpluses, and price changes relating to the value of the Somali Shilling. Different types of grain traders can be distinguished at different levels. At one end of the scale, are village-based traders who are primarily farmers with sufficient capital to purchase from other farmers within the village. The village-based part-time traders sell to town-based small-scale petty traders. The petty traders are largely market women who operate at a roughly district or regional level, transporting produce by donkey cart and playing an important role in transferring grain from surplus to deficit areas. Large-scale grain traders have considerably greater capacity, purchasing grain from farmers in the sorghum belt and transporting it to the urban market of Mogadishu. An effective radio communication infrastructure allows large-scale traders to operate very efficiently (Plate 3).

Plate 3 Radio communication at village level

4.2 Sample household characteristics and livelihood assets

Given that household wealth generally provides one of the main criteria determining the way in which African farmers manage their seed resources, the survey was designed to sample farmers according to their relative wealth. Each enumerator was instructed to interview two better-off households and three poorer households per selected village, using their own judgement and knowledge of local wealth criteria to assess relative wealth levels. The comparison of relative household wealth levels can be made according to a number of different criteria.

Table 3 shows that for riverine farmers the better-off households tend to belong to slightly larger compounds and cultivate larger areas. In the *Gu* season 2000, riverine farmers cultivated, on average, larger rainfed farms than agro-pastoralists. As expected riverine farmers do not own many livestock, whereas livestock ownership provides the main difference between poorer and better-off agro-pastoralists. The slightly smaller average compound size for better-off agro-pastoralists may be due to some family members being away looking after livestock.

Table 3 Wealth indicators for different Food Economy Groups, showing mean figures

FEG/ wealth	Number of people in compound	Average number of households in compound	Rainfed cropped area, *Gu* 2000 (ha)	Irrigated cropped area, *Gu* 2000 (ha)	Shoats	Cattle	Camels
Riverine							
Better-off	15.2	3.6	10.2	2.8	5.9	8.8	0.0
Poorer	13.3	3.4	3.5	1.7	1.2	1.0	0.0
Agro-pastoralist							
Better-off	15.7	4.0	7.8	4.5	30.8	15.4	9.4
Poorer	17.3	3.8	3.6	0.8	15.1	6.1	2.8

The table below shows how the enumerators' assessment of the relative wealth of selected households corresponded with the giving and receiving of *zaka* (Table 4). *Zaka* is a traditional form of social welfare found in Islamic communities where households are expected to set aside 10% of their production for the benefit of poorer households. However, as Table 4 illustrates, the *zaka* system is rather more complex than a straightforward transfer of goods from the better-off to the poorer households: some poorer farmers also give *zaka*, whilst there are both poorer and better-off farmers who neither give nor receive *zaka*. Moreover, there appear to be some differences between riverine and agro-pastoral households.

Table 4 Household wealth and *zaka*

FEG/wealth	Whether farmer received/gave *zaka*			
	Give	**Receive**	**Neither**	**Both**
Riverine (n=65)	39%	35%	26%	0%
Better-off (n=26)	84%	4%	12%	0%
Poorer (n=39)	8%	56%	36%	0%
Agro-pastoralist (n=60)	47%	31%	20%	2%
Better-off (n=17)	71%	0%	29%	0%
Poorer (n=43)	37%	44%	16%	3%

Among riverine farmers the transfer of goods from better-off to poorer households appears to be rather more straightforward than among agro-pastoralists. For the former, the vast majority of better-off farmers (84%) give *zaka* whilst the vast majority of poorer farmers (56%) receive *zaka*. Among the agro-pastoralists, on the other hand, significant proportions of both better-off and poorer farmers (71% and 37% respectively) give *zaka*. This difference between riverine and agro-pastoral farmers might be explained by the relative degree of social differentiation, as explained below.

Households belonging to the riverine Food Economy Group tend to be of Bantu origin and are historically presumed to have come from East Africa. The term Bantu or Jareer is usually associated with slave origins and low status. As such, Bantu communities tend to be socially homogenous in that there are no class-based differences among the various households within the same community. In contrast, Rahanweyn communities (which tend to be agro-pastoral) are hierarchical in that nobles are distinct from commoners and the two do not intermarry (Helander, 1996). Since nobles tend to be better-off than commoners, the giving of *zaka* by poorer households can perhaps be explained by those commoners who are in a position to give *zaka* to their commoner relatives.

Such contrasting features of social organisation both between and among riverine and agro-pastoral communities helps to understand something about the networks through which people cooperate and help each other. Such social networks – whether based on family relationships, class or clan backgrounds, or neighbourly friendships – also provide an important means through which farmers acquire agricultural inputs (including seed) and organise the labour necessary for agricultural production. These networks are particularly important to the Rahanweyn, who place considerable importance in maintaining geographically dispersed networks within southern Somalia so that relations in other communities could be relied upon for assistance when necessary (Helander, 1996; Narbeth, 2001).

4.3 Vulnerability

Vulnerability is defined according to two aspects: (i) an external aspect of risk, shock or stress to which a household is subject; and (ii) an internal aspect relating to the ability of the household to cope with shock or stress. Whilst this definition specifies vulnerability at household level, vulnerability (like seed security) can also be defined at the level of individuals or groups, villages, districts, regions or countries. The paragraphs below show that the ability of a household to cope with shock or stress has economic, social and political dimensions. Section 10.2 applies the concept of vulnerability to seed systems as opposed to households.

The various types of shocks and stresses to which households in southern Somalia have been subject in recent years include political (i.e. violent conflict and insecurity), environmental (e.g. drought, flooding and farm pest outbreaks), and economic (e.g. bans on the export of livestock, the devaluation of the Somalia Shilling and associated increased costs of imported commodities, and low market prices for locally produced cereals). Some of these shocks and stresses are further described in Section 6 in relation to their impact on agricultural production and cropping systems. Many of these shocks and stresses are not new to Somalia, which is characterised by an extremely harsh environment. Climatic uncertainty is such that livelihood, agricultural and seed systems all display features which contribute to their overall resilience.

The ability of households to maintain their resilience to external shocks, however, is considerably reduced when the household asset-base has become depleted. Asset-stripping is a feature of violent conflict, in which personal property and the very means of livelihood are forcibly seized or destroyed. In Somalia, the most consistent victims have been the Bantu riverine farmers: with few guns and no organised militia of their own, these groups have been virtually defenceless (Cassanelli, 1995). The inter-riverine area of Bay and Bakool was also a major battle ground in 1991–2 where contending militias swept back and forth, confiscating livestock and food supplies, looting water pumps and household items, and disrupting agricultural production and local markets (Cassanelli, 1995). The suffering of the Rahanweyn was such that the area became known as the ‘triangle of death’. The vulnerability of the Rahanweyn relates not only to their location in the inter-riverine area but also to their hierarchical and heterogeneous social structure, making it difficult for them to mobilise cohesive alliances among themselves to defend their region. Although strong social internal networks are a feature of Rahanweyn society, the absence of social networks outside the country contributed to their vulnerability in the height of the crisis (Cassanelli, 1995).

In Somalia, the ability to cope with shocks or stress is presently assessed mainly through the presence or absence of productive assets (i.e. crop production or livestock ownership), wild foods, and access to markets (both in terms of purchasing power and physical access relating to transport and security). In other words, economic indicators of wealth or financial capital, as well as natural and physical capital are presently considered in assessing vulnerability. A recent WFP study, however, suggests that the ability of households to cope with shock or stress should also be informed by their access to resources through social ties of kinship, place, friendship and religion, i.e. social capital (Narbeth, 2001). Given that social networks form an essential feature of farmer seed systems, the present study also incorporates an understanding of social

organisation and social networks into the assessment of seed security. Although social networks permit the re-allocation of resources between the haves and have nots, there is a limit to the effectiveness of these networks when the effect of political stability has been so widespread. Violent conflict and insecurity also reduces levels of trust which bind social networks together. By far the most visible effect of social networks in Somalia is the huge transfer of financial resources from migrants overseas to those living in the country.

In recent years, relief agencies working in complex political emergency situations have come to realise that vulnerability and the ability of a population to cope with shock or stress must also be defined politically, in terms of the social and political associations of a particular household or village in terms of tribal and clan alliances vis a vis the dominant structures of authority. Regional economies or livelihood strategies cannot be understood in isolation from regional politics; most local politics is very much about the struggle to control resources, and most political power is derived from control over those resources. Vulnerable groups often tend to be those who are excluded or marginalised by those who hold the political power to allocate resources. Although this report does not attempt to describe the dynamic power relations existing within southern Somalia in a detailed way, it is essential that the design of any relief, rehabilitation or development intervention must be informed by sound political economy analysis (e.g. the 'benefits-harms' analysis tools developed by CARE) so as to avoid any unintended impacts of projects. Although there is recognition by humanitarian agencies that interventions may have unintended consequences, actions very rarely seem to reflect the rhetoric. Relief seed acquisition from large-scale traders provides a good example, where the livelihoods of small-scale seed traders, most of whom are female, are potentially undermined by seed procurement strategies favoured by humanitarian agencies.

5. Cropping patterns in southern Somalia

Two very distinct cropping systems are recognised in southern Somalia, irrigated and rainfed. Both riverine farmers and agro-pastoralists undertake both types of cropping. Although riverine farmers cultivate larger rainfed areas than agro-pastoralists in the *Gu* season, agro-pastoralists plant greater irrigated areas in both *Gu* and *Deyr* seasons (Table 5). The literature reports a decline in rainfed farming by riverine farmers in recent years (see section 4.2), and the table suggests that this decrease may have affected poorer riverine farmers to a much greater degree than the better-off farmers.

Table 5 Food Economy Group and cropping patterns

FEG/wealth	Average cropped area, *Gu* 2000 (ha)		Average cropped area, *Deyr* 2000 (ha)	
	Irrigated	**Rainfed**	**Irrigated**	**Rainfed**
Riverine farmers	2.2	5.5	2.2	4.5
Better-off	2.8	10.2	3.2	6.8
Poorer	1.7	3.5	1.5	3.5
Agro-pastoralist	3.8	4.8	4.1	4.4
Better-off	4.5	7.8	5.7	7.2
Poorer	1.0	3.6	2.5	3.3

Irrigated agriculture is concentrated along the middle and lower stretch of the Shabelle river and some areas of the Juba river. Von Boguslawski (1986) reported that about 50,000 ha of land were irrigated under semi-controlled or controlled conditions in the mid-1980s. Rainfed agriculture, which is the main form of settled crop production accounting for about 77% of the total cultivated land, is concentrated in the inter-riverine belt. The three most important regions for rainfed sorghum production are Bay, Bakool and Gedo regions respectively.

Southern Somalia has a weak bimodal rainfall pattern, with the main planting rains being received in what is known as the *Gu* season from April to July, followed by the shorter and less reliable *Deyr* season from September to November. From the end of the *Deyr* to the start of the next *Gu* season is an intense dry period referred to as the *Jilaal*. The weak bimodal pattern is stressed, as some crops such as sorghum are sometimes ratooned from the *Gu* to the *Deyr* season. Ratooning avoids the need to re-plant the crop and hence reduces the overall seed requirement.

The irrigated areas are dependent on the flow of water in the Shabelle and Juba rivers which is affected by rainfall in the catchment areas of eastern and southern Ethiopia. Although water levels in both rivers rise during the *Gu* and *Deyr* seasons, the flood in the *Deyr* season is much longer and more reliable. This is reflected by the slightly larger areas planted under irrigation in the *Deyr* season (Table 5). It is important to recognise the importance of the more productive and reliable irrigated agriculture in an area where rainfed farming is problematic due to the limited and unreliable rainfall that is typical of semi-arid environments.

Despite the insecurity that exists, there is movement of goods and people both within and between the two areas. This has important implications relating to seed availability, as it is extremely unlikely that there will be total crop failure throughout the rainfed areas, and/or the irrigated areas.

Plate 4 Water pumped from the Juba River for irrigation, Gedo Region

Although the ability to supplement rainfall with irrigation confers an enormous advantage for crop production in such a harsh environment, water control is sub-optimal. Along the northern part of the Juba River, water has to be pumped up from the river and is then distributed to the fields by a system of earth channels and basins (Plate 4). However, there are problems with water distribution ranging from insufficient/inadequate infrastructure to variable water flow. Such problems influence the choice of crops and varieties grown by farmers in these areas. Gravity irrigation is possible along the Lower Shabelle River due to a system of barrages and weirs which control the water level.

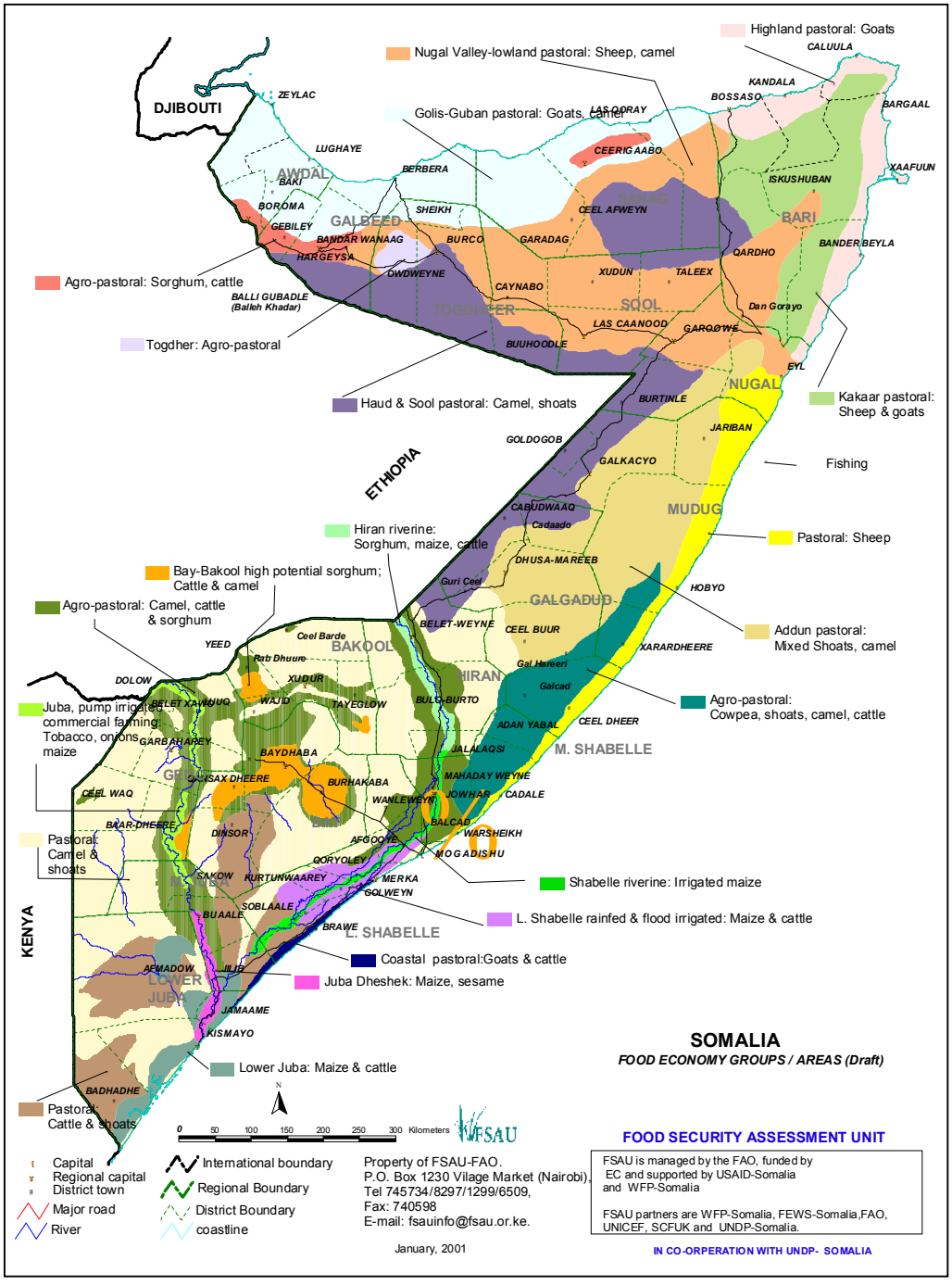
5.1 Crop and varietal diversity

Sorghum (*Sorghum bicolor*) is the dominant crop grown throughout the rainfed areas of Somalia, followed by cowpeas (*Vigna unguiculata*) and sesame (*Sesamum indicum*). Maize (*Zea mays*) is the second most important cereal grown in Somalia. The production of this crop is mainly in the flood irrigated areas where it has replaced sorghum as the dominant cereal. There are several reports of pearl millet (*Pennisetum glaucum*) being grown in rainfed areas of Somalia, but the crop is not reported in crop production statistics. Millet is even more drought tolerant than sorghum, and produces useful amounts of biomass that is palatable to livestock.

In traditional cropping systems where crops are grown primarily for subsistence needs, farmers grow a broad range of crops and varieties not only to meet their subsistence needs, but also to avoid the risk of total crop failure that can result from the many biotic and abiotic stresses that exist. It is estimated that 90% of the rainfed

area in Somalia is planted to sorghum, with the remaining 10% being divided between cowpeas, and maize. The survey further revealed that within each crop there is relatively little diversity of varieties: five different named varieties of maize and six of sorghum. These statistics would tend to suggest that the cropping systems are not very diversified, and that crop farmers are not well buffered against adverse biotic and abiotic stresses. Several factors determine the choice of crops grown in Somalia, and these will be examined individually to determine the vulnerability of the cropping system resulting from the apparently very narrow range of crops grown.

Figure 2 Map of Somalia showing Food Economy Groups
Source: Food Security Assessment Unit (FAO).



In Somalia it would be wrong to focus exclusively on the cropping system alone, as livestock play such a critical role in the wider farming system. Livestock are critical to the success of the farming system in Somalia because they are far less susceptible to the effects of drought than are rainfed crops. An important output of cropping systems is fodder that is used to supplement the natural grazing used to support the livestock population. Fodder production is less susceptible to drought than grain production as at least some fodder can be harvested even in years where grain production might fail. The importance of fodder as an output of the cropping system undoubtedly influences the choice of crops and varieties. This is well illustrated by the types of sorghum grown by farmers that are relatively low yielding in terms of grain production, but give high fodder yields because of their long stems. The introduction of short-stemmed sorghum varieties can potentially increase grain yield, but if farmers give equal weight to the value of fodder they are not necessarily superior. Crop-livestock interactions are therefore critical to agro-pastoralists, and have important implications for crop and varietal diversity.

