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# WAR AND CROP DIVERSITY



**Edited by Louise Sperling**

## EDITORIAL INTRODUCTION

For there to be productive and stable agricultural livelihoods, there must be crop diversity, on-farm. Growing a number of crops and different varieties of each crop helps farmers to fine-tune their cropping systems to local ecological conditions, to enhance the food security of their households and to exploit a range of crop-related products or benefits (for example forage or medicine production and enhanced soil fertility).

Despite these well-known observations, crop diversity is generally narrowing in farmers' fields. A number of factors lie behind this trend, including, among others: the spread of commercial agriculture, acute natural phenomena (such as drought and floods), and war and civil strife. The frequency of the latter, in particular, is on the rise. For instance, each of the ten countries in the Greater Horn of Africa has experienced either drought or civil strife and war – or both – since 1980 alone (ASARECA, 1996).

Though crop diversity is declining, international understanding of the *differential* nature of the stresses it faces, and how to deal with them, remains underdeveloped. This argument was elaborated at the 1996 International Technical Conference on Plant Genetic Resources: 'No formal mechanisms exist to monitor such [stress] situations, assemble information or initiate appropriate action' (FAO, 1996:45). In order to protect and enhance crop diversity, it is necessary at least to understand the particular nature of the problem; useful aid and development interventions in the area of crop diversity can only derive from more targeted knowledge.

The four papers presented in this volume focus on one potential stress to crop diversity, namely war and its accompanying civil strife. Taking a farmer-centred perspective, the case studies examine the effects of war on crop diversity through the same set of guiding questions: 'what were the biological, social, and political factors which shaped crop diversity prior to the war?'; 'which defining characteristics of the war itself seem to have influenced the way in which crop diversity evolved and was managed?'; 'how do pre- and post-war crop production systems compare?'; and 'what key lessons can we draw from these studies, for both development practitioners working at the grassroots level and policy-makers involved in shaping research, development and relief interventions in agriculture?'

By presenting comparative cases, this volume aims to stimulate analytical thinking about the links between war and changes in cropping systems. The studies themselves can but suggest the complexity of the term 'war' and how the set of events that go to make up war can be linked to crop and varietal changes. They are preliminary (as is study of the subject as a whole) rather than definitive. They are also rather different in scope. The Cambodian and Nicaraguan studies provide overviews of the effects of war and civil disruption (which lasted a decade or more in both countries) on broad cropping systems and the rice crop, respectively. The Rwanda and Sierra Leone cases, in contrast, focus

This Network Paper is a precursor to work on the policy and practice of supporting crop diversity, which ODI's Seed and Biodiversity Programme intends to carry out over the next three years or so. The work will include detailed case studies which examine crop diversity in farmers' fields from various perspectives, and will synthesise lessons learned. The aim is to contribute to better and more targeted policy, research, development and emergency aid interventions concerning crop diversity.

As well as the impact of war and other stresses on crop diversity, the work will cover issues such as:

- plant breeding approaches and their impact on crop diversity;
- seed supply policies and their effect on crop diversity;
- women's perspectives on and management of crop diversity; and
- approaches to measuring and evaluating crop diversity.

If you are interested in publications arising from this work, or in contributing to the work as an author, please write to or fax the Seeds and Biodiversity Programme at the ODI address given on the back cover of this Network Paper, or email us at:

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on the effects of fairly short-lived wars and pursue more micro-level analyses of varietal diversity issues in one or two crops.

## Nicaragua

The Nicaragua study draws on a brief period of research in two war-affected regions and presents farmers' own descriptions of changes in cropping patterns. The period of the Nicaraguan civil war (which spanned the 1980s) saw profound economic and social changes in this country. Not able to separate out the effects of the war *per se* from massive changes in government policy, the author presents an overview of the way in which measures such as land redistribution, the establishment of cooperative production, the provision of credit to small farmers as well as the uncertainty of guerilla attacks, resulted in a dramatic changes in agriculture during the war. The most intense period of civil disruption was marked by increased production of basic staples as the revolutionary government geared its economy towards survival, food sufficiency and defence. The production of export and luxury items such as coffee, tobacco, and cattle declined, giving way to a focus on maize and beans (among other crops). Modern, high-yielding varieties of these crops were promoted in place of local cultivars.

The author traces changes through to the post-war period. Farmers now suggest that the individual varieties 'lost' were not key and, in any case, can probably be reaccessed across the broader in Honduras. However, farmers are facing a more serious dilemma in the post war period: a change in government in 1990 and further shifts in policy have meant that farmers are now provided with relatively little direct agricultural support, except for in those areas in which NGOs are operating. At the same time they have lost some of the skills and knowledge which enabled them to endure the lower-input farming situation pre-war.