As cropping systems become more commercialised, there tends to be a reduction in crop and varietal biodiversity as farmers grow crops and varieties in response to market demand, and use purchased inputs to overcome such problems as soil fertility, insect pests and diseases. The harsh agricultural environment in Somalia has resulted in the development of quite specialised agro-pastoral systems. The Food Economy Groups developed by the Food Security Assessment Unit illustrate this well (Figure 2). For example, north of Mogadishu along the coastal belt, farmers plant cowpeas because these are well adapted to the sandy soils and sparse rainfall of the area. In the inter-riverine areas farmers cultivate sorghum on the heavier clay soils while areas with lighter soils are largely left uncultivated for grazing. Because of these quite defined agro-ecological niches that exist, trade networks have developed to move agricultural products between different areas. For example, pastoralists who range across the arid landscape with their animals exchange livestock and livestock products for grain produced in those areas where crop production is possible. The demand for food from large urban markets such as Mogadishu, which are dependent on food supplies from both within and outside the country, have also stimulated trade.

No outside observer can fail to be amazed at the trading ability of the Somali people, but this has evolved as a matter of necessity as a result of the harsh environment in which the Somalis live. It is instructive to review the post-independence history of Somalia, as inappropriate government policies in the early post-independence period resulted in widespread market failure for much of the agricultural sector, especially grain marketing. By the mid 1980s, market reforms had started to be introduced, and there was a dramatic although short-lived increase in crop production as forced selling to the government marketing board at controlled prices was abolished. With the collapse of the central government and the start of the civil war, large numbers of people were displaced, and trade networks disrupted. There has undoubtedly been an improvement in the situation since the mid 1990s, but the unstable political environment continues to have far reaching consequences for agricultural marketing, and hence crop production in both irrigated and rainfed areas. Another factor that has reportedly reduced the incentives for agro-pastoralists to grow crops is the widespread distribution of relief food both inside and outside the country. Some fieldworkers claim that this has reduced demand for locally produced grain reducing prices to such low levels that some farmers did not bother to plant in the 2000 *Deyr* season.

A further factor affecting the level of crop and varietal biodiversity is the relative geographical isolation of areas in southern Somalia where crop production is practised. These areas are surrounded by large tracts of arid and inhospitable land traversed by nomads who have little interest in crop and varietal diversity. Crops and varieties in traditional societies tend to be disseminated through informal mechanisms of farmer to farmer exchange, and trade networks. This is in contrast to the situation in north-west Somaliland, where crop production takes place near to the Ethiopian border, a country well renowned for its crop and varietal diversity, where there is continuous movement of people and goods between the two countries with the result that agro-biodiversity is much greater.

There can be no doubt that the farming systems of Somalia are well developed to cope with the harsh climatic environment. However, farmers have had to cope with the added dimensions of poor government policies in the post-independence period (see Shirwa, 1993), followed by uncertain market reform, a devastating civil war, and the collapse of the nation state all within the short space of 40 years. What might have been an appropriate farming system before these cataclysmic events may well be inappropriate now. One consequence of the civil war was the widespread displacement of people and loss of physical assets including livestock. Where crop production might have been just one component of the farming system before the civil war, there is evidence that it has assumed much greater importance for people who have suffered asset loss. In such circumstances, the limited crop and varietal diversity is likely to be a constraint to increased crop productivity, and human welfare as the crops grown are mainly cereals which cannot satisfy the full dietary needs of people especially in the absence of livestock products such as meat and milk.

5.2 Maize

Maize (*Zea mays*) is the dominant cereal grown in irrigated areas of southern Somalia. It is hardly surprising that maize is favoured over sorghum in these areas as the alleviation of moisture stress by irrigation should result in significantly higher yields when compared with sorghum, provided that soil fertility is adequate. Maize also has the added advantage of being much less susceptible to bird attack which is an important consideration where birds are a major threat.

Maize is the one crop in sub-Saharan Africa where the formal seed sector has had an impact. Since the advent of liberalisation, which has resulted in the privatisation of parastatal seed companies, the formal sector has focused on supplying hybrid maize seed on commercial terms to farmers. In southern Somalia, there is no formal seed sector (see Section 7.1) and as a consequence farmers have not been able to access hybrid maize seed. In the 1970s and 1980s, an improved variety of maize known as ‘Somtux’ was introduced and disseminated throughout southern Somalia, but as maize is a cross-pollinated crop the varietal integrity of Somtux will have been totally compromised. This might not be a problem in areas with a long history of maize cultivation, but this is not the case in Somalia, as in other countries of Africa, where the genetic pool for maize is not very broad.

Varieties of maize cultivated by sample farmers included white maize, *jaf gaduud*, *galley cad*, *abuur guri*, and *baidoa*. Some survey forms also listed 'short cycle' maize, which may well correspond to one of the named varieties. The low maize yields reported from irrigated areas of southern Somalia confirm that this is potentially a problem, as yields just above one tonne per hectare from such areas are pitifully low. Investments in the rehabilitation of irrigation infrastructure need to be accompanied by improved agronomy to realise the full potential.

5.3 Sorghum

The dominant race of sorghum in Somaliland is Durra[4], with tight headed panicles held on a goose neck shaped peduncle. The goose neck trait is inherited through a single gene, and is commonly found in Durra types.

Plate 5 A farmer with a sorghum variety that had been originally provided through relief seed distributions following the return of displaced farmers to their villages in 1994–5.

All the local sorghums are daylength and photoperiod sensitive, carrying a single panicle at the end of a tall stem. Introduced short-duration varieties are short and have the ability to tiller so that one plant may produce several panicles. However, short-duration types do not produce as much biomass, which is a disadvantage to farmers

[4] There are five main races of sorghum: *Bicolor* – most primitive race; *Kaffir* – not highly evolved and mainly found in southern Africa; *Guinea* – not highly evolved and mainly found in west Africa; *Durra* – Highly evolved and found mainly in the Horn of Africa, the Middle East, and India; *Caudatum* – Highly evolved and found mainly in the African interior.

who place a high value on stover production for supplementary feeding to livestock. CINS (2000) have described the genealogy of sorghum varieties collected in Gabiley District, Somaliland. Field visits found three introduced varieties; Serena referred to as *Karmiichi*, GP 148 and Martin, both of which were called *Fetich*. GP 148 and Martin were identified as promising in the early 1960s, while Serena has been widely distributed through relief programmes throughout the region.

In southern Somalia, the survey revealed the following descriptions of sorghum: *gaduud*, *barsane*, *abur cas*, *cadow cad*, *nur nurts*, *fududug*, and *cadey*. Both red and white sorghum were also named; these are thought to correspond to *gaduud* and *cadey* respectively.

The presence of head smut (*Sphacelotheca reiliana*) and long smut (*Tolyposporium ehrenbergii*) posed problems, and stemborers were observed to cause considerable damage. Smut diseases are spread by spores which are carried over from season to season in the soil, and are also seed borne. Seed treatment with fungicides is highly effective at eliminating the transmission of the disease through seed, while the reservoir of spores in the soil can be reduced by removing infected heads from the plant and burning them.

5.4 Cowpeas

Cowpeas (*Vigna unguiculata*) are the dominant legume grown in rainfed areas of southern Somalia. During the field visit, three varieties were identified: one a small-seeded type referred to as *bobodo*, matures early after which the pods shatter dispersing the seed on the ground around the plant. The crop is said to establish itself from the shattered seeds so that farmers do not need to re-establish the crop every season. The second variety, called *Degelo*, matures later, does not shatter and has much larger pods containing big red seeds. A third variety was distributed by a relief agency, that sourced the seed from Lower Shabelle. This variety known as *Abgaliti* or *Abgalley* is now considered as a local variety in some areas. Cowpeas are harvested and consumed both as a green vegetable, and once the seeds have matured. Although the crop is notorious for its susceptibility to insect pest attack in many environments, the dry climate in southern Somalia results in reduced pest attack. However farmers have trouble storing the grain as it is highly susceptible to attack from bruchids (*Callosbruchus chinensis*), and resort to storing grain in air tight containers such as 200 litre drums. There is a marked difference in price between *bobodo* and *Abgaliti* with the former fetching only half the price of the latter (SSh 500/- versus SSh 1000/- in Baidoa market in December, 2000).

Plate 6 Cowpeas intercropped with sorghum on a rainfed farm

5.5 Sesame

Sesame is an important cash crop that is widely grown throughout southern Somalia, and is crushed for oil. There has been some research done on the crop in southern Somalia before the present troubles, but the extent and impact of this research is not well documented. As the crop is a prolific seeder and the seed rate very low, the availability of sesame seed is rarely a problem. There is good potential to increase the returns to sesame cultivation by increasing awareness among sesame traders of the high value market for confectionary grade sesame (large white seeded types) instead of the small black seeded types that are only good for oil production. Although there is a good demand for sesame oil, the relative price when compared to confectionary grade sesame is less than 50%. In Baidoa, there were a number of oil milling plants in the market which crush sesame and groundnut for oil.

6. Insecurity, shocks and stresses: Impacts on livelihoods and agricultural systems

Different types of disaster affect farming communities in different ways. Drought, for example, tends to impact hardest on the most marginal households within a community (e.g. landless labourers, migrants with weak entitlements to local social security): an implication is that the means of seed acquisition will not necessarily be disrupted, provided the local population is not driven to seek aid in camps. War, on the other hand, generally has more serious consequences for livelihoods and agricultural systems in that it targets the very means of production.

The type, timing, duration and intensity of a crisis are features that influence the impacts on local livelihoods and the response of farmers. The timing and duration of a crisis, particularly those with a rapid onset, can be crucial in terms of the level of disruption to agriculture. In war situations, the broad scale of crop and seed losses can be assessed in terms of the actual time that households and farmers are prevented from farming and at what periods of the agricultural calendar (i.e. planting, weeding, harvesting) (Longley, 1998; Grunwald, 1999).

The impact of the war in southern Somalia on agriculture and rural livelihoods is complex and has been further compounded by the natural hazards of drought and flooding. The nature of these shocks and stresses and their impacts on agricultural livelihoods are considered below. Farmers have been affected by displacement and loss of financial and physical assets; agricultural production has been hampered by pests and by reduced access to land, labour, and other inputs; and trade/market activities (whether for sale of agricultural produce or purchase of agricultural inputs or more general household consumption requirements) have been affected by damage and disruptions to communications infrastructure, the micro/macro-level economic situation and price changes.

6.1 Political shocks and stresses: Conflict and insecurity

Widespread insecurity in Somalia dates from the final years of the Siad Barre regime (1988–91) when government troops were sent against the civilian populations linked to various clan-based opposition movements. The period 1991–2, after the ousting of Siad Barre and prior to the arrival of the UNOSOM forces in December 1992, witnessed the forcible and systematic displacement of tens of thousands throughout southern Somalia. The regions of Bay and Bakol were the worst hit during this period, 'when rival militia carried out a 'scorched earth' policy with deliberate destruction of infrastructure, theft of crops, underground grain pits and seed stocks, killing and theft of livestock, destruction of towns and villages, and laying of mines (FSAU et al., 1999: 3). Thousands of people from Bay and Bakol regions died at this time, and thousands more fled to relief camps in Baidoa and Hoddur. Baidoa was at the epicentre of the 1992 famine and became known as the 'city of death'.

This massive displacement of agro-pastoralists within the sorghum belt of Bay and Bakol was such that agricultural production was effectively suspended for more than one season. Whether displaced to the relief centres or eking out a living in the bush,

agro-pastoralists were unable to access their land for farming, and were stripped of their livestock and other assets. The severity of the crisis was made worse by drought, as described in Box 1. When eventually people were able to return to their villages (generally after at least one whole year), access to labour was the main constraint to agricultural production. Without money to hire labourers, farmers relied on village work groups called *goob* which are composed mainly of young men (20–30 individuals, but can also include women) and provide support for agricultural tasks that must be carried out in a timely manner – i.e. weeding and harvesting. *Goob* work only for a meal but do not provide assistance in clearing new land because this is seen as a personal benefit (Helander, 1996) and it is a heavy task that can be undertaken by the farm family over a period of time. The case of Ali (Box 1) illustrates how agricultural recovery occurs over several seasons as the household is able to re-build its asset base and gradually increase its access to labour.

In the riverine areas, the violent conflict of 1991–4 was manifest in the competition for fertile farm land (Cassanelli, 1995) and also served to heighten the tension over water and pasture between farmers and herders (Unruh, 1996). Though much of the land that was seized by various militia had previously been appropriated by well-connected politicians during the Siad Barre years, small farmers lacking security of land tenure and without the means to defend themselves also suffered in the scramble over the rich agricultural land in the Juba and Shabelle valleys. The widespread looting of water pumps further restricted agricultural productivity.

While 'scorched earth' tactics and widespread population displacement have a very visible impact on livelihoods and agricultural systems, the less visible effects of on-going low-level insecurity can also be significant. Local and regional markets often have to adapt to changes in the security situation. With the problems along the main Baidoa-Mogadishu road, for example, large-scale grain traders have often been forced to re-route via Dinsor, which involves a

Box 1 The experience of Ali, a farmer from a village in Baidoa District

Ali is about 35 years in age and head of a household of three people. He presently owns a small village shop and some livestock (5 goats and 1 cow) and appears to be relatively better-off, though did not give or receive *zaka* this year. Ali has been living in the village since birth and received land from his father. He has never left the village to live elsewhere, except during the time of the civil war, when he was forced to hide in the bush for two years. The village fled after the *Gu* harvest of 1992. Ali took his livestock with him but everything else was left behind and subsequently looted or burnt. While living in the bush, it was not possible to farm; people were able to access food by trading at night, moving with donkey carts to exchange with others. However, after one year, there was drought and severe food shortages. Ali's cattle were raided and he was left with nothing. After UNOSOM, people were able to return to the village in early 1993, at the start of the *Gu* season. When Ali first returned to the village, he planted only one farm on 40 *ta'ab* (*Gu* 1993). The output from the 1993 *Gu* was sufficient to sell some sorghum for cash so that in the 1993 *Deyr* season he could plant two farms by hiring labourers. After planting for 2–3 seasons Ali had produced enough to purchase one goat, and after another few seasons he bought two more goats. In total, Ali owns four farms, of which three were planted this season (*Deyr* 2000): 60, 40, 30 *ta'ab* respectively. In the previous *Gu* season, Ali had planted only one out of his four farms. The other three had been left fallow for three years due to lack of cash to pay for manpower.

considerably longer distance over very poor roads in order to reach Mogadishu. This inevitably has price implications in which urban dwellers may find it cheaper to purchase imported food rather than grain from the sorghum belt; the consequence of which is that there is a reduced demand for locally-produced grain and farmers have limited outlets through which to sell their produce. Changes in both local and inter-regional trade patterns will often result in changes in agricultural production and cropping patterns.

Low-level insecurity and the ever-present threat of attack may also lead to changes in household grain management practices. Rather than storing large quantities of grain in underground pits and risk having it stolen or destroyed, for example, households may prefer to sell their output at harvest time and then use the cash to buy food as required. Although it was reported by some NGO fieldworkers that farmers faced with insecurity also altered their seed management practices – preferring to acquire seed at planting time rather than save their own seed from the previous harvest, no evidence of this was found in the areas visited. Given the relative frequency with which farmers acquire seed off-farm, such a change in seed management due to insecurity would not impact much on overall seed systems.

6.2 Environmental shocks and stresses: Drought, floods and farm pests

Localised drought is a frequent occurrence in the semi-arid climate of Somalia: rainfall statistics from the meteorological station in Baidoa suggest that since the 1920s there has been a bad season every fourth or fifth year (van der Poel, 1978, cited by Helander, 1996). Not surprisingly, agricultural systems are well-adapted to dealing with such events: underground grain pits are used to store quantities of food that are sufficient to last more than five years. Even in the riverine areas, patterns of land use are such that farmers aim to access different types of land to avoid risk and ensure crop production under different climatic conditions, as illustrated by Bestemann (1996: 32):

> During droughts, *dhasheeg* land was critical because its soils retained water better and longer. One commonly heard the expression, 'There are no droughts on *dhasheeg* land,' a significant thought in an area where droughts are regular occurrences. During and after floods, farmers preferred *doonk* land because the floodwaters drained much more quickly from the higher land, enabling earlier cultivation than was possible in the *dhasheego* and reducing the risk of disease-causing bacteria from water standing too long in *dhasheego* after a heavy flood.

Despite such well-developed coping mechanisms, when climatic disasters occur on a large scale and/or when households are particularly vulnerable due to previous asset loss, the consequences of drought or flooding can be severe, as in Bay and Bakol regions in 1992–3 (Box 1). The 'Spaghetti Famine' of 1965 is often cited as the most devastating drought within living memory; the Italian colonial authorities responded to the shortage of local food supplies by importing and distributing spaghetti as food aid. Large parts of Somalia were also affected by drought in 1973–4, when the 1974 *Gu* season was estimated to be 40% of normal, the *Deyr* crops failed altogether, and livestock losses were high (Samantar, 1989). The government initially set up relief centres and then, with international assistance, later established three agricultural

settlements for the re-location of over 100,000 nomadic pastoralists. Although the adoption of cultivation by pastoralists in response to drought is known to occur in Somalia, it is thought to take place as a supplement to pastoralism and not as a replacement for it (Samantar, 1989). Whether the Marehan pastoralists who are adopting agriculture along the river valleys regard it as a temporary or permanent change in livelihood strategy remains to be seen.

Severe flooding affected the Juba and Shabelle River valleys at the end of 1997 and early 1998, causing the deaths of 1,800 people and the displacement of 230,000 other (ICRC, 1998). In Lower Shabelle and Lower Juba, water remained stagnant for weeks, leaving fields submerged and villages inaccessible. Harvests were poor and many underground grain stores were destroyed, leaving people extremely vulnerable.