The Nicaragua example does not show guerrilla 'war' immutably changing a local production system. Rather, it illustrates the consequences of war-time strategies which aim to promote one type of production system over another. Issues of biodiversity and sustainable production were not considered important during the early years of the war in Nicaragua; they were only brought to the fore through NGO efforts in the late 1980s. The authors point to the need for more concerted attention to be paid to the effects of wars on farming systems at the time when the wars themselves are underway. Only then can policy responses be adequately informed.

## Cambodia

As in Nicaragua, the Cambodian genocide and civil disruptions throughout the 1970s ushered in profound agricultural change. Once more, the particular impact of the victor's policy edicts is difficult to separate from that of the combat itself and accompanying disruption. Large-scale population movement – of farmers from one part of the country to another and of urban dwellers to the countryside – during the war meant that many were new to the areas in which they were now farming. This dramatically increased the incidence of crop failure.

Cambodia lies on the edge of the region of origin of rice and it is on this crop that the author concentrates. Rice diversity in this country is very high: for every 400 ha there exists a distinct cultivar and some 3,000 Cambodian rice varieties have already been preserved in genebanks. The author describes how the wartime government promoted irrigated rice, officially forbidding the cultivation of both upland and deepwater rice. As Cambodia was closed to outsiders for long periods, it is hard to ascertain the micro-level effects of such policy pronouncements. However, a very focused case study suggests possible trends. In a deepwater rice area of Takeo district, farmers indicated, by name, their 15 most important local rice varieties. All had been lost during the war; none had yet been recovered.

Unless more precise assessments of loss are conducted in Cambodia, it will be difficult to design appropriate interventions. However, as a general principle, the author suggests screening and releasing some of the farmer varieties already held in genebanks (a process already underway) and re-evaluating breeding strategies so as to promote the use of diverse germplasm on farm. Recent farmer interest in a narrow set of modern rice cultivars otherwise threatens to do what the civil disruptions may not in the end have done: to decrease sharply rice varietal diversity in farmers' fields.

## Rwanda

The Rwanda case study examines the effects of a civil war which killed a million people within several months in the mid-1990s. Somewhat surprisingly, countrywide analyses have shown the effects of the war on agriculture to be fewer than anticipated: fighting was staggered, harvests were relatively good, at least a third of the population was not displaced at all and 'seed aid' helped farmers keep their own adapted stocks.

In assessing varietal diversity, the author draws several lessons from Rwanda. First, equal attention should be paid to understanding and, if possible, safeguarding the seed channels which can re-supply germplasm as to the germplasm itself. The key issue in Rwanda was not whether a farmer possessed a particular variety at any point in time, but rather whether she/he could re-access that variety on demand. A comparison between two crops illustrates the point. Bean production in Rwanda remained relatively stable during the war as local bean varieties (some 1,300 phenotypes) could be restocked through the remarkably resilient, local farmer markets. By contrast, potato production tumbled. Pre-war, it had been dominated by three improved varieties. Production was the victim of reliance on formal sector supplies of clean seed, fungicide and fertiliser, all of which dried up in the early days of the war.

Second, the Rwanda case shows the importance of distinguishing between farmers' absolute versus relative lack of varieties or seed. Absolute lack implies a true scarcity of varieties or seed in a region. Remedial action in such circumstances should focus on re-introduction or interventions to build seed production capacity. However, relative lack of varieties/seed – by far the more common scenario in Rwanda – implies problems with accessing seed (e.g. farmers may not have adequate funds available) rather than absence of seed *per se*. In such circumstances, interventions should not be germplasm-based. Rather, innovative poverty-focused projects and, perhaps, selective distribution of seed vouchers (to buy local seed) should be considered.

Finally, pre- and post-war comparisons clearly suggest the dynamism of varietal use in Rwanda and demonstrate how important baseline data can be. For example, war did not appear to have an impact upon bean varietal profiles but important bean varietal changes *had* been documented over the previous decade. Climbing bean varieties had been heavily adopted and a partial shift in bush bean types had taken place in response to increased root rot. The current trend for promoting biodiversity has led many to suggest, as a near-panacea, the restoration of farmer germplasm from genebanks to their original sites of use. Documentary evidence of rapidly changing bean use in Rwanda shows that such an approach may not always be to farmers' benefit, even in low input situations.

## Sierra Leone

The insights from northwest Sierra Leone, based on intensive interviews with about 250 farmers, focus on two distinct episodes of rebel attack: one in 1995, one in 1996. As in the Rwandan case, the period of actual fighting was relatively short-lived and there was significant family and varietal stability (in this case of rice). Rice seed could still be obtained through the usual channels (among others, informal social networks of exchange, gifts and loans) which appear not to have been severely ruptured by the attacks.

This case is unique in the perspective it gives on household management strategies during a crisis period. Families in the study area actually increased their rice production (rice being the preferred food crop) during the time of the 'war' at the expense of groundnut (cash crop) production. Rice diversity seems also to have increased, although this may have been for the negative reason that farmers were obliged to supplement the seeds they already had by importing non-local types.

Drawing on between-site comparisons, the author suggests the need to be more cognisant of the relatively localised effects of war on seed systems. There is a growing awareness among relief and rehabilitation agencies of the need to supply locally-adapted cultivars to displaced farmers. Yet it is often difficult for such agencies to acquire local seed types in the quantities required. One approach to this problem might be for such agencies to support the multiplication of seed by farmers in areas in which agricultural production *is* still functioning. The case study area – due to its border location and the particular nature of the rebel activities which it witnessed – is an example of one such area.

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Drawn together in this way, the four case studies show quite vividly that wars can have dramatically different impacts on crop diversity. The duration of war, extent of dislocation, and extent of physical damage may be just the first pointers for understanding the effects of the war on specific crops and varieties. Perhaps more importantly, the cases show how critical it is to place crop and varietal diversity within broader analyses of the systems which shape farmer decision-making. The Nicaragua and Cambodia studies suggest how powerful the larger policy context was in determining the shape of war and post-war agriculture in these countries. By contrast, the Rwanda and Sierra Leone cases show how important local, community systems of maintenance (of knowledge, seed and the social relationships which move seed) are. Ultimately, crop diversity and varietal diversity is about a lot more than the physical things which are planted. It is about the political, socio-economic, and bio-technical processes which allow people to manage their cropping systems in dynamic ways.

Thus, when thinking about appropriate crop diversity interventions post-war, questions about how to replenish germplasm or crops are but the first line of inquiry. It must equally be asked whether the systems are in place to sustain and allow crops and varieties to evolve. Is local technical expertise still relevant? Are appropriate seed systems functioning (whether based around markets or social exchange) to multiply and move the crops and varieties? Are the varieties and crops of the pre-war period still biologically adapted and socio-economically suitable for the inevitably changed post-war agricultural system?

The case studies also begin to give us some pointers as to what type of support for crop diversity might be appropriate in the immediate aftermath of war. First, the studies show us the resilience of *some* local systems even in times of war. (Note that this contrasts with the widespread vulnerability of formal seed systems). This suggests that large-scale interventions (for example, massive distribution of free seed), which pose the threat of swamping local systems, may not always be necessary nor appropriate. The need may rather be for very targeted support, what some authors call 'smart' relief (Richards *et al.*, forthcoming). Second, the studies show us that the reasons for apparent seed shortages after war need to be investigated very carefully: relative rather than absolute lack of access to seed may be the problem. In this case, support that helps to overcome the reasons for this (for example, food aid to stop people eating their seed stocks) may be more appropriate than seed relief itself. Third, the studies show us that some wars

can have a surprisingly localised impact on crop diversity, with many communities and farming systems being relatively unaffected. This suggests that, if required, there may be considerable scope for sourcing relief seed and planting materials locally and even for building up local production capacity relatively quickly. Certainly the state of local seed sources should be assessed at the same time as 'seed import' possibilities are being considered.

The ODI Seeds and Biodiversity Programme welcomes comments on the papers in this volume. We are particularly eager to hear from others trying to explore some of the practical consequences of the effect of war on crop and varietal diversity. If the quality of war-related seed and variety interventions is to be improved, policy-makers, researchers, development workers and grassroots support systems must have access to further insights on the micro-level effects of war on cropping systems and the various options farmers have for rebuilding sustainable and diversified, agricultural production.