Although not often documented in the literature concerning the impacts of war on agriculture, the problem of farm pests can have a very adverse effect on agricultural livelihoods. Visits to farms and discussions with farmers revealed very serious problems of sorghum smut, army worms, stem borer and birds. Although *Quelea quelea* birds are usually expected to affect rainfed farming only in the *Gu* season, farmers complained that this year they had also been affected by birds in the *Deyr* season. Government schemes previously assisted farmers in the control of pests, but these had long since ceased to operate. Labour shortages further limit a household's ability to effectively control pests. At the time of writing (early *Gu*, 2001), an infestation of mole crickets – which tends to occur once every 15–20 years – was affecting crop establishment in the area near Baidoa.

Table 6 Main production problems cited by farmers for all fields cultivated: incidences for each problem as a % of all problems and N*

Season	Drought	Insect pests	Birds	Weeds	Live-stock	Other[5]
Rainfed						
Gu (n=509)	42%	32%	16%	4%	4%	2%
Deyr (n=847)	37%	34%	17%	8%	3%	1%
Irrigated						
Gu (n=237)	13%	67%	2%	12%	3%	3%
Deyr (n=472)	16%	61%	2%	11%	5%	5%

N* refers to the total number of incidences of all problems

Table 6 records the main production problems that affected both rainfed and irrigated farms for each season in 2000. Insect pests are by far the most serious problem on irrigated farms, particularly in the *Deyr* season. Although drought is the most often cited production constraint on rainfed *Deyr* farms, this is closely followed by insect pests, which constitute the main problem in the *Gu* season. The main insects affecting sorghum production are stem borer and army worm.

[5] Other refers to plant diseases, lack of irrigation inputs, and lack of tractors.

6.3 Economic shocks: Changing market prices

The post-independence history of southern Somalia is characterised by inappropriate agricultural policies (Shirwa, 1993), resulting in widespread grain market failure. Poor agricultural production caused by economic stresses is therefore nothing new to Somalia. More recently, economic shocks include changing prices due to the livestock ban and the influx of relief food supplies.

Associated with the livestock ban is the reduced availability of foreign currency, devaluation of the Somali Shilling, and uncontrolled influxes of newly printed Somali Shillings (FSAU, 2001). Since September 2000, the value of the Somali Shilling has fallen by about 50%, directly increasing the cost of imported commodities and indirectly increasing the cost of some locally-produced goods. With the costs of rice, pasta and sugar becoming more expensive, people in urban centres have been switching from imported food to cheaper local grains. This increase in demand, together with higher fuel and transport costs, caused a sudden rise in the price of local cereals in February 2001, after several months at stable low prices. Although farmers with sufficient grain reserves will not be adversely affected by these price rises, poorer farmers without sufficient cereal stocks will be more vulnerable to food price increases (FSAU, 2001).

Farmers using pump irrigation are directly affected by the currency devaluation due to the rise in fuel prices. Although some farmers may be temporarily buffered against this rising cost by sharecropping arrangements in which the pump owner covers the cost of fuel, the additional costs to the pump owner will eventually have an impact on the farmers.

The inevitable response of relief agencies to these shocks is the distribution of relief supplies. However, the widespread distribution of relief food both in Somalia and just over the border in Ethiopia may also negatively impact on farmers. With plenty of relief food available, the demand for locally produced grain may be reduced, causing a fall in the farmgate price of local grain. The low price of locally produced grain was such that some farmers reportedly did not bother to plant in the 2000 *Deyr* season. Whilst relief agencies argue that the amount of relief food supplied to Somalia is too small to cause such market distortions, the situation certainly deserves greater examination.

7. Seed systems and seed security

Three distinct types of seed systems are briefly introduced this section: (i) the formal seed system, as it existed pre-1991; (ii) the local seed system, through which farmers access most of their seed (also referred to as informal seed system), and (iii) the relief seed system, as developed by relief agencies. While Sections 8 and 9 discuss the local seed system and relief seed system in more detail, the present section draws a number of comparisons between these three different seed systems and corrects some commonly-held misperceptions.

Although the distinction between the three different seed systems is useful for descriptive purposes, the need for better integration is widely recognised, both in development contexts and in 'emergency' situations. The mechanisms for such integration will always remain elusive so long as the formal and informal seed sectors continue to be treated as distinct. A new analytical framework is therefore presented in Section 10.2 to assist in identifying entry points for innovative seed interventions that are appropriate to the needs of farmers.

7.1 The formal seed system, pre-1991

Although this report covers the post Barre period, it is instructive to review the seed sector as it existed in Somalia when there was still a functioning government. It is important to note that at this time the seed sector generally referred to what is now known as the formal seed sector, i.e. national or even private institutions involved in the development, multiplication, processing and distribution of improved crop varieties to farmers. Despite the fact that informal seed exchange mechanisms have always played a much more important role than the formal sector in meeting the seed needs of farmers throughout Somalia, the ways in which farmers managed their seed resources was rarely considered by formal sector researchers. It is ironic that despite the demonstrated success of the informal sector, it is hardly mentioned in the literature for the pre-1991 period.

The first attempts to multiply seed were undertaken by the Government under the Agricultural Research Department in the Ministry of Agriculture. There were three research stations; the Central Agricultural Research Station in Afgoi, the Sorghum Improvement Project at Bonka (near Baidoa in Bay Region), and Aburein Research Station near Hargeisa. Research on maize and sesame was undertaken at Afgoi, while sorghum research was focused on the rainfed areas in Bonka and Abuerin. The Faculty of Agriculture of the Somali National University collaborated with the Agricultural Research Department in crop improvement. An FAO/DANIDA supported Seed Production and Improvement Project started in 1981, and established a seed multiplication farm at Afgoi for the production of foundation seed. Breeder seed production was the responsibility of the research station, which was then handed over to the seed multiplication farm to be multiplied into foundation seed. Some certified seed was then produced by contracted farmers, for use by the FAO Seasonal Credit Project (Sikora, 1985). By 1987, a National Seed Service had been established, although Ekin (1990) mentions that one of the obstacles in achieving the objectives of

phase II of the Seed Production and Improvement Project was the failure of the Ministry of Agriculture to accept the need for a National Seed Service.

In terms of crop improvement, the major success was the release of the composite maize variety 'Somtux' in 1981. During the period 1981–9, national maize yields rose from 600kg to 1,100kg ha^{-1}, some of which can probably be attributed to the introduction of improved germplasm.

Plate 7 Mr. Addou Magan, former director of the Bonka Research Station, showing what is now left of the Station.

Despite investments made in formal seed production, the results in terms of quantities produced were relatively modest. Only 3,715 MT of certified maize seed was produced over the period 1984–9 when the estimated annual maize seed requirement was 5,000 MT. Even then, there were concerns at the quality of seed produced, as breeder seed stocks were not maintained due to lack of cold storage facilities at the Central Agricultural Research Station, which was therefore obliged to multiply seed every year (Ekin, 1990). Apart from maize seed, the only other crop that was multiplied in any quantity was sesame, but only 13.7 MT of foundation seed were produced from 1984–90, and there are no records of this being advanced further to certified seed. What certified seed was multiplied, only 30% was marketed through the private sector, with the remaining 70% being sold to the Commercial and Saving Bank of Somalia. It was not until 1988 that a cost recovery policy was introduced.

The history of the formal seed sector in Somalia is not very different to that of many other countries in sub-Saharan Africa where government controlled seed operations fell victim to 'government failure' (see Cromwell, 1990; Tripp and Rohrbach, 2001). Since the early 1990s, most governments have divested their interests in seed to the private sector which has tended to concentrate on hybrid seed, predominantly maize, based on economic considerations.

Seed produced by the formal seed sector is differentiated from grain by the way in which it is managed from planting through to the point of sale. Countries with a formal seed sector have established standards (enshrined in seed legislation) which

must be adhered to if the product is to be marketed as seed rather than grain. These standards are designed to ensure that seed is of acceptable quality in terms of varietal integrity (will the plant that grows from the seed be true to type) and physiology (germination percentage being most commonly used to determine whether the seed is viable or not). In the farmer seed system, seed is not differentiated from grain through the application of established standards, but by individual farmers who may select certain plants in the field for harvesting specifically as seed, and/or by separating grain to be used as seed at some stage after harvest. In the farmer seed system, seed production is integral to crop production, whereas in the formal seed sector seed production is carried out separately from grain production.

The formal seed sector is dependent on research and development for the supply of new varieties. Farmers relying on the farmer seed system may acquire new varieties from the formal seed sector, by local selection, through social networks, from traders bringing grain into an area from outside, and from humanitarian agencies.

7.2 Common misperceptions in the comparison of formal and farmer seed systems

When comparing seed from the formal and farmer seed systems (Table 7), there are a number of common misperceptions that need to be corrected. The first misperception is that farmer saved seed is not of high physiological quality in terms of germination percentage and physical purity when compared to seed from the formal seed sector. Very rarely do farmers complain about the quality of their own saved seed or that sourced locally as farmers have well developed seed storage systems, and are most happy planting seed of known origin. It is true that the genetic purity of farmer saved seed can be variable compared to seed from the formal seed system, but purity is not always an important criterion for subsistence farmers. In commercial agriculture where harvesting is mechanised, uniformity is important to ensure that the crop ripens evenly so that the whole field can be harvested at one time.

The second misperception is that varietal integrity and seed quality deteriorate over time when seed is recycled from season to season. Farmers do not perceive this to be the case, and the fact that crops were first domesticated, and subsequently improved from such practices suggests that this is patently not true. There are exceptions to every rule, and the farmer seed system cannot maintain varietal integrity of hybrid crops seed of which is produced through specialised procedures. However, hybrid crops are not being grown in southern Somalia, and for the crops presently being grown by farmers there is little justification to intervene with the farmer seed system on the basis of seed quality or varietal integrity.

The third misperception is that because poor farmers very often do not have own saved seed, there is a problem of seed availability. Such farmers routinely access seed through different mechanisms including relatives, friends, neighbours, begging, and local markets. Problems arise for poor farmers when they have poorly developed social networks and/or few assets which can be exchanged for seed. The problem is then one of access not availability. These issues are further elaborated below.

Table 7 Comparison of seed systems

Formal seed system	Local seed system	Relief seed system
Seed multiplication separate from crop production	Seed production integral component of crop production	Seed procured is often reconditioned grain. Where seed multiplication is carried out, this can either be part of crop production (e.g. seed swaps) or separate from crop production (multiplication projects).
Quality control standards exist	Quality of seed is good	Quality of seed is highly variable
Narrow range of improved varieties	Can manage a wide range of varieties	Narrow range of varieties
New varieties through agricultural research and development	New varieties through farmer selection and social networks	Growing preference among agencies for local varieties over improved types
Seed acquired for cash through network of wholesalers and retailers	Multiple options for seed acquisition	Free seed distribution – often late
Depends on highly commercialised agricultural system	Effective for commercial or subsistence farming	Intended to assist subsistence farmers
Quality control regulated externally through seed legislation	Regulated through social obligations of 'good neighbourliness	No effective regulation
Cost of seed at least five times cost of grain	Price of seed not very much higher than grain	Value of seed is often a fraction of the overall farm gate cost
Not able to function under insecurity	Flexibility to adapt to external shocks	Designed for emergency situations

7.3 Seed security

A food security framework provides a useful starting point to help in understanding issues related to food security. The concepts used in the food security framework can equally be used to examine similar issues related to seed security. These are outlined in Table 8, and relate to seed availability, seed access and seed utilisation.

Table 8 A draft seed security framework to help in developing effective seed aid activities

Parameter	Food Security	Seed Security
Availability	Sufficient quantity of appropriate foods are within reasonable proximity to people	Sufficient quantity of appropriate seeds are within reasonable proximity to people
Access	People have adequate income or other resources to purchase or barter for appropriate foods	People have adequate income or other resources to purchase or barter for appropriate seeds
Utilisation	Food is properly used (food processing, storage, nutrition, child care, health and sanitation practices).	Seed is of acceptable quality (genetic, phytosanitary and physical quality).

The two most common justifications for providing relief seed are that there is a problem of seed availability, and/or farmer saved seed is of poor quality. As the next section will illustrate – with the exception of some areas in 1991–3 – neither of these situations has generally been the case for southern Somalia. Furthermore, given that problems of seed accessibility will always exist for at least some households, the seed security framework presented above provides a very blunt instrument in understanding problems that are thought to relate to seed. In order to provide sharper insights into seed security at household level, it is necessary to incorporate an understanding of vulnerability into a seed security framework. This is addressed in section 10.2, but it is first necessary to describe the ways in which farmers manage their seed resources.

8. The farmer or local seed system

Under 'normal' conditions, most farmers are usually able to save and use seed from a previous harvest. The amount of seed saved is determined by several factors including the size of farm to be planted in the next season, and the need for multiple plantings where stand establishment might be affected by drought, pests, diseases or a combination of factors. Only when there is a necessity (e.g. lack of own-saved seed due to localised drought, poverty or insecurity) or an incentive to acquire fresh seed (e.g. of a new variety) will there be a demand for seed from off-farm sources.

Since a significant proportion of off-farm seed demand in African farming communities is poverty-related, and poverty is generally accentuated in situations of chronic instability, the initial survey analysis involved differentiation by poverty levels. In general, the demand for off-farm seed resulting from poverty is caused by a low harvested output (often related to small farm size), in turn due to various reasons – labour shortage, illness, shortage of land or other resources. Even with a reasonable harvest, the poorer households in a community may have to sell their seed stocks for cash or consume them as food. As will be seen below, the contrasts between better-off and poorer farmers in terms of seed saving and seed acquisition were not as great as might be expected.

As well as being poverty-related, the demand for off-farm seed also stems from environmental factors and the relative frequency of localised drought. Whether seed is acquired from the previous harvest or from off-farm sources, environmental factors and the frequency with which rains might start and then stop requires that the planting of seed might need to be repeated up to four or five times in the same season. Farmers must therefore plan for these repeat plantings by having access to larger quantities of seed than would otherwise be necessary.

8.1 Farmer seed management practices

8.1.1 Seed selection

In Musubayo village (Bay District) both men and women are involved in seed selection: when cutting the panicles, larger, healthy heads with large healthy seed are put in a different pile from the other heads which will be used as grain. In another village, farmers described how panicles intended to be used as seed are cut with a longer stalk than those to be used as grain. By cutting the sorghum in this way, the farmer is easily able to distinguish panicles to be used as seed and those to be used as grain. In selecting seed, farmers described how they avoid heads affected by smut. The seed panicles are then brought to the village and threshed and the seed is handed over to the wife to store.

8.1.2 Seed storage

The amount of seed saved after harvest is determined by the size of the land to be sown the following season, and is generally about four times the amount required for

a single planting. The seed is mixed with ash and is placed either in sacks, drums, plastic containers or clay pots (*kut* or *ashung*), depending on the amount of seed and the containers available (Plate 8). Data collected by IPGRI reveal that seed is often kept on the roof of the house between the *Gu* harvest and the *Deyr* planting season (Table 9). Women are responsible for looking after the seed in the house. The seed for different farms may be stored separately, particularly if different wives are responsible for different farms. One woman interviewed described how she mixed the seed with sand to prevent it from being eaten by her children.

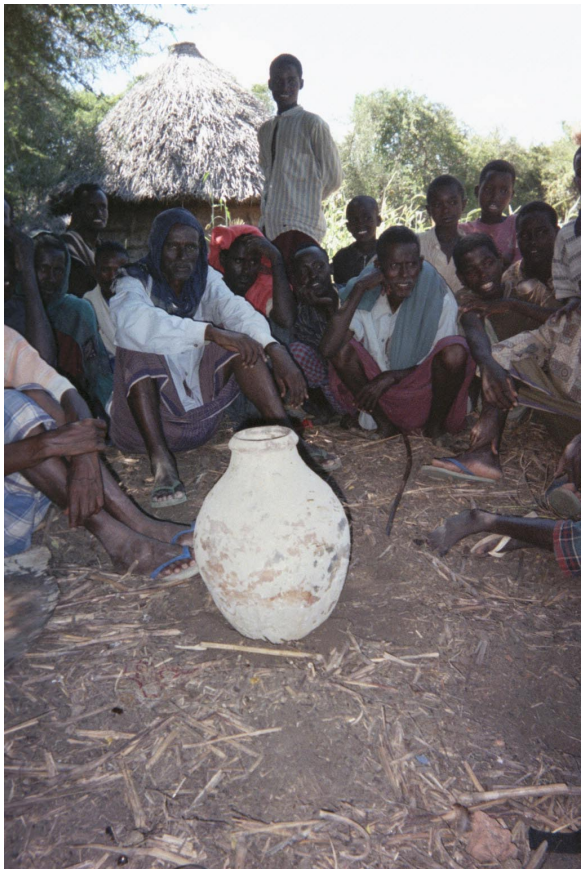


Plate 8 A clay pot known as kut or ashung used for seed storage

Ideally, farmers aim to maintain stored seed throughout the year, replacing stocks with fresh seed after each harvest season. Thus, some of the seed selected from the *Gu* season harvest will be used for planting (and re-planting) in the *Deyr* season and some will be kept until the *Deyr* season harvest when it will be replaced with seed selected from the *Deyr* season harvest. Similarly, some of the seed from the *Deyr* season harvest will be sown in the *Gu* planting season and (ideally) some will be saved up to the *Gu* harvest and then replaced with seed selected from the *Gu* season harvest. In this way, even in the event of a harvest failure, farmers will have seed stored from the previous harvest for planting. In practice, however, not all farmers are able to save seed in this way throughout the year: survey results on seed-saving practices are provided in the following section.

It is important to note that the timing of the seasons is such that the period between the *Gu* harvest and the *Deyr* planting season is approximately one month (but can be

as little as ten days), whereas the period between the *Deyr* harvest and the *Gu* planting seasons is approximately four months. Although the precise time period will vary according to the start of the rains, the period in between *Deyr* and *Gu* is considerably longer than that from *Gu* to *Deyr*. As will be shown below, some farmers find it difficult to save seed over the longer *Deyr-Gu* period.

Plate 9 200 litre-drums in a house used for seed storage

Data collected in 1996–7 by IPGRI reveal that the seed storage methods vary for the different seasons, as illustrated by Table 9. The most common method of seed storage for both seasons is in a sack mixed with ash inside the house. For maize, the cobs selected as seeds (with or without the ear removed) are commonly placed on the roof of the hut, where the sun ensures that the seeds are kept dry. Farmers claim that the viability of maize seed remains high for eight months when stored in this way (Friis-Hansen, 2000).

Table 9 Methods of seed storage by season

Figures given refer to percentages of households. Crop types are not specified.

Method of storage	Short term (from *Gu* harvest to *Deyr* planting)	Long term (from *Deyr* harvest to *Gu* planting)
On the roof	30%	0%
In drums	3%	45%
In sacks with ash inside a house	64%	53%
In plastic containers	3%	2%
Total	100%	100%

Source: IPGRI/CINS Socio-economic and farming systems baseline survey 1997. Number of households = 266

For longer-term storage (i.e. from *Deyr* harvest – *Gu* planting), seed is often stored in a sealed 200 litre drum. In order to keep the seed dry and prevent pest attacks, the hand selected seed are mixed with ash before stored in the drum. The drum is only opened immediately before sowing. At the Baidoa workshop it was noted that such drums can heat up if left in the sun, causing a loss of seed viability. For this reason, it is necessary that drums are kept in a shady place.

8.1.3 Planting

Data collected by IPGRI in 1996–7 reveal that 84% of households conducted seed viability tests before sowing their own saved seed. Farmers conduct germination tests by planting seeds in pots, watering them daily and counting how many of the seed planted have germinated. If 4–5 out of 10 seed do not germinate, the farmers will not use the seed and will instead buy seed from the market. At least eight or nine out of ten seeds should germinate for the farmer to plant the seedlot (Friis-Hansen, 2000). Once seed has been sown, if the rains stop or if some fails to germinate, the field will be subsequently replanted or gaps filled in. The excess seed is maintained up until the harvest time and will be consumed after the harvest, when it is replaced with fresh seed from the new harvest, as described above.

8.1.4 Seed saving and seed acquisition

Approximately half the farmers interviewed used own-saved seed in the *Gu* 2000 season, but this percentage increased significantly in the following *Deyr* season (Table 10), reflecting the relative ease of saving seed from *Gu* to *Deyr* as compared to *Deyr* to *Gu* (or even *Gu* to *Gu*). Slightly more farmers used their own sorghum seed compared to maize. The *Gu* 2000 season was relatively good in terms of both rainfall and security, and it is therefore not surprising that for the following *Deyr* season a greater proportion of farmers used own-saved seed.

Table 10 Percentage (and number) of farmers using own-saved, acquired or both own-saved and acquired seed by crop and season

Crop	Season	Own-saved seed	Acquired seed	Own saved and acquired seeds
Sorghum	*Gu* (n=68)	51%	49%	0%
	Deyr (n=75)	76%	24%	0%
Maize	*Gu* (n=71)	44%	51%	5%
	Deyr (n=69)	61%	35%	4%

Participants at the Baidoa workshop suggested that the figure for own-saved sorghum seed would not have been so high had the previous season not been so good. What the table does reveal is that far fewer farmers than might be expected in a purely subsistence cropping system, used own-saved seed. If this is the case where did farmers who did not use own-saved seed acquire seed for planting?

Table 11 Sources of seed by crop and season (2000)

Crop	Season	Self (own-saved seed)	Close relative or other farmer	Trader	Relief agency
Sorghum	*Gu* (n=76)	47%	11%	25%	17%
	Deyr (n=95)	62%	3%	25%	10%
Maize	*Gu* (n=98)	38%	16%	43%	3%
	Deyr (n=101)	45%	19%	33%	3%

Note: N refers to instances of seed sourcing reported by sample farmers, and percentages have been calculated in terms of total seed sources. Since each farmer may have more than one seed source, the figures are slightly different to those in Table 10

Off-farm seed (i.e. seed that has not been saved from the farmer's own farm) is sourced from relatives, other farmers, traders, or relief agencies, as shown in Table 11. It is important to note that Table 11 refers to instances of seed acquisition, not numbers of farmers. One farmer can acquire seed for more than one seed source, so the figures in Table 11 are slightly different to those in Table 10, which refers to number of farmers.

For both sorghum and maize, the primary source of off-farm seed was from traders (Table 11). In the *Gu* 2000 season, relief agencies were a distant second as suppliers of sorghum seed followed by other farmers and close relatives respectively. The same trend was observed for maize except that relief agencies hardly featured, probably reflecting the fact that maize tends to be cultivated in irrigated areas that are generally considered to have fewer vulnerable households.

Table 12 Percentage of farmers using own-saved seed, acquired seed, or both own saved and acquired seed by crop, season and wealth group

Crop	Season	Wealth	Own-saved seed	Acquired seed	Own-saved and acquired
Sorghum	*Gu*	Better off (n=20)	55%	45%	0%
		Poorer (n=48)	50%	50%	0%
	Deyr	Better off (n=22)	68%	32%	0%
		Poorer (n=52)	81%	19%	0%
Maize	*Gu*	Better off (n=32)	41%	50%	9%
		Poorer (n=39)	46%	51%	3%
	Deyr	Better off (n=29)	59%	34%	7%
		Poorer (n=40)	62%	35%	3%

It might be expected that better-off farmers would be more able to save their own-saved seed than poorer farmers, and this was confirmed although the differences between the two groups were not that large (Table 12), reflecting the observation that the wealth differential within Somali villages is not great. The most striking difference was that there were most instances of sorghum seed-saving by poorer farmers for the *Deyr* 2000 season (66%) compared to the previous *Gu* season (45%)

Table 13 Sources of seed by crop, season and farmers' wealth status

Crop	Season	Wealth	Self (own-saved seed)	Close relative or other farmer	Trader	Relief agency
Sorghum	*Gu*	Better off (n=23)	52%	4%	26%	17%
		Poorer (n=53)	45%	14%	25%	17%
	Deyr	Better off (n=30)	53%	0%	40%	7%
		Poorer (n=65)	66%	5%	19%	11%
Maize	*Gu*	Better off (n=42)	38%	12%	45%	5%
		Poorer (n=53)	36%	18%	43%	2%
	Deyr	Better off (n=39)	44%	18%	33%	5%
		Poorer (n=59)	42%	23%	34%	2%

If poorer farmers tend to acquire seed rather than using own-saved seed, where do they acquire seed from? Certainly for poorer farmers, close relatives and other farmers are more important seed source than for better-off farmers, but only after traders and relief agencies.

Data collected by IPGRI in 1997 display rather different findings (Table 14) and suggest that the market supplies a much smaller proportion of seed than revealed by the 2000 survey.

Table 14 Major sources of seed outside the household

Seed source	First choice	Second choice	Third choice
Relatives	91%	0%	0%
Neighbours	2%	95%	0%
Other farmers within the village	0%	2%	71%
Other farmers outside the village	0%	1%	8%
Market in district town	7%	2%	21%
Total	100%	100%	100%
No. farmers answering the question	266	242	85

Source: IPGRI/CINS Socio-economic and farming systems baseline survey 1997. Number of households = 266

Friis-Hansen found that only 16% of his sample farmers had bought seed from the district market since the start of the civil war, and that farmers only purchase seed from district markets if they fail to obtain seed from informal sources within the community. Rather than suggesting that the relative importance of seed marketing has increased from 1997 to 2000, we interpret the difference in findings as being due to the limited range of possible responses to this question in the 1997 IPGRI survey. If 'trader' and 'local market' (in addition to 'district market') had been included in the range of possible responses, we feel that the 1997 survey results would have given a more accurate picture of seed sources. Having said that, it is possible that our 2000 survey could have been slightly biased towards farmers in villages located close to major towns (and markets).

Table 15 Means of seed sourcing by crop and season

Crop	Season	Own-saved	Gift	Exchange for seed, labour or other item	Buy	Borrow
Sorghum	*Gu* (n=91)	40%	27%	1%	29%	3%
	Deyr (n=118)	50%	20%	3%	25%	2%
Maize	*Gu* (n=94)	37%	11%	3%	48%	1%
	Deyr (n=101)	42%	15%	3%	39%	1%

Through what means are farmers able to source seed? Own-saved seed is clearly most important (Table 15). The fact that traders are the biggest single source of off-farm seed suggests that cash transactions are important, and this is confirmed for both

sorghum and maize. After cash transactions, gifts were the next most important way of acquiring seed with bartering, exchanging seed for other items and borrowing being almost insignificant. There was good evidence (see Table A15 in Annex 7) that gifts were more important for poorer farmers, more especially for sorghum than maize. The relatively low figure given for seed sourced by exchange for labour may be a reflection on the fact that the previous season had been good and that farmers were able to acquire seed through other means.

Table 16 Location of seed source by crop and season

Crop	Season	On farm (own-saved seed)	Within village	Nearby village	>10 km or 3 hours walk	Local market	Others
Sorghum	*Gu* (n=93)	39%	23%	11%	4%	20%	3%
	Deyr(n=116)	52%	21%	3%	3%	16%	5%
Maize	*Gu* (n=91)	39%	11%	2%	4%	40%	4%
	Deyr (n=96)	44%	16%	3%	2%	34%	1%

During field visits some farmers explained how they had travelled long distances to access seed when they first returned to their villages after the extended displacement in the early 1990s. This mobility both allows farmers to tap into social networks that can be very extensive, and to access goods including seeds that might be scarce in one area because of poor rainfall, insecurity or a combination of factors. During the survey, farmers were asked about where they had acquired seed, and this was again disaggregated by crop, wealth and season. The most important source of off-farm seed tended to be from local markets, but was closely followed by other farmers in the village. Few farmers sourced seed from nearby villages, and even fewer farmers travelled more than 10 km to access seed. Although the numbers are not large, there is a suggestion that it was the poorer farmers that tended to access seed from further afield than the better-off farmers (see Table A16 in Annex 7). This suggestion was confirmed by participants at the Baidoa workshop: in times of need, poorer farmers will travel to surplus areas and work as labourers in order to acquire seed for planting.

8.2 The provision of seed by farmers

Given that some farmers acquire seed from their close relatives and other farmers, the survey asked whether or not the respondent had provided seed to others in the past two years (i.e. four seasons). The results show that 69% of better-off farmers and 62% of poorer farmers had provided seed (usually as a gift or possibly also through exchange) to other farmers in the past two years. Clearly, it is not only the better-off farmers who are in a position to provide seed to others. There are various different motives for providing seed to others, e.g. out of charity or pity, as a social or religious obligation to assist those in need, or as a form of support through which the giver may one day expect to benefit in return. The frequency with which seed was provided to others by our sample farmers in the past two years is shown in Table 17.

Table 17 Frequency of seed provision by farmers in past two years

Wealth	No seed provided	Seed provided once	Seed provided more than once
Better off (n=41)	34%	32%	34%
Poorer (n=69)	48%	30%	22%
Total (n=110)	43%	31%	26%

The frequency with which farmers – even poorer farmers – provide seed to others clearly illustrates the role of social networks in the local seed system.

8.3 The provision of seed by traders

Both the survey data and information collected from Baidoa market (confirmed as being representative across other markets in southern Somalia) clearly indicate that there exists a very well developed seed marketing system. Informal discussions with market women in Baidoa uncovered a network of small seed traders, all women, who specialise in marketing seed in addition to grain. Box 2 profiles one such trader. These female petty traders buy grain at harvest time from farmers in the surrounding villages and pay a premium of about 20%–25% for good quality seed (described as freshly harvested, properly dried, pure in colour, with large, healthy grains). The traders store the seed separately, in drums, keeping different varieties in different drums. This is done every harvest season, even though they cannot necessarily predict how much seed will be needed the following planting season. The largest of the petty traders in Baidoa have a maximum capacity of about 50 drums of seed, which is equivalent to approximately 8.5 MT of sorghum and maize seed.

Normally local traders do not differentiate seed from grain – as is the case for Somaliland – but in southern Somalia this distinction is important. The importance of these seed markets is thought to relate to the relative frequency of localised drought, the difficulties of storing seed over more than a few months, and the consequent demand for off-farm seed. Also, because the practice of storing grain in underground pits (Plate 10) leads to rapid reduction in seed viability, farmers are very aware of the need to maintain separate seed stocks.

Seed traders specialising in seed are forced to use more elaborate storage systems to ensure that this seed is protected from attack by stored insects. Seed storage is normally in sealed 200 litre drums, which are quite appropriate for maintaining the relatively small quantities of seed that these women are thought to trade in. Larger scale grain traders are not thought to have such elaborate seed storage systems, and when they tender to supply seed are forced to go out and procure freshly harvested grain to meet the necessary quality standards (primarily germination percentage) that humanitarian agencies have insisted on.

Box 2 A profile of Amina, a petty trader in Baidoa market

Amina is a female petty trader in Baidoa market who buys and sells sorghum, maize, cowpeas and groundnuts. She works in cooperation with another woman and the two share a store where they employ two full-time store hands. When necessary she can also hire additional storage space, whether in Baidoa or in the villages. Amina purchases grain from farmers in some 12–15 villages near Baidoa: she buys from farmers who come to Baidoa market, and either she or a colleague will also visit the villages to buy surpluses which are then transported by hired donkey cart. She has a good relationship with most of the farmers she purchases from and – for security reasons – tends to buy on a credit basis from farmers in the villages, paying cash or any other item (clothes, medicines, etc) requested by the farmer when they next come to town.

Amina has access to credit from friends and relatives and recently received a loan of 1.5 million Somali Shillings (equivalent to US $85) for a period of one month. Following the *Deyr* 2000 harvest season she handled 100 sacks of sorghum, 70 sacks of maize, 50 sacks of groundnut and 40 sacks of cowpea. The quantities that she handles in the *Gu* season are generally more. Amina owns thirty 200-litre drums which she uses for storing cowpeas and sorghum.

Each season Amina selects good quality grain from farmers which she purchases at a higher price than the other freshly harvested grain and takes care to store the different varieties in separate drums. If there is likely to be a good demand for seed then she will send someone to purchase from specific farmers who are known to have good quality seed. This is then sold as seed at planting time. But the demand for seed varies: this season (*Deyr*, 2000), for example, Amina was not able to sell all of the seed she had stored because most farmers had sufficient seed of their own and the demand was low. In such cases, the seed is simply sold at the slightly lower price of fresh grain.

Obviously it will be impossible for small scale seed traders to compete with the larger grain traders because the amounts of seed each group deals with is totally different. There is a very real danger that the livelihoods of small scale seed traders will be affected by larger scale grain traders responding to a short-lived and artificial demand for seed that would not exist except for the presence of humanitarian agencies undertaking relief seed distributions. It is unlikely that larger scale grain traders would have any long-term interest in meeting localised seed demand from farmers that in most years will be relatively insignificant compared with the potential grain

market. However, to ensure that there is sufficient production of grain surpluses at harvest time it is certainly in the interests of the large-scale grain traders to make sure that seed is available to farmers. One large-scale grain trader based in Baidoa explained that he does not transport grain immediately to Mogadishu at harvest time but keeps it for about three months (until the price goes up), by which time he will know exactly where there is a localised demand for seed. When there is such a demand, even large-scale traders will provide seed on a loan basis to farmers.

Plate 10 The opening of an underground grain storage pit or bakar

The importance of social networks in mediating transactions between individuals cannot be underestimated in situations such as Somalia where there are no external regulating agencies. If a farmer goes to a local market, another farmer in the village or even to a nearby village, it is very likely that there will be a relationship between the two parties that will ensure there is some degree of propriety governing the transaction. It is not in the interest of a small trader to misrepresent his/her goods as this will affect future business transactions. It is clear that no such relationship exists between large scale grain traders and humanitarian agencies, with the result that external tests need to be carried out to ensure that what is purported to be seed is actually viable. There are well documented instances where such controls have failed.

The effectiveness of local traders in transferring seed from surplus areas to deficit areas in response to a crisis should not be underestimated. In 1991–2, for example, it has been reported that certain geographical pockets functioned as seed rescue sources: Awdheegle and Qoryooley were important for maize conservation and Qansax Dheere and Waajid districts were vital for the supply of sorghum seed (Mohamed, n.d.). The ways in which traders acquire grain and seed is currently being further investigated by ICRISAT and CARE.

9. The relief seed system and the impact of emergency seed aid

Before embarking on any type of humanitarian intervention, it is necessary to clearly define the problem that needs to be addressed. As mentioned in Section 7.3 with reference to the seed security framework, the two most common justifications for providing relief seed are that there is a problem of seed availability, and/or farmer saved seed is of poor quality. If, for the sake of argument, we accept these justifications – despite the evidence presented in the preceding section which rather suggests that neither problem exists at present in southern Somalia – where should seed be sourced for provision to affected communities?

9.1 The procurement of quality planting material: What is 'local' seed?

Between 1991 and 1993, most seeds for distribution in southern Somalia were bought from established seed companies in Kenya[6]. Since 1993, seed has increasingly been sourced from within southern Somalia, and during the last few years almost all of the cereal and pulse seeds have been purchased from large scale grain traders, usually from within the same agro-ecological zone as the target area.

Because the need for seed is not foreseen until after harvest, humanitarian agencies only have a short timeframe in which to source and distribute seed before the start of

Box 3 The distribution of a locally appropriate improved variety in Somaliland

Dehar Dega village is located about ten kilometres from the town of Borama. In 1994, SCF(UK) predicted food insecurity due to civil unrest and a poor *Gu* season. When SCF asked farmers what type of seed they required, there was a strong preference for short duration sorghum types.

Local short duration types had been lost following two consecutive droughts of the early 1980's which occurred at a time when the village was full of displaced people from Ethiopia who had been displaced by the Ogaden War. Having established the need for short duration types, SCF sought advice from the Ministry of Agriculture as to which short duration types would be appropriate. SCF then consulted farmers again concerning the varieties recommended by MoA. Farmers' preferred short season varieties were then procured in Nairobi: GPR148 (an ICRISAT photoperiod insensitive type with three dwarfing genes) and Martin (an improved variety developed in USA from a southern African kafir type). Both of these varieties had been tested by the MoA prior to the civil war and both were appropriate to local conditions. In Boodley village, these two varieties were locally known by the same name – *fetich* – and both were observed to be cultivated by farmers at the time of our visit in September, 2000. The fact that farmers have maintained these varieties and cultivated them since 1994 is a good indication of their appropriateness.

[6] Seed companies in Kenya supply both true certified seed and conditioned grain that is of no known origin. The former is considerably more expensive.

the next rainy season. Very few traders are willing to maintain large inventories of seed for a market where there is uncertain demand, and the lowest cost supplier is generally favoured provided that test results for germination percentage are acceptable. However, it is not possible to determine varietal integrity from a physical seed inspection without actually growing out the crop.

Relief agencies in Somalia express a strong preference for 'local' seed procurement. But what does 'local' mean? 'Local' can imply a political boundary i.e. international versus national, an agro-ecological boundary, and/or different communities. Although Bay, Bakool and Gedo regions are local to Hiran, Middle and Lower Shabelle Regions in political terms, the two areas have different agro-ecologies and different ethnic groups. From the seed perspective, a variety can be considered 'local' when many farmers have adopted the variety within a specific agro-ecology *and* when it is appropriate to the particular farming system in which it is to be used. It is important to note that the varieties grown by farmers are subject to change over time as individuals adopt and incorporate new types into their planting repertoires. Thus, what is considered to be a local variety may well change over time.

The existence of a relief seed market has certainly benefited grain traders who routinely charge more than double the grain price for 'seed' that is in fact no different to grain. The financial benefits of the relief seed system to large scale grain traders are great and competition over contracts is high. Cases have been recorded of agencies only being allowed to procure seeds within certain areas, and of conflict situations arising when tenders are awarded to some and not to others. Collusion among different parties in the procurement, delivery and distribution of seed consignments has certainly occurred in the past: the only quality issue that traders have had to address is keeping grain stored in underground pits separate from grain stored above ground. Farmers know very well that grain from pits loses its viability quite rapidly, and hence store seed for planting separately. The two can easily be differentiated apart both visually and by smell. Grain stored in pits fetches a lower price than 'fresh' grain, and there are reports of traders mixing the two sources together to reduce seed procurement costs.

9.2 Targeting

Identification and targeting of vulnerable households for relief distributions is an extremely complex and contentious task in any society. A great deal of effort is expended by agencies to try and identify vulnerable individuals or households for targeting of relief distributions. It is clear that this type of intervention creates tension within communities. If certain individuals or households are picked out, there is a strong likelihood that social networks will be undermined as people will be less inclined to help those in need.

For seed distributions, two approaches have been used. The first is to distribute seed to everybody in a community which is generally considered to be vulnerable. The second approach has been used by Save the Children Fund (UK) and Care. This relies on village development committees to select beneficiaries and then to handle the process of distribution at community level. Village development committees are considered to be in closer contact with communities than village elders. Again the

question is whether village development committees provide effective social institutions, and whether their use in such distributions strengthens certain groups at the expense of others. Evidence from the survey suggests that relief seed distributions have benefited both better-off and poorer farmers, suggesting that whatever targeting has been used has not been very effective in reaching the poorer farmers (Table 18, below). In Somaliland, re-distribution of tillage vouchers was successfully carried out by communities after these had been distributed to communities identified as vulnerable. However, it should be remembered that in Somaliland there is relative peace as a result of accommodation between clans, which is not necessarily true in the south.

9.3 Receipt of relief seed by farmers

The survey covered over 28 villages across nine regions of southern Somalia. Of the villages sampled, only six had never received any seed aid, and the remaining 22 villages had received a total of 36 separate seed distributions since 1991. Most villages had received more than one seed distribution since 1991 and some had received up to four different seed distributions. The agencies implementing the seed distributions covered in the survey included FAO, ICRC, Trocaire, Concern, World Vision, Oxfam, Woman Care Organisation (WACO, a local NGO with Swedish support), CARE, Muslim Aid-UK, InterSos, and the German agency, Bread for the World. About half of these seed distributions included sorghum and half included maize. Some also included vegetables, cowpea, sunflower or sesame. Half of the seed distributions had blanket coverage within the village and half had partial coverage.

Given the scale of the seed distribution projects since 1991, it is not surprising to see that 63% of the sample farmers reported to have received seed aid at least once at some point in the past (Table 18). There is no discernible difference among better-off and poorer farmers as to whether or not they received seed aid, clearly indicating that seed assistance has not effectively targeted poorer farmers.

Table 18 Whether respondent has received seed aid before

Wealth	Yes	No	Total
Better off (n=38)	66%	34%	100%
Poorer (n=62)	61%	39%	100%
All farmers (n=100)	63%	37%	100%

9.4 Use of seed aid by farmers

For those farmers who reported to have received seed aid, over half (between 59% and 79%) claim to have actually planted it at least once (Table 19). However, when these figures were presented at the Baidoa workshop, a number of participants expressed surprise that the percentage of farmers planting seed aid was so high. A number of the enumerators who collected the data for the survey clearly felt that farmers were responding positively to this question not because they had actually planted the seed but in the hope that a positive response might promote further seed

distributions. The figures in Table 19 should therefore be treated with extreme caution and are thought to over-represent the proportion of farmers who actually planted the seed aid received.

Table 19 Use of sorghum and maize seed aid received by farmers based on instances reported

Crop	Wealth	Planted as seed	Eaten as food	Exchange for other seed	Sold
Sorghum	Better off (n=14)	79%	21%	0%	0%
	Poorer (n=22)	59%	41%	0%	0%
Maize	Better off (n=72)	76%	24%	0%	0%
	Poorer (n=81)	79%	16%	1%	4%

While many of the more recent seed distributions have had very little impact, farmers in different locations reported particular occasions when seed aid was certainly very much needed and had a very positive impact (see Boxes 3 and 4). These occasions tend to be when there is an absolute lack of available seed, caused by massive population displacement and the suspension of farming over a wide area. In such situations, seed may well be needed to re-start agricultural production. But for crops such as sorghum or maize which have a high multiplication rate there is rarely a need to continue relief distributions for more than one or two seasons.

Box 4 A successful seed distribution in Bay Region

In 1993, following two years of living in the bush, residents from Lafaale village, Baidoa District, were able to return to their homes. As returnees, they received supplies from the relief agencies, including seed, food, cooking sets, etc. Concern supplied sorghum seed to all farmers in the village – this was the local *barsane* variety, and it was received in time for planting. Farmers reported that at this time seed was not locally available therefore it was highly appreciated. According to a show of hands among a focus group discussion, the vast majority of farmers planted the 1993 relief seed supplies. One or two farmers also accessed seed outside the village – for example, one man who had been born in Dieglow (and lived there up until 1980s) went back to his father's village and acquired seed from his relatives. In contrast, most farmers who received relief seed distributed in the *Gu* 2000 planting season consumed the seed because they already had seed of their own and remarked that it made very tasty porridge!

According to one informant, most successful seed distributions were reportedly in the early part of the emergency period (1992 –4), when farmers were in need and the only seed available for procurement by agencies was not from big traders in town but from farmers in irrigated areas, e.g. L and M Shabelle. Villages had been looted and some farmers had been displaced (lowered overall production, hence less grain and seed in markets), yet many of those who would normally go to market to buy seed for themselves could not access the markets due to insecurity (only later when UNOSOM came in did the security situation improve). In short, relief seed interventions in southern Somalia had most impact when the emergency need for seed was at its greatest.

9.5 Lessons learnt

Existing guidelines recommend that emergency seed provisioning (ESP) should be carried out only as a short-term intervention and that alternative interventions for seed capacity-building (SCB) should implemented in the longer-term to allow farmers to access seed more sustainably (ODI, 1996). The aim of SCB is to enhance the capacity of local seed systems by building on system strengths and addressing weaknesses. The review of seed interventions in southern Somalia to date clearly shows that such interventions have been dominated by ESP, whereas SCB is now more appropriate in areas that have a relatively stable security situation. Appropriate SCB interventions are described more fully in Section 10.

The two most common justifications for emergency seed provisioning are that there is a problem of seed availability, and/or farmer saved seed is of poor quality. Neither of this conditions presently exist in southern Somalia. Although some farmers may find it difficult to access seed, good quality, appropriate seed is certainly available through local seed systems, as evidenced by the ability of agencies to procure seed locally for distribution. While many of the more recent seed distributions are thought to have had relatively little impact, farmers in different locations reported particular occasions when seed aid was certainly very much needed and had a very positive impact. These occasions tend to be when there is an absolute lack of available seed, caused by massive population displacement and the suspension of farming over a wide area for at least two seasons. In such situations, seed may well be needed by all farmers within the affected area in order to re-start agricultural production. For crops such as sorghum or maize which have a high multiplication rate there is rarely a need to continue relief distributions for more than one or two seasons.

ESP has greatest impact when responding to a lack of seed availability, not problems of access. The distribution of relief seed inputs has greatest impact when the need for seed is greatest. Given that emergency seed provisioning is most appropriate in response to problems of seed availability rather than problems of access, geographical targeting is the logical approach for ESP.

Seed interventions to date have been based largely on an assumption that seed is needed and fail to understand of how farmers themselves access seed. The survey results clearly reveal that farmers, especially poorer farmers, are quite dependent on seed traders to access seed for cash. As humanitarian agencies have become increasingly dependent on traders to supply seed, there is the very real risk of increasing the price of seed because of the extra demand created by the large bulk purchases that are made by humanitarian agencies. Although we have no quantitative evidence, the livelihoods of small seed traders might have been affected through bulk procurement and free distribution of seed to those very same farmers who would normally tend to access seed from these people.

Whilst the emphasis placed on ‘local’ seed procurement prevents the distribution of seed that is inappropriate, it also limits the potential for more developmental interventions for the beneficial introduction of new, locally appropriate varieties. It is important to note that farmers are generally keen to try out new varieties and to incorporate appropriate varieties into their planting repertoires. Thus, what is considered to be a ‘local’ variety is subject to change over time. In Somaliland, SCF

successfully re-introduced an improved short-duration sorghum variety that had previously been cultivated by farmers but subsequently lost as a result of external shocks and stresses. In southern Somalia, the case of cowpeas sourced from Lower Shabelle and distributed in Bay unwittingly strengthened the traditional cropping system by broadening crop diversity. Given the limited diversity of cropping systems in southern Somalia, there is the potential to build the resilience of local seed systems by increasing diversity.

10. Developing an alternative strategy for seed security

While the overall impact of relief seed distributions has not been great, there are certainly some situations when an absolute shortage of seed exists and relief seed is an appropriate response. However, such situations tend to be the exception rather than the rule: e.g. when there has been no cultivation at all over a wide area due to wholesale population displacement; when partial displacement is combined with a widespread loss of assets; or when there is an extended crop failure (say, over more than two years) over a wide area. Provided it is possible to move between surplus and deficit areas and local markets are working, the local seed system in southern Somalia is such that it can effectively provide seed to areas where there may be pockets of crop failure. But how can agencies recognise whether or not relief seed might be needed? Importantly, how can agencies distinguish between problems of seed availability and seed access?

10.1 Seed needs assessment

In Somalia, as elsewhere, seed interventions are largely based on an *assumed* rather than an *actual* need. It is generally presumed that, if a harvest is good, the need for seed distribution is low; if a harvest is poor, the need increases. Thus, seed availability is determined by food availability. Whilst this is certainly true at the macro level, it fails to take account of how small-scale farmers retain and acquire seeds, as described in Section 8. After a harvest, the amount of seed a farmer retains is usually determined by the size of the plot to be planted the following season, rather than as a proportion of the overall amount harvested. In the event of a poor harvest, a farmer will usually try to retain the seed needed for the following season, even if this means less food from the overall harvest. In extreme situations, the whole of the harvest can be saved as seed, rather than eaten as food.

The seed security framework lists three parameters that need to be considered by humanitarian agencies considering relief seed interventions, namely; availability, access and utilisation. A simple key has been developed to assist agencies in determining whether seed availability is likely to be a constraint based on findings from southern Somalia and elsewhere. This key takes the form of a few simple questions. The problems of seed access and utilisation are much harder to answer and will depend on the collection of more detailed information as is the case with the Household Economy Approach that is being used by the Food Security Assessment Unit (FSAU).

Establishing whether or not relief seed distributions are needed is only the first step in assessing seed-related needs. It is also possible to enhance seed security without necessarily providing seed itself but by strengthening the local seed system.

Table 20 Checklist for assessing seed availability

Question	Yes	No
1. Has there been large-scale displacement of people from areas where crops are normally grown?	Seed availability is potentially a problem	Go to question 2
2. Has there been widespread crop failure for more than four consecutive seasons (i.e 2 years)?	Seed availability is potentially a problem	Go to question 3
3. Has there been widespread insecurity during the cropping season in areas where crops are normally grown?	Seed availability is potentially a problem	Go to question 4
4. Have grain traders been unable to purchase grain from areas of crop surplus?	Seed availability is likely to be a problem, but only if you answered yes to any of the above questions	Go to question 5
5. Have individuals been unable to travel to areas of crop surplus?	Seed availability is likely to be a problem if you answered yes to any of the above questions	

10.2 Vulnerability and seed systems

Section 4.3 discussed the concept of vulnerability as it relates to an external shock or stress and the internal capacity of a household to cope with shock or stress. A similar understanding of vulnerability can also be applied to seed systems. The two aspects of vulnerability thus become: (i) an external aspect of risk, shock or stress to which a seed system is subject, and (ii) an internal aspect relating to the ability of the seed system to cope with shock or stress. Section 6 has already described the impact of different types of shocks and stresses on agricultural livelihoods, cropping systems and seed systems.

Given that seed systems are best understood as an integral part of wider agricultural livelihood systems, the ability of a seed system to cope with shock or stress depends not only on the vulnerability of agricultural production systems but also on the vulnerability of households. In relation to the seed security framework presented in Table 8, the availability and quality of seed depends largely on aspects relating to agricultural production, whereas the ability of people to access seed depends on the level of household assets, including social networks and even perhaps political associations with the dominant authorities.

Enhanced seed security at household level therefore requires not only a reduction in the vulnerability of agricultural production but also a reduction in household vulnerability. Whilst the following sections highlight ways in which agricultural production can be strengthened, it is also important to note that reducing household vulnerability more generally can also promote enhanced seed security.

10.3 Entry points for seed system support

The description in Section 7.1 of the formal seed sector in Somalia as it existed pre-1991 shares many of the same characteristics with which formal seed sector systems in other African countries are now finding problematic (Tripp and Rohrbach, 2001). Given the overall failure of the formal seed sector in Africa for most subsistence crops (hybrid maize provides the only really successful exception), it is clear that any efforts to re-build a formal sector seed system will only lead to failure.

Rather than creating systems that stem from the formal seed sector, a novel strategy for seed system development should be pursued that enhances existing aspects of the local seed system. Thus, rather than trying to separate seed multiplication from agricultural production, seed production should be regarded as an inherent part of agricultural production; rather than creating a seed dissemination system that relies on large-scale input suppliers, dissemination should tap into the network of female petty traders that already supply a significant proportion of off-farm seed inputs to both riverine farmers and agro-pastoralists.

However, distinctions between the formal seed sector and the farmer seed sector do little to integrate the two or build on the strengths of each. Rather than differentiate the different types of seed systems described earlier in the report, potential seed interventions must be based on an analysis that overcomes the formal – farmer distinction. Table 21 uses the findings presented earlier in the report to highlight features of existing seed systems according to five main aspects and can be used to help identify appropriate entry points for building on strengths and addressing weaknesses.

Table 21 Strengths and weaknesses of existing seed systems

Aspect of seed system	System strengths	System weaknesses
Seed users and seed management: production, storage, acquisition, and use of seed by farmers.	• Seed multiplication occurs as integral part of agricultural production • Seed selection by farmers promotes good quality seed • Farmers are knowledgeable about good seed management practices • Range of mechanisms exist through which farmers can access seed	• Problem of seed unavailability may occur in very extreme situations • Production constraints (e.g. pests, lack of irrigation) affect seed availability • Long term storage of seed (from *Gu* to *Deyr*) can be problematic • Lack of chemicals with which to treat seed, and associated knowledge • Some poorer farmers have to travel far to acquire seed
Seed providers and seed provision: supply of seed by farmers, traders, NGOs, etc	• Both better-off and poorer farmers regularly provide seed to other farmers • Traders play an important role in transferring seed from surplus to deficit areas • Even in drought, riverine and irrigated areas provide source of seed to rainfed areas	• Seed traders lack chemicals with which to treat seed and are limited by availability of credit and storage capacity • Seed provided by NGOs is often late and poor quality
Local institutions and organisations involved in seed activities: social and economic frameworks of local seed supply (e.g. relations of reciprocity, transport and market infrastructure); organisational capacities (e.g. of NGOs and other organisations).	• *Zaka* system obliges farmers to assist one another • Social networks further promote farmer – farmer support • Good communications infrastructure and social networks of traders promote successful seed trade at regional level • Availability of credit to petty traders • Some local NGOs are promoting appropriate improved varieties and good seed management practices	• Though social networks are effective within southern Somalia, lack of farmer/trader networks over wider areas (e.g. Yemen, Ethiopia) prevents introduction of new varieties • Relief seed economy benefits large-scale traders considerably more than farmer beneficiaries
Characteristics of seeds themselves: diversity of crops and varieties, quality, and quantity of seed available	• Seed selection ensures that farmer-saved seed is generally of good quality, but exceptions do exist	• Little crop diversity • Little diversity of varieties within crops • Problems of sorghum smut and other seed-borne diseases in some areas
External linkages and regulation; collaboration and coordination, both within the seed sector and between the seed sector and other sectors.	• Local seed system is regulated internally by relations of reciprocity and 'good neighbourliness'	• Local seed/agric trade systems have few external linkages • No regulation of relief seed system • Distribution of relief food may lower farmgate price for locally-produced grain, providing disincentive to grain production

10.4 Alternative types of seed-related interventions: Seed capacity building

If we accept the hypothesis that there is no absolute lack of seed and that farmer seed is generally not of poor quality, what alternative interventions might be appropriate for strengthening seed systems? Three types of interventions have been identified and each is further described in the sections that follow.

1. Facilitating farmers' access to seed
2. Introduction of appropriate agricultural technologies
3. Enhanced input/output marketing

Using the entry points defined in Table 21, appropriate projects to further enhance existing strengths and address areas of weakness can be identified with the help of the matrix in Table 22, in which the rows define the entry points and the columns present the types of interventions.

10.4.1 Access to seed and other agricultural inputs

How can we facilitate access to seed by people who have difficulty saving their own seed or getting hold of seed for reasons of poverty in the wider sense? When there is a poor harvest or widespread displacement of people because of war, the provision of food reduces the pressure to consume stocks of own saved seed, and also provides an asset that can be used by poor people to barter for seed. The provision of seed alone in such situations will have minimal impact. Even if the seed is consumed, which it frequently is, the impact on household food security will be minimal as the quantities of seed that are distributed would only meet a small fraction of the total household food requirements. To be effective, relief seed distribution must be of adapted crops for which farmers have a problem accessing seed. A broad diversity within and between crops strengthens the resilience of the cropping system, and any relief seed intervention must therefore take this into account.

There is the potential to address specific problems of seed storage, particularly over the long gap between the *Deyr* and *Gu* seasons. For example there are some well known botanicals that are effective at controlling weevils in pulses such as cowpeas. These need to be evaluated together with farmers and then such technologies widely promoted among the farming community. Although the use of air-tight containers has been previously mentioned, there is limited availability of such containers in local markets. Local tin-smiths have been trained in countries like Kenya to make metal silos, and similar technologies could be tried and tested in Somalia, using designs based on local preferences. The entrepreneurial flair of the local population and the cash based economy would ensure rapid adoption if found to be effective.

Since seed multiplication is an integral part of crop production, addressing production constraints will promote increased access to own-saved seed. Drought and pests (including birds) were the most frequently cited production problems revealed by the farmer survey. Possible interventions might include the provision of irrigation pumps through loan schemes and appropriated pest management strategies.

Table 22 A framework for identifying alternative seed-related interventions

Entry points	Access to agricultural inputs	Appropriate technologies	Input/output marketing
Seed management by farmers	• relief food distribution • relief seed distribution • seed fair/vouchers • address production constraints, e.g. loans for irrigation pumps, ploughing	• improved seed storage (e.g. seed treatment, providing containers) • technologies to address production constraints, e.g. farm pest control	• seed fair/vouchers
Seed providers and seed provision	• seed fair/vouchers • capacity-building for petty seed traders (e.g. credit, storage)	• improved seed storage for petty traders (e.g. seed treatment, containers)	• seed fair/vouchers • enhanced market infrastructure
Local institutions and organisations	• capacity building for farmer organisations and associations, where these exist	• enhanced linkages with agricultural researchers and research centres	• capacity building for traders, e.g. training in pest control, business loans
Seeds and varieties	• farmer-managed trials of promising new crops and varieties • sale of small packs of improved varieties	• testing and introduction of appropriate crops and varieties • improved seed quality through farm pest control	• sale of small packs of appropriate improved varieties
External linkages	• operational agencies to collaborate with agricultural research centres to access new seed types and other agricultural technologies, e.g. through technical backstopping to NGO projects	• enhance capacity of local professionals through links with agricultural researchers and research centres	• development of urban and export agricultural markets, provided that power dynamics are such that vulnerable groups will not be further marginalised

The use of seed vouchers linked to seed fairs has been successfully tested by Catholic Relief Services in Kenya and Uganda to address the problem of seed access in times of disaster (Remington et al., 2001). The major assumption behind this approach is that there is no absolute shortage of seed. Poor farmers are provided with a number of vouchers which have a pre-determined monetary value. The message is then passed out to farmers in the community who have surplus seed or good-quality fresh grain for sale that they should bring their surplus planting material they are willing to sell to a pre-determined location. Voucher holders can then exchange their vouchers for seed of the crops and varieties that they choose. On completion of the seed fair, seed sellers redeem the vouchers for cash. Though seed fairs/vouchers have yet to be tested in Somalia, there are several advantages to this approach:

- Farm families can access seed of their preferred crops and varieties
- Seed quality issues are left to the judgement of farmers who are experienced in this
- Are cost effective and simple to implement, monitor and evaluate
- Can be planned and implemented in a short period of time
- Can serve the needs of large numbers of farm families experiencing difficulty accessing seed
- Can be adapted to the level of seed insecurity.

Potential problems in implementing such an intervention in Somalia include the unpredictability of the security situation, and whether people would be willing to accept voucher-based approaches. However, until it is tested in practice it is not known whether these pose insurmountable constraints.

If there is an absolute shortage of seed, farmer seed stocks can be supplemented with purchased seed from elsewhere, although this situation has not yet arisen in those countries wherever the approach has been used. In southern Somalia the procurement of seed from traders has created tension in communities because of the high profits to be made when such tenders are awarded. Similarly, agencies have found it very difficult to target vulnerable households within communities as non-targeted households take exception.

Although the seed fair approach has yet to be tested in southern Somalia, the intervention can potentially be self-targeting for obvious reasons. Farmers wanting to sell surplus ‘seed’ are required to register their names and the amount of seed they wish to sell with the organisers of the seed fair. It follows that people who have surplus seed to sell cannot also be recipients of seed vouchers as by implication they are not short of seed. A clear choice has to be made; is it better to have the opportunity to market seed, or to obtain seed and benefit from the programme through seed vouchers? The fact that both buyers and sellers benefit through this type of initiative can potentially ensure that targeting takes place without creating conflict within the community. As the choice of seed is left up to the recipient of the seed voucher, farmers will be able to target seed from individuals that they know can provide quality. In this way, seed fairs and vouchers strengthens the operation of the informal seed system rather than undermining it.

Strengthening the existing local seed trading system can enhance the availability and quality of seed in local markets. Improved storage facilities and the use of seed

treatments for use by petty traders are suggested interventions. Since the role of petty traders is particularly crucial in transferring seed from surplus to deficit areas, the provision of timely credit services may allow experienced traders to respond more effectively to anticipated seed demand.

10.4.2 Introduction of appropriate agricultural technologies

A justification for relief seed is the opportunity to broaden the bio-diversity both within and between crops by supplying seed of new/improved crops or varieties. A weakness of the farmer seed system in areas such as southern Somalia is the absence of any effective mechanism to link the farmer seed system to sources of new germplasm that would normally come from research, trade networks, and/or the formal seed sector. This can be addressed by small injections of novel seed types that would permit farmers to test and experiment with new crops and varieties. Unfortunately the short planning timeframe under which agencies operate in disaster situations, and the lack of any historical perspective related to agricultural interventions in southern Somalia has largely resulted in a missed opportunity. Where seed of unknown varieties has been introduced, farmers have shown their willingness to test and experiment with the new varieties. For example, the cowpea variety known as *abgaliti* or *abgalley* is currently grown by a good number of farmers in Bay region, though this variety was not known in the area until it was distributed by relief agencies in the early 1990s. Agencies sourced the seed from Lower Shebelle and introduced it into the Bay region where it now fetches a good price (twice the value of the older, local variety) in Baidoa market. This example shows that the cropping systems are dynamic, and that farmers are willing to try out new technologies, but the process cannot be forced through continued injections of varieties that farmers do not find acceptable.

Small seed injections of the type described above might not be considered for funding as emergency seed provisioning or ESP in disaster situations, but the strengthening of the local cropping systems is an intervention that very much fits into the area of disaster preparedness or seed capacity building (SCB). The lack of institutional memory in disaster situations such as in southern Somalia is largely the result of crisis management with rapid staff turnover and little investment in human capacity to address the underlying causes of poverty in such areas. A more developmental approach to seed interventions could potentially help agencies to build human capacity that is capable of switching from development or SCB interventions to relief as and when the situation arises, rather than the present situation of focusing only on relief through ESP. The provision of relief food can provide an important SCB input to help farmers to maintain their own seed stocks or to use as a means to access seed by barter.

Other forms of appropriate technologies include improved seed storage mechanisms and measures to address production constraints. Seed storage – by both farmers and traders – can be improved by the use of seed treatment to prevent sorghum smut and to preserve maize from weevil damage. The promotion of linkages between farmers, traders, local professionals, NGOs and research institutes is necessary for the identification of production constraints and potential technologies to address them.

Adequate follow-up monitoring is essential to ensure that the technology options introduced are appropriate to the local situation (see Section 10.5).

10.4.3 Enhanced input/output marketing

Probably the most important asset for farmers in times of stress is cash. With cash, farmers can normally access food, seed and other necessities. As described earlier, cash income from agriculture is predominantly from the sale of livestock products, but resource-poor farmers have limited livestock assets and are therefore at a serious disadvantage. In rainfed areas farmers growing sorghum have suffered from low prices as a result of disrupted transport links to Mogadishu, the main urban market for surplus production, and massive imports of relief food both into Somalia itself and to neighbouring Ethiopia. Even without these market distortions, the production of low-value cereal crops is unlikely to be very profitable as the import parity price is low because of low world market prices for many of these commodities. This is well illustrated in most countries of eastern and southern Africa where the price of the staple cereal maize, is often not sufficiently attractive for farmers to invest in costly inputs such as hybrid seed and inorganic fertiliser to improve productivity because the returns are insufficient for farmers to recoup input costs, and make a good profit. This was not always the case as until quite recently the input and output costs were regulated, and marketing infrastructure developed to support such interventions. Increases in crop production during the Barre regime are closely correlated with producer prices being offered at the time.

With market liberalisation, the challenge is to link farmers to high value markets for products that they have a comparative advantage in growing. Despite the harsh climatic environment in southern Somalia, there are crops such as sesame that can be successfully grown for value-added processing and export. Already there is a vibrant trade in sesame oil to countries in the Middle East, but the returns to sesame cultivation can potentially be increased by improving both the productivity and quality of the sesame crop. Somalia occupies a prime geographical location and there is already a flourishing trade between the country and some of the richest states in the world that are just a short voyage away by sea. With some imagination, and strategic investment it should be possible to link Somali farmers and the highly entrepreneurial trading community to some of these high-value markets. If this strategy is to be pursued, however, it is first essential to understand the ways in which warlord politics and power dynamics may exclude certain farmer groups from benefiting from such trading opportunities. From a political economy perspective, there are those who would argue against promoting market-led development and expanding the private sector. With continued political instability there is the risk of such markets becoming controlled by powerful warlords or political factions. any market-based interventions must therefore be approached with extreme caution in Somalia.

10.5 Towards a principled and more developmental approach

Implicit in many of the interventions suggested above is the adoption of a longer-term, more developmental approach to promoting seed security than is currently possible through the free distribution of relief seed. Although there may be future emergency situations for which the supply of seed inputs may be deemed appropriate,

the present security situation across much of the main agricultural belt is such that more developmental types of interventions can be successfully implemented.
The various stages of the EC framework for linking relief, rehabilitation and development in the Somali context are described in Box 5. It is important to note that the continuum is not a linear process of progress: the overall security situation is such that areas that might be relatively stable one year could potentially become unstable the next year. Similarly, pockets of instability can exist within areas of relative calm, and vice versa. Given that there is no existence of any internally recognised national authority, development itself is still not possible in Somalia. Nevertheless, the policy of the EC is that interventions should move as far as possible towards the development end of the continuum as is possible.

Box 5 The EC framework for linking relief, rehabilitation and development

Relief should be considered as those interventions targeted towards preserving human lives. Interventions should be aimed at alleviating severe food shortages, combating epidemics, supporting collapsed health structures and ensuring the availability of safe drinking water. In exceptional cases where the basis of the Somali economy is undermined, interventions outside the proposed sectors should be considered.

In geographical areas where war zones co-exist with relatively stable areas, some low profile interventions can be possible in what is called the **interactive stage between relief and rehabilitation**, provided the following criteria are fulfilled: (i) the absence of fighting; (ii) the presence of an authoritative local counterpart recognised by its community; and (iii) attention should be paid to match the satisfaction of basic needs with the economic potential of the area. The rehabilitation activities should contribute to conflict mitigation and to strengthen the economic basis of the area in order to consolidate the peace process. Food security and health interventions are still priority areas.

Rehabilitation is the process of meeting the basic socio economic and political requirements all the way towards sustainable development. Rehabilitation is a strategy encompassing institutional reform and strengthening infrastructure reconstruction and improved services aimed at regaining a path of sustainable development. The overall goal of this stage of the continuum should be to contribute effectively to sustainable enhancement of security, peace, political tranquillity as well as economic status of the people of Somalia.

Economic and political stability are the basic conditions for the **interactive stage between rehabilitation and development**. Where in the previous stage institutional support should be viewed as an overall support to the capacity of the authorities (e.g. in revenue collection), at this stage it is crucial to build the technical capacity of the local administration in those sectors which are deemed to be crucial for the economic and political stability of the area.

Development is the process by which a social/economic/political stable situation in a given area is assisted to achieve sustainable improvement in the quality of life. There should be an internally and externally recognised governance system in which the authorities have the ability to provide national policies, foreign aid coordination and interaction with international financial institutions.

Source: compiled from EC (1999: Annex II).

In promoting a more developmental approach, it is also necessary to observe existing codes of conduct for promoting long-term peace and political stability within Somalia. The recently agreed SACB framework for continuing cooperation in Somalia re-emphasises these codes of conduct and elaborates the goals and principles which SACB partners should seek to achieve for the maximisation of benefits provided to the Somali people (Box 6).

Box 6 Expected goals and principles of SACB partners

Goals:

1. help ensure the protection of civilian populations and the provision of humanitarian assistance to vulnerable groups that cannot be adequately supported by Somali communities or authorities;
2. build capacity for self-reliance in Somalia, including the opportunity for each individual's and community's full and independent participation in political and economic governance; and
3. promote the sustainable development of livelihoods within an environment of peace and stability.

Principles:

- Somali partnership: The people of Somalia have a fundamental right and responsibility of ownership of humanitarian, rehabilitation and development activities.
- Impartiality: SACB partners will provide assistance throughout the country, subject to the availability of resources, according tot he urgency of humanitarian needs and the prospects for sustainable peace and development.
- Peace Dividend Approach: SACB partners will provide resources in quantity and quality that meet the different capacities of Somali authorities and local communities to use those resources for the public benefit, particularly through the promotion of inter-agency development programming in areas of peace and stability.
- Good governance: SACB partners will seek to cultivate legitimate political cooperation between Somali authorities and the Somali communities they represent, particularly through the promotion of good governance and respect for principles of international law by all Somali authorities and non-state actors (e.g. civil society and business communities).

Source: CAP 2001 for Somalia (United Nations, 2001)

Whilst clear cut-off points between relief, rehabilitation and development do not exist, Table 23 attempts to typologise the various types of projects suggested in Table 22 according to where they might be placed along the relief-development continuum. Whereas the distribution of emergency seed has generally been regarded as a more developmental activity, we prefer to regard it as a strictly relief type of intervention since it is only appropriate in response to an absolute lack of seed and this situation is only likely to exist in the most extreme emergency situations. Whereas the EC continuum states that relief interventions are generally restricted to food and health interventions, there is the proviso that interventions outside of these sectors are also possible where the basis of the Somali economy is undermined. This would certainly be the case for the agricultural economy in the rare event that seed was simply not available.

Table 23 Typology of agricultural projects to promote seed security

	Type of project	Timescale	Comments
Relief	Relief seed distribution	Short-term (one season)	Best regarded as 'emergency relief' intervention rather than longer-term developmental, rehabilitation or capacity-building project. Should be based on sound needs assessment (see Table 20), in response to extreme situation such as widespread displacement and absolute unavailability of seed at local level.
	Seed fair/vouchers	Short-term (one season)	Requires pilot testing; potentially offers an alternative means of providing relief seed to farmers who may otherwise experience difficulty in accessing local seed due to poverty and/or reduced asset base.
Rehabilitation	Capacity-building for seed traders	Medium-term (across two or more seasons)	Specific needs for capacity-building require local-level assessment but might include credit and technical training (e.g. use of seed treatments) for petty traders already experienced in managing seed.
	Improved seed storage	Medium-term (across two or more seasons)	Use of organic and non-organic pesticides needs to be evaluated together with appropriate storage methods to ensure that stored seeds maintain their viability, are free from fungal pathogens and remain free of stored pests.
	Access to appropriate improved varieties	Long-term (four seasons)	Requires expert agronomic inputs to identify and test appropriate variety types through farmer-managed trials. Promising varieties that are favoured by farmers need to be multiplied and disseminated through existing seed networks.
	Technical and institutional support for specific agronomic problems	Long-term	Specific problems must be identified through local-level assessments, but might include fungal disease (e.g. sorghum smut), pests (stem borer, birds, etc.), soil fertility, etc. Appropriate technical inputs should be provided/promoted through appropriate institutional mechanisms.
	Rehabilitation of small-scale pump irrigation infrastructure	Medium-term to long-term, depending on scale	Such rehabilitation should be based on lessons learnt to date by agencies with previous experience of pump rehabilitation in Somalia. The full potential of irrigated agriculture can better be realised if accompanied by the provision of high-yielding crop varieties
Development	Production and trade for external markets	Long-term	Market opportunities for high-value crops that can be grown in Somalia need to be identified, and then traders and farmers made aware of these opportunities; input supply to ensure a consistent supply of grain that meets established quality standards needs to be developed

Although the EC continuum approach states that development interventions are not possible in Somalia, we have included one type of development project in Table 23 relating to agricultural production for external markets. If such an intervention is to be promoted, it should be done so with extreme caution and certainly not without prior thorough harms-benefit assessment. Given the political marginalisation of Somalia's main crop farmers (Rahanweyn and Bantu), it is likely that any external agricultural markets will be effectively controlled by traders belonging to one of the more politically powerful groups. To avoid further marginalisation of Rahanweyn and/or Bantu farmers it is therefore necessary that they are in a position to receive maximum benefit from any such promotion of external markets.

10.6 Monitoring, evaluation and follow-up assessment

Continuous monitoring is an essential feature of the EC continuum approach, and its importance cannot be over-emphasised. In addition to monitoring the impact of specific interventions, particular attention also needs to be given to the pilot testing of new approaches such as seed fairs and seed vouchers and the appropriateness of new agricultural technologies. Before introducing a new technology it is essential that it is first tested on farm over a number of seasons and that adequate attention is given to the ways in which new technologies will be disseminated, together with the training needs of farmers.

On-going, continuous monitoring of livelihood, cropping and seed systems is also an essential component of disaster preparedness. By having a more detailed understanding of local seed management systems then appropriate and timely interventions can be identified and implemented as and when the need arises.

Annex 1 Terms of Reference: Seed Sector Study of southern Somalia

A. Background

Ever since the outbreak of the civil war, which led to the ousting of the Siad Barre regime in 1991, various degrees of conflict and the lack of a central government have affected Somalia.

Conflicts and civil strife caused significant damage to the agricultural infrastructure and a general under utilisation of the agricultural potential, especially in southern Somalia where most of the valuable agricultural resources are located. This situation led to even greater vulnerability of large sections of the population to food insecurity.

The prevailing arid to semi-arid climate aggravates the situation. The annual mean precipitation in the crop production areas varies from as little as 260 mm to 640 mm. The first and main wet season of southern Somalia's bi-modal rainfall is called *Gu* and is expected between April and July. The second or minor wet season called *Deyr* during October and November. However, the great variability of precipitation over years, typically associated with arid to semi-arid climates, is a major problem for farming communities as traditional methods of coping were destroyed during the war.

Over the years, adverse climatic conditions and/or insecurity related incidents rendered farming communities vulnerable or destitute, again and again. To mitigate the situation and to enable farmers who often have no resources left for planting the new crop, agencies involved in relief and rehabilitation activities implement free seed distributions, targeting vulnerable rural households. The purpose of these interventions is usually the support of a sustainable recovery of farming based livelihood systems from crisis situations.

The most important agencies have been the International Committee of the Red Cross (ICRC), the FAO as well as INGOs like CARE, CEFA, CINS, InterSOS, SCF, Trocaire and World Vision. Principal donors have been the European Commission, USAID and EU member states.

Between 1991 and 1993, most seeds for distribution were brought from abroad (chiefly Kenya). This situation has largely changed and during the last years almost all of the cereal and pulse seeds originate from within Somalia, usually from within the same agro-ecological zone as the target area.

However, continued free seed distributions raise some questions:

1. Very little is known on how farming communities have been coping with seed related problems before and during the war and how they cope now.
2. Since 1991, between 2,000 and 4,000 MT of cereal and pulse seeds have been distributed annually.
   - Have these distributions achieved to mitigate the seed problem?

- How have the distributed seeds been utilised? Have they been planted, eaten or sold as food?
- Considering the given situation, have the implemented seed interventions been the most appropriate way to improve the situation?

The fact that each season, emergency interventions in the seed sector are proposed, is an indication that more of appropriate interventions may have to be identified.

The EC Somalia Unit considers seed insecurity a problem. However, we do not see that the current approaches addressing this problem, are sufficient, appropriate and sustainable. Therefore, the EC Somalia Unit wishes to identify more sustainable interventions, taking the specific socio-economic and political situation into account.

B. Objective

The study will provide a better understanding of the seed sector in Somalia, proposing an enhanced strategic approach to seed security at household level. In this regard, particular emphasis should be given to possibilities of strengthening coping mechanisms of farmers, seed availability at household level, as well as planning and implementation of emergency and rehabilitation activities.

C. Results

The study will deliver the following:

- Farmer's knowledge of **seed management** is better understood and problems are identified. This includes a description of the pre-war and post-war seed sector, seed procurement, seed storage and the role of traders.
- The current situation of **seed security** is better understood and problems are identified.
- The **impact** of free seed distributions, their strengths and weaknesses, are known.
- A **strategic approach** to improve seed security at household level is elaborated on. The approach will consider the specific socio-political, cultural and agronomical situation of southern Somalia and will include an outline for emergency and rehabilitation interventions.

D. Issues to be Studied

The main issues to be studied are outlined below. It is recognised that there is very limited documentation about the seed sector and of previous seed interventions available. The study should preferably be scheduled to coincide with the early stages of the *Gu* season to be able to observe the impact of ongoing seed interventions first-hand and to meet the target group.

In their description and assessment, the consultant will include relevant gender and environmental aspects.

i. Understanding farmers seed management in southern Somalia

The consultants will elaborate on:

- The seed management of small-scale farmers, before the war and at present, indicating changes.
- On-farm seed selection including choice of varieties and seed storage.
- The institutional set-up and service provision for farmers.
- Seed interventions between 1991 and the *Gu* 2000 season. Information will be made available from implementing agencies as well as donors. Details on quantities and type of seeds, target groups, geographical distribution, justification for intervention, resulting harvest, lessons learned etc should be included.

ii. Understanding the current seed security situation

Considering the situation at farm- and sectoral level, the consultants will:

- Conduct a workshop identifying strengths and weaknesses as well as threats and opportunities of stakeholders in the seed sector, developing a problem tree and discussing approaches on how to strengthen the sector.
- Present a comprehensive assessment of the seed security situation.

iii. Impact assessment of seed interventions

The consultant will assess:

- The impact of recent and/or on-going seed interventions, which will be selected at the beginning of the consultancy.
- Interventions with the aim to identify a 'best practice'.
- The extent to which previous and ongoing seed interventions are coherent with the specific needs of beneficiaries, the (complex) emergency situation and how they address economic and social demands.
- The co-ordination function of the seed working group of t he Food Security and Rural Development Sectoral Committee (FSSC/SCORD) of the Somali Aid Co-ordination Body (SACB).

iv. Formulation of a strategic approach to interventions in the seed sector

Considering the specific socio-economical, political and agro-ecological situation of southern Somalia and in reference to EC strategies and Guidelines, the consultants will:

- Formulate a strategic approach for interventions in the seed sector, outlining different options and providing sufficient information for a qualified decision on the selection of option(s).
- Describe different options, including information on relevance, feasibility and sustainability.
- Outline guiding principles for emergency seed interventions and rehabilitation activities.

The above lists of issues are not exhaustive. The consultants are required to use their professional judgement and experience of review all relevant factors and bring these to the attention of the EC.

E. Methodology

Considering the expected results of the study, the consultants will include this in their offer an outline of methodologies. The outline should set out the consultants' approach to the following activities:

- Fact finding/data collection/surveys;
- Analysis of the seed sector;
- Consultative meetings with decision makers/stakeholders;
- Development of an strategic approach to interventions in the seed sector;
- Identification of preferred technical solution.

F. Expertise Required

The consultants must specify the qualifications and experience of the specialist to be assigned to the study. For the specialist proposed, a curriculum vita, must be provided, setting out the relevant experience.

The consultants have to consider that the study requires travel in the harsh environmental conditions of rural Somalia and may include overnight stays in remote villages.

Rural Development or Seed Specialist

The proposed specialist will have the following qualifications:

- University degree in agriculture or a social science field relevant to rural development/rural sociology and/or seed security.
- 10 years of professional experience in rural development/rural sociology of which 3 years are in the field of coping mechanisms of rural populations and/or seed security, preferably in emergency situations.

- Demonstrated experience in sub-Saharan countries. Knowledge of the specific socio-economic situation in the Greater Horn of Africa, in particular Somalia, would be an added advantage.
- Proven experience in the application of participatory techniques and evaluation missions.
- Practical experience in assessing complex emergency situations.
- Experience in the development of rural development/seed sector concepts in a relief/rehabilitation context and the preparation of studies.
- Fluent in English, both writing and reading.

We suggest the consultant collaborates with a Somali professional in conducting the study.

G. Reporting

The consultants will present an inception report (10–15 pages) latest 1 week after completing the fieldwork. This report will outline the strategic approach and alternative technical solutions for interventions in the seed sector in sufficient detail to enable an informed decision to be made on the best solution. The findings will further be presented during a presentation for interested parties at the conference room of the EC Somalia Unit in Nairobi.

A draft report in 5 copies and on computer disk is to be presented to the Counsellor of the EC Somalia Unit for comments within 5 weeks of completing the fieldwork.

The consultants will take account of these comments in preparation of the final report. A final report is to be submitted in 5 copies and on a computer disk using MS WinWord within 4 weeks after the consultants receive the response from the EC Somalia Unit.

H. Time Schedule

Time schedule for the International consultant:

5	days	briefing in Nairobi, contacting organisations, in Nairobi
25	days	field study in Somalia
5	days	research/meetings in Nairobi
3	days	stakeholder workshop and elaboration on briefing report
10	days	report writing
2	days	international travel
total	**50**	**days**

Note: the time schedule is indicative and will finally be agreed upon between the EC Somalia Unit and the consultants.

I. Assistance to the Consultants by the Contracting Authority

The Contracting Authority will make available the following information and facilities to the consultant's staff:

- Documents regarding the EC strategy in Somalia and the sector.
- Relevant information on previous interventions in the seed sector, funded by the EC.
- The initial contact to other agencies, donors and the SACB secretariat in Nairobi.

The Contracting Authority will facilitate:

- *Air travel between Kenya and Somalia, using ECHO flight.*

Annex 2 Names, positions and organisational affiliations of people met

Name	Position	Organisation
Christoph Langenkamp	TA Rural Development	European Union
Thierry Antoine	Food Security Analyst	Food Security Assessment Unit
Buzz Sharpe	Team Leader	Food Security Assessment Unit
A H Shirwa	Agronomist	Famine Early Warning System Network
Sidow Ibrahim Addou	Economist	Famine Early Warning System Network
Raymond Desarzens	Field Co-ordinator	International Committee of the Red Cross
Jane MacAskill	Nutritionist/Food Economist	International Committee of the Red Cross
Herman Odhiambo	Seed Project Manager	Care
Lex Kassenberg	Assistant Country Director/Somalia	Care
John Miskill	Team Leader southern and central Somalia	Care
Marai Renato	Emergency Officer for Somalia	Food and Agriculture Organisation
Christine Neset	Food Security Officer for Somalia	Food and Agriculture Organisation
Mike Jordan		Save the Children UK
Giorgio Sartori	Head, Data and Information Management Unit	United Nations Development Office for Somalia
Robert Hughes	Agronomist	European Committee for Agricultural Training
Roberto Pes	Regional Co-ordinator	INTERSOS
Nisar Majid		Food Security Assessment Unit
Edward Kallon	Programme Co-ordinator	World Food Programme– Somalia
Simon Narbeth	Food Security and Conflict Officer	World Food Programme– Somalia
Luigi Cavestro	Project Co-ordinator	Cooperazione Italiana Nord Sud
Mohamed Elmi Ibrahim	Agronomist	Cooperazione Italiana Nord Sud
Ali Ismail	Senior Agronomist	Cooperazione Italiana Nord Sud
Andre Le Sage	Humanitarian Affairs Officer	United Nations Coordination Unit Somalia
Mohamed Waisame	Vice-Minister for Agriculture	Ministry of Agriculture, Republic of Somaliland
Sa'ada Dahir Ahmed	Nutritionist	VETAID
Mohamed Jibril Ibrahim	Project Manager	VETAID
Derek Massey	Country Programme Co-ordinator	VETAID
Nur Ahmed Ibrahim	Director General	Ministry of Agriculture
Charlotte Langeveld		Concern Worldwide InterSos, Bardera SADO (local NGO), Bardera
Abdi Nasir Osman Elmi	Field Monitor	FSAU
Addou Aden Magan	Field Monitor	FSAU
Abdirizak Osman Hussein	Field Monitor	FSAU
Peter Wangai		World Vision
Idris Abdi Taktar		World Vision
Husein Adan Tubako	Trader	Kalkal Express
Amina Hassan	Trader	Baidoa market

Annex 3 Inventory of relief seed distributions, 1991–2000

Date	Organisation	Location	Beneficiaries	Seed types	Quantities MT	References; reports
1991 (Sept-Oct)	World Concern, with logistical support from ICRC	Lower Juba, Lower Shebelle	55,000[7] in over 200 villages	maize sorghum cowpeas veg	159 114 20	Crisp, 1992
1992–3	CARE	Gedo, Bay, Bakool, Lower and Middle Shebelle	129,938	grain/legume veg oilseed	1,081 8.8 200	CARE Annual report 1992–3
1992	Oxfam (UK)	Shabelle		maize sesame veg	533 25 25	Baffo
1992	ICRC	nationwide		maize sorghum	665 860	Baffo (see also Grunewald, 1993)
1992	SCF (UK)	Shabelle, Hiran		maize sorghum sesame veg	200 100 40 10	Baffo
1992	Concern	Bay and Bakool		maize sorghum cowpea	170 170 68	Baffo
1992	World Vision	Bay		sorghum	70	Baffo
1992	FAO	nationwide		maize sorghum veg	not known	Baffo
1993	CARE	Bay, Gedo, Lwr Shebelle		maize sorghum cowpea sesame veg	20 500 100 50 12	Baffo (*Gu* 1993 plans)

[7] Seed quantities per family were as follows: 3kg maize, 2kg sorghum, 2kg cowpea, 10g pumpkin, 5g watermelon, 5g tomato, 5g okra, 5g eggplant, 5g pepper, 5g kale.

Date	Organisation	Location	Beneficiaries	Seed types	Quantities MT	References; reports
1993	CRS	Bay		sorghum cowpea groundnuts	200 40 40	Baffo (*Gu* 1993 plans)
Deyr 1998–9	SC (UK)	Belet Weyne		maize sorghum cowpea sesame	35 35 5 5	Memo dated, 14 September, 2000
Gu 1999	SC (UK)	Belet Weyne		maize sorghum cowpea sesame	35 35 12.5 7.5	Memo dated, 14 September, 2000
Gu 2000	World Vision	Middle Juba, Bay		sorghum	326	Seed Working Group report, 30 June, 2000
Gu 2000	InterSOS	Gedo, Bay		sorghum	161	Seed Working Group report, 30 June, 2000
Gu 2000	ICRC	Gedo, Lower Shabelle, Middle Shebelle, Bay, Bakool		sorghum cowpea	217 42	Seed Working Group report, 30 June, 2000
Gu 2000	ADRA	Hiran		sorghum	54	Seed Working Group report, 30 June, 2000
Gu 2000	SC (UK)	Belet Weyne		maize sorghum cowpea sesame	52.5 72.5 10 5	Memo dated, 14 September, 2000
September 2000	ICRC	Gedo, Bay, Bakol, Hiran, L Shebelle, M. Shebelle, Mudug, Galgudug, Juba		sorghum cowpea veg	264 79.2 106,000 sachets	ICRC plans, Seed meeting, 19 September, 2000
September 2000	World Vision	Middle Juba		maize sorghum	27 30	WV plans, Seed meeting, 19 September, 2000

Annex 4 Field visit to the Republic of Somaliland

The Republic of Somaliland seceded from the rest of the Somalia in 1991 after a prolonged civil war which resulted in the collapse of the Barre' regime together with the Somali state. Though the breakaway 'state' has not achieved international recognition, it has distanced itself from the devastating factional fighting in the south of Somalia, managed to negotiate peaceful settlements of disputes among its competing clan groups (largely through traditional systems of governance) and established a functioning government.

Agricultural research in Somaliland was started in colonial times, and was centred at Aburin Research Station south-west of Hargeisa. Post-independence, there was a significant investment in agricultural research on sorghum, and maize by the Somalia Government, with several varieties being introduced including Martin and GP 148. Although all agricultural research has ceased, the information from research programmes has remained, and been used in selection of varieties in relief seed distributions. The most striking example of this was the Save the Children (UK) seed distribution in mid–1994 after the failure of the *Gu* rains. Farmers requested short-duration sorghum seed, and the Ministry of Agriculture was able to provide a list of varieties that had been tested and found to perform well.

In 1999, the *Gu* rains failed, and FAO procured 100 MT of seed, 75 MT of maize and 25 MT of sorghum, from unaffected villages. In addition, provision was made to provide 3000 farmers with four tillage hours, sufficient to plough one hectare. The cost of tillage hours was split, with the community expected to reimburse 50% of the hours, in the form of grain at harvest based on prevailing market prices, to the village development committees. The committees could then use the returned grain to carry out food for work projects in the communities. The tillage hours were well received, with some communities actually increasing the number of beneficiaries by reducing the area ploughed. A total of 5000 farmers were provided seed, but only 3000 received tillage hours.
The area cropped and quantities produced are given in Table 24.

Table 24 Crop production statistics for the Republic of Somaliland (1997–9)

Crop	*Gu* 1997		*Gu* 1998		*Gu* 1999	
	Area (ha)	Production (MT)	Area (ha)	Production (MT)	Area (ha)	Production (MT)
Sorghum	17,610	15,741	14,200	9,640	19,105	14,845
Maize	11,398	7,979	6,300	5,040	8,720	6,976
Total	29,008	23,720	20,500	14,680	27,825	21,821

Source: FSAU, 1999

The case of Boodley Village (southern Galbeed region)

All farmers in the settlement had been forced to flee in May, 1988 (the start of the *Gu* planting season) when government soldiers based in the area started causing problem and there was fear of bombardment by air. The villagers had to flee at night; their huts were subsequently burned and their grain stores looted. Some fled with their livestock and found refuge in the rural areas of Ethiopia where they were able to maintain their herds. Others went to the refugee camp (Harte Sheikh) and lost their livestock. Despite having well-established social relations with the local Ethiopian population, it was reportedly not possible for the farmers to gain access to land for cultivation in Ethiopia.

Voluntary repatriation began in March, 1991 (before the rains). Those who could purchase small quantities of seed (e.g. 2–3kg) in Ethiopia did so, and acquired a range of varieties which they had previously cultivated in Boodley. The only sorghum variety which they chose not to purchase was a long duration (6 months) type. One farmer purchased a large quantity of a local variety and brought it back to the village and then supplied other farmers. A farmer who we interviewed was given 5kg of seed from this farmer. Having planted 5kg in 1991, the farmer was able to plant 10kg in 1992. Most farmers in the village planted small farms in 1991 and were therefore not able to fully recover their 'normal' seed stocks until the following season.

Several farmers in the village received 10kg of sorghum as seed aid from SCF in 1992[8]. This seed had been purchased by SCF from farmers just over the Ethiopian border, after having carried out a survey of seed availability in the area. Due to the security situation and the risk of looting from NGO convoys, SCF employed a trader to purchase the sorghum seed at the end of the *Deyr* season (September, 1991) from local Ethiopian farmers and checked the bags to ensure that the trader had done the job properly. The trader then transported the seed to Somaliland and SCF distributed the seed to farmers in March, 1992. Farmers in Boodley reported that SCF had procured the seed from an appropriate source and that they themselves would have acquired seed from Ethiopian farmers had they had money with which to purchase it.

It is important to note that farmers will only purchase seed from the grain market as a last resort – the farmer we interviewed had never purchased such seed (grain). When a farmer wants to acquire seed, he will have identified another farmer (i.e. a local seed provider) with the required variety which he will have observed in the field well before harvest time. The seed of the chosen variety will then be acquired – either as a free gift or purchased for cash (depending on the relationship of the farmers) – from the seed provider at the time of harvest. The price of seed acquired in this way last season was SSh.4,000 for a one litre cup ('gallon') while the same quantity of grain was selling for SSh.1,500 at this time. It is important to note that there was a wide range of different varieties being cultivated by farmers in Boodley, they selected varieties at harvest time and grew separate varieties in separate fields. These factors encourage a clear distinction between seed and grain.

The local seed system in Boodley village took just two years (in which the second year was very good) to fully recover. In contrast, farmers reported that there were several sorghum varieties that had been cultivated prior to the civil war but that they had lost as a result of war and displacement. According to the CINS agronomists, the 'extinct' varieties were largely the short duration types. Farmers did not know where to go to access these varieties, and they could not afford the cost of transport to go and search for them. Whilst the social networks offered by the clan system are extremely strong and provide a very effective means of accessing seed, these networks are perhaps spatially limited. One might expect that the social networks maintained by those involved in trade activities would be more extensive, but perhaps these merely connect with urban markets rather than other rural areas. Marriage networks can be extensive, especially since there is a preference for exogamous marriage outside the clan/tribe. There are three such clans/tribes in Somaliland: Isac are predominant in Hargeisa; Gerebusi in Boroma; and Issar in the coastal areas.

The case of Dehar Dega village

This village is located in southern Awdal region, less than ten kilometres from the town of Borama. Agricultural production is considerably more important to local livelihoods in this village than in Boodley, as evidenced by the size of the grain pits (up to 4 MT per household) and the range of

[8] SCF also provided 3kg of maize seed (purchased in Nairobi) and tools (e.g. hoes, axes, rakes, etc).

cereals grown (sorghum, maize, pearl millet). However, there was not a very diverse range of sorghum varieties grown locally and farmers' fields were observed to be relatively pure. Farmers tend to save only the amount of seed that they themselves expect to plant. Farmers who require seed at planting time tend to acquire (either as free gift or through exchange of cash purchase) grain (not seed) from other farmers. When grain (to be used as seed) is acquired in this way, there is no difference between the price paid for this 'seed' and the grain available in the market. The conversion between grain and seed is possible because of the few varieties locally planted and the relative purity of stands.

The civil war was not so intense in this region, and those in the village were displaced for only two weeks (April/May, 1988). This displacement appears not to have had any lasting negative effect on the agricultural system. In 1994, however, SCF (UK) predicted food insecurity due to civil unrest and a poor *Gu* season. SCF began planning a seeds distribution programme by first asking farmers (including those in the case study village of Boodley) what type of seed they required. Farmers indicated a strong preference for short duration sorghum types.

Local short duration types had been lost following two consecutive droughts of the early 1980s which occurred at a time when the village was full of people from Ethiopia who had been displaced by the Ogaden War. Prior to this time, farmers reported that they had cultivated a variety known as *abadiro* (short duration type commonly available in Gebiley); *gagap ade* and *gagap asse* (one red and one white three month sorghum that had been grown since colonial days); and a fourth type of an unknown name.

Having established the need for short duration types, SCF sought advice from the Ministry of Agriculture as to which short duration types would be appropriate. SCF then consulted farmers again concerning the varieties recommended by MoA and found that farmers did not want Serena due to its bitter taste and lack of fodder. Farmers' preferred short season varieties which were then procured in Nairobi: GPR148 (an ICRISAT photoperiod insensitive type with three dwarfing genes) and Martin (an improved variety developed in USA from a southern African kafir type). Both of these varieties had been tested by the MoA prior to the civil war and both were appropriate to local conditions. In Boodley village, these two varieties were locally known by the same name – *fetich* – and both were observed to be cultivated by farmers at the time of our visit in September, 2000. The fact that farmers have maintained these varieties and cultivated them since 1994 is a good indication of their appropriateness. Although the quantity of these varieties observed in the fields was not large, this was because short season varieties tend to be planted in the *Gu* season and it is only if the *Gu* season fails that short season sorghum is planted in the *Deyr*. We observed the seed of the short season varieties stored for the following *Gu* season – the seed had been threshed and placed in bags which had been sprayed with DDT. We also observed a field of *fetich* (short season sorghum) which had ratooned following the *Gu* harvest.

Lessons learnt from the village case studies

The SCF 1992 emergency seed distributions in both areas are regarded as highly appropriate to local situations and had long-term positive impacts. Of course, the subsequent peace in Somaliland following the 1991 fall of Siad Barre's government played an important role in allowing local farming systems to recover from the 1988–91 crisis. The intervention provided appropriate seed inputs and allowed the local seed system to recover more quickly than it might have done otherwise. Admittedly, the need for short duration varieties in Dehan Dega did not arise out of the 1991 crisis or the drought and insecurity in 1994 but was related to the loss of these varietal types in the early 1980s. Presumably farmers could have accessed these 'lost' varieties through social networks had they felt the need, but the presence of pearl millet and short season maize varieties in

the cropping system made up for the lack of short duration sorghum to some extent. The more recent need for short duration sorghum was described by farmers as necessary due to the shortening of the *Gu* rains (from 6 months to 4–5 months).

The location of Boodley village in relation to the refuge camps in Ethiopia was such that the local sorghum varieties available in Ethiopia were the same as those previously planted by farmers. But only those farmers with cash were able to acquire varieties in Ethiopia in preparation for their repatriation. The distribution of seed vouchers to refugees would have perhaps allowed them to access more easily the varieties of their choice, though it has been suggested that the experience of previous government schemes may make it difficult for farmers to trust the value of such vouchers. It is important to note that such a voucher distribution programme should be carried out prior to the harvest.

Annex 5a Survey Part 1 – Farmer questionnaire

Please read accompanying instructions before completing this form. Each enumerator should interview five different farmers (two better-off and three poor – see instructions) from the same village. The farmer interviewed should be the head of household. Use a separate form for each farmer.

Enumerator's name: _____ Date: _____

1. Details of respondent

1.1 Name_____ (Initials: _____)

1.2 Age (approx)_____ years.

1.3 Male or female: _____

1.4 Village or hamlet: _____

1.5 District: _____

1.6 Region: _____

1.7 Total number of households in the compound: _____

1.8 Total number of people (both adults and children) normally living in the compound: _____

1.9 Total number of farms cultivated by members of the compound this season (*Deyr*): _____

1.10 Total number of livestock presently owned by members of the compound:

(a) goats and sheep_____ (b) cattle_____ (c) camels_____

1.11 Wealth category (as judged by enumerator, tick one):

better-off_____ poorer_____

1.12 Did you give or receive *zaka* this year? give_____ receive_____ neither_____

2. *Deyr* 2000 season

2.1 Record the crops planted in each farm cultivated by the farmer in the *Deyr* 2000 season below:

Farm	**Location**[a]	Size (**specify *ta'ab* or *jibaal* or tractor hrs**)	Main crop	Intercrop (if any)	Rainfed or irrigated	Owner-ship[b]	Tillage[c]	Soil type[d]	**Major production problems**[e]
1									
2									
3									
4									

a. location
in or near village = 1
neighbouring village = 2
over 10 kms (or 3 hrs walk) away = 3

b. ownership
own or family land = 1
rented land = 2
borrowed land = 3
donated land = 4

c. tillage
hand hoe = 1
donkey plough = 2
oxen plough = 3
tractor = 4
no tillage = 5

d. soil type
red = 1
black = 2
other = 3
(specify)_____

e. Production problems
drought = 1
insect pests = 2
weeds = 3
livestock damage = 4
birds = 5
other = 6
(specify)_____

Enumerator's initials_____ Farmer's initials:_____

2.2 Record the seed sources of the crops planted by the farmer in the *Deyr* 2000 season below:

Farm	Main crop	Name of variety	No. times planted	Seed source[a]	Seed quantity (**specify unit**)*	If self-saved, state year seed originally obtained	Provider[b]	Provider: male/female	Acquisi-tion method[c]	Location of provider[d]
1										
2										
3										
4										

* Units of measurement for seed might include small tins, big tins, kish, quintal, etc.. Please specify which unit you are referring to

a. seed source
self-saved seed = 1
acquired seed = 2

b. provider
close relative = 1
other farmer = 2
trader = 3
relief project = 4

c. acquisition
free gift = 1
exchange for seed or grain = 2
exchange for labour = 3
exchange for other item = 4
bought for cash = 5
(specify cost)_____
borrowed = 6

d. location of provider
within village = 1
neighbouring village = 2
over 10 kms (or 3 hrs walk) away = 3
(specify)
local marketplace = 4

3. *Gu* 2000 season

3.1 Record the crops planted in each farm cultivated by the farmer in the *Gu* 2000 season below:

Farm	**Location**[a]	Size (**specify *ta'ab* or *jibaal* or tractor hrs**)	Main crop	Intercrop (if any)	Rainfed or irrigated	Owner-ship[b]	Tillage[c]	Soil type[d]	**Major production problems**[e]
1									
2									
3									
4									

a. location
in or near village = 1
neighbouring village = 2
over 10 kms (or 3 hrs walk) away = 3

b. ownership
own or family land = 1
rented land = 2
borrowed land = 3
donated land = 4

c. tillage
hand hoe = 1
donkey plough = 2
oxen plough = 3
tractor = 4
no tillage = 5

d. soil type
red = 1
black = 2
other=3
(specify)_____

e. Major problems
drought = 1
insect pests = 2
weeds = 3
livestock damage = 4
birds = 5
other = 6 (specify)____

3.2 Do you own any farms which were not cultivated in the *Gu* season? Yes_____ No_____

3.3 If yes, for how many years has the farm(s) not been cultivated? _____

3.4 If yes to 3.3, what was the main reason for not cultivating this farm(s)?_____ (use codes below)

lack of cash for rent of tractor = 1
lack of draught power = 2
lack of manpower =3
lack of seed = 4
lack of pump irrigation = 5
dispute over ownership =6
soil of poor quality = 7
other (specify) = 8

3.5 Record the seed sources of the crops planted by the farmer in the *Gu* 2000 season below:

Farm	Main crop	Name of variety	No. times planted	Seed source[a]	Seed quantity (**specify unit**)	If self-saved, state year seed originally obtained	Provider[b]	Provider: male/female	Acquisi-tion method[c]	Location of provider[d]
1										
2										
3										
4										

* Units of measurement for seed might include small tins, big tins, kish, quintal, etc.. Please specify which unit you are referring to.

a. seed source
self-saved seed = 1
acquired seed = 2
ratoon crop = 3

b. provider
close relative = 1
other farmer = 2
trader = 3
relief project = 4

c. acquisition
free gift = 1
exchange for seed or grain = 2
exchange for labour = 3
exchange for other item = 4
bought for cash = 5
specify cost_____
borrowed = 6

d. location of supplier
within village = 1
neighbouring village = 2
over 10 kms (or 3 hrs' walk) away = 3 (specify)
local marketplace = 4

4. Seeds provided to others and seeds received

4.1 Have you provided seed to other farmers in the past two years (i.e. in the past four cropping seasons)? Yes_____ No_____

4.2 If yes, please provide the following details for the seed provided to other farmers:

Season and year provided[a]	Crop[b]	Variety	**Means of provision**[c]	Number of recipient farmers	Approx total quantity provided (**specify unit**)

a.season/year
Deyr 2000 = 1
Haggai 2000 = 2
Gu 2000 = 3
Jilaal 1999 = 4
Deyr 1999 = 5
Haggai 1999 = 6
Gu 1999 = 7
Jilaal 1999 = 8

b. crop
sorghum – 1
maize = 2
pearl millet = 3
sesame = 4
cowpea = 5
vegetables = 6

c. means of provision
free gift = 1
exchange for seed or grain = 2
exchange for labour = 3
exchange for other item = 4
sold for cash = 5
loan = 6

4.3 Have you ever received seed from an aid agency? Yes_____ No_____

4.4 If yes, please provide the following details, in order of most recent first:

Season and year received	Crop[a]	Variety (if known)	Seed quantity (**specify unit**)	Seed quality[b]	Use[c]	If planted, did you save any seed from the harvest for planting in the subsequent season? (yes/no)

a. crop
sorghum = 1
maize = 2
sesame = 3
cowpea = 4
vegetables = 5

b. seed quality
good quality = 1
poor quality =2
If 2, please specify below why quality was poor:

_____

_____

c. use
planted as seed = 1
eaten as food = 2
given away for free = 3
exchanged for other seed = 4
exchanged for other item = 5
sold for cash = 6
other = 7 specify:_____

Annex 5b Survey Part 2 – Enumerator questionnaire

Please read instructions before completing this form. If you undertake the survey in more than one village, please complete a separate sheet for each village.

1. Name of enumerator_____ (Initials: _____)

2. Tick to indicate whether you work for FSAU: _____ OR
a local NGO supported by CARE: _____

3. If NGO, what is name of NGO:_____

4. Place of residence (town, district, region):

_____

5. Name of village and district where farmer questionnaire was undertaken:

_____

6. Food Economy Group of village (if known)

_____

7. Previous harvests of village (indicate whether good, average or poor):

Deyr 2000_____ *Gu* 1999: _____

8. Describe the local size of a *ta'ab* or *jibaal* or *darab* or any other units of measurement that you have specified on the farmers' questionnaire (e.g. small tins, large tins, etc.).

_____

_____

9. Provide details of any relief seed aid distributions that you know to have been carried out since 1991 in the village surveyed. Start with the most recent first, and continue overleaf if necessary.

Season and year	Aid agency	Crops	**All** farmers benefited, or only **some** targeted?	Timing (indicate whether **late** or **on time**	Seed type (indicate whether **good** or **inappropriate**)

Annex 6a Participants at Nairobi workshop, 5 February 2001

Name	Organisation
Edward Kallon	WFP Somalia
Simon Narbeth	WFP Somalia
Hiroko Nishino	WFP Somalia
Michael Kevin Jordan	SCF-UK, Somalia
Ute Westphal	Food Security Programme, Caritas, Switzerland
Herman Odhiambo	CARE-Somalia
Alison MacColl	FAO
Andre Le Sage	UNCU
Christoph Langenkamp	EC-Somalia Unit
Stephanie Kouassi	EC-Somalia Unit
Charlotte Langeveld	Concern
Michel Del Buono	CINS
West Yugule	CINS
Luigi Cavestro	CINS
Thierry Antoine	FSAU/FAO
Ali Mohamed Noor	Trocaire, Mandera
Matthias Lenggenhager	ICRC-Somalia
Michelle Parke	World Vision- Somalia

Annex 6b Participants at Baidoa workshop, 8 May 2001

Name	Organisation
Idris Abdi Taktar	World Vision
Ibrahim Hussein Ibrahim	World Vision
Hamdun Moh'd Noor Ali	World Vision
Hussein A'rahman Ibrahim	World Vision
Mustafa Mohamed Sheik	World Vision
Thierry Antoine	FSAU-Nairobi
Mohamed Muse Yusuf	FSAU-Nairobi
A. M. Abikar	FSAU-Mogadishu
Abdirazak Osman Hussein	FSAU-Bakol
Mohamed Farah Omar	FSAU-Lower Shabelle
Addo Aden Magan	FSAU-Baidoa
Abdi Hussein Roble	FSAU-Hiran
Moxamed Isse Moxamed	FSAU-
Abdikarin Abdi Ismail	FSAU-Mandera
Salad G. Imoble	FSAU-Mogadishu
James Kingori	FSAU-Nairobi
Hussein Abrahim Ali	Agronomist, Baidoa
Abdulbori A. Shekh	Agronomist, Baidoa
Husein Adan Tubako	Kalkal Express Trader, Baidoa
Noor Ali Mohamed	WFP
Muhiedin M. Yaro	WFP
Hassan Ali H. Abdi	CARE International
Herman Odhiambo	CARE International
Mohamed Said Daar	FAO, Merka

Annex 7 Farmers' seed sources disaggregated by farmers' wealth status

Table A15 Means of seed sourcing by crop, season and farmers' wealth status

Crop	Season	Wealth	Own Saved	Gift	Exchange for seed, labour or other item	Buy	Borrow
Sorghum	*Gu*	Better-off (n=26)	46%	19%	0%	31%	4%
		Poorer (n=65)	37%	30%	2%	28%	3%
	Deyr	Better-off (n=35)	46%	14%	0%	37%	3%
		Poorer (n=83)	52%	23%	4%	20%	1%
Maize	*Gu*	Better-off (n=44)	36%	12%	2%	50%	0%
		Poorer (n=50)	38%	10%	4%	46%	2%
	Deyr	Better-off (n=41)	41%	13%	5%	41%	0%
		Poorer (n=60)	42%	16%	2%	38%	2%

Table A16 Location of seed source by crop, season and farmers' wealth status

Crop	Season	Wealth	On-farm (own-saved seed)	Within village	Nearby village	>10 km or 3 hrs walk	Local market	Others
Sorghum	*Gu*	Better-off (n=27)	44%	20%	7%	0%	22%	7%
		Poorer (n=66)	36%	24%	12%	6%	20%	2%
	Deyr	Better-off (n=34)	47%	23%	3%	3%	21%	3%
		Poorer (n=82)	51%	20%	4%	4%	15%	6%
Maize	*Gu*	Better-off (n=38)	42%	11%	0%	0%	42%	5%
		Poorer (n=53)	36%	10%	4%	8%	38%	4%
	Deyr	Better-off (n=39)	44%	15%	0%	0%	38%	3%
		Poorer (n=57)	44%	16%	5%	3%	32%	0%

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