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***(unattributed)***



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***Louise Sperling***

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*Catherine Longley*

## ACRONYMS

### Nicaragua

| | |
|---|---|
| ADDAC | Asociación para el Desarrollo y Diversificación de Agricultura Communal (*Association for the Development and Diversification of Communal Agriculture*) |
| CAS | Cooperative Agrícola Sandinista (*Sandinista Agricultural Cooperatives*) |
| CATIE | Centro Agronómico Tropical de Investigación y Enseñanza (*Tropical Agricultural Center for Research and Education*) |
| CIA | Central Intelligence Agency |
| CIERA | Centro de Investigación y Estudio de Reforma Agraria (*Centre for Research and Studies on Agrarian Reform*) |
| CNMPT | Centro Nacional de Medicina Popular Tradicional (*National Centre for Traditional Popular Medicinal Plants*) |
| FSLN | FSLN Frente Sandinista de Liberación Nacional (*Sandinista National Liberation Front*) |
| INEC | Instituto Nicaraguense de Estadisticas y Censos (*Nicaraguan Institute of Statistics and Census*) |
| INTA | Instituto Nicaraguense de Tecnología Agropecuaria (*Nicaraguan Institute for Agricultural Technologies*) |
| MAG | Ministerio de Agricultura (*Ministry of Agriculture*) |
| MIDINRA | Ministerio de Agricultura y Reforma Agraria (*Ministry of Agriculture and Land Reform*) |
| NGO | Organisación no gubernmental (*Non-governmental organisation*) |
| PPM | Proyecto Pie de Monte (*Foothills Project*) |
| PRODECOOP | Promotora de Desarrollo Cooperativa de las Segovias (*Coffee Growers' Enterprise*) |
| REGEN | Recursos Genéticos Nacional (*National Plant Genetic Resources Unit*) |
| SPAVJ | Producción de alimentos en Valle de Jalapa (*Project for Food Grains Production of Jalapa*) |
| UNA | Universidade Nacional de Agricultura (*National Agricultural University*) |

### Cambodia

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|---|---|
| IRG | International Rice Gene Bank |
| IRRI | International Rice Research Institute |
| UNTAC | United Nations Transitional Authority in Cambodia |

### Rwanda

| | |
|---|---|
| CIAT | International Centre for Tropical Agriculture |
| CIP | International Potato Centre |
| NGO | Non-governmental organisation |
| ISAR | Rwandan Institute of Agricultural Sciences (*Institut des Sciences Agronomiques du Rwanda*) |
| NARS | National agricultural research system |
| PRAPACE | Regional Programme for the Improvement of Potato and Sweet Potato Cultivation in Central and East Africa (*Programme Régional d'Amélioration de la Culture de la Pomme de Terre et de la Patate Douce en Afrique Centrale et de l'Est*) |
| RESAPAC | Central African Bean Improvement Network (*Réseau pour l'Amélioration du Haricot dans la Région de l'Afrique Centrale*) |
| RPF | Rwandese Patriotic Front |
| SOH | Seeds of Hope |

### Sierra Leone

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|---|---|
| RUF | Revolutionary United Front |

# EFFECTS OF WAR AND DISPLACEMENT ON LOCAL SEED SYSTEMS IN NORTHERN SIERRA LEONE

**Catherine Longley**

## 1 INTRODUCTION

This article examines the impact of war and displacement on the seed systems of resource poor semi-subsistence farmers in north western Sierra Leone.[1] Rice is the staple food crop grown by farmers in this region. It is cultivated both in upland, rain-fed areas and in inland valley swamps. This paper focuses on upland rice.

Data were collected from farmers in and around the Susu town of Kukuna in Kambia District. Whilst the area of study was directly affected by war and displacement in both 1995 and 1996, it is important to point out that this part of the country has not witnessed the same degree of devastation as parts of the south and east of Sierra Leone. The torture and maiming of civilians which was reported by the international media did not occur in the north west of the country, and the sense of insecurity has not been as prolonged here as in the south and east. Also, the proximity of the Guinea border has provided a safe refuge to fleeing civilians.

These observations are not in any way intended to belittle the impact of the war in the case study area. The war caused serious hardship as this paper will show. Nevertheless, there are important differences between the case study area and other parts of Sierra Leone, where war has been endemic since 1991, which mean that the findings of the paper are not necessarily applicable elsewhere in the country. An important feature of this particular case study is that farmers were not only able to continue upland rice cultivation following the rebel attacks but that the number of farmers growing upland rice actually increased.

## 2 CROPPING PATTERNS AND SEED SYSTEMS IN THE CASE STUDY AREA

The majority of farmers in the case study area are Susu, although some data was also collected from neighbouring Limba farmers. Among the Susu, *dembaya* is the name given to the household group which forms an independent productive unit and, in most cases, eats from the same cooking pot. Each year members of the *dembaya* might cultivate temporary fields of upland rice, groundnuts and fundi (*Digitaria exilis,* fonio), together with semi-permanent fields (gardens containing various tree crops and swamps which are sown to rice in the rainy season and vegetables in the dry season).

Within the *dembaya* women and men of different ages have distinct agricultural tasks. If upland rice is grown, the household head (*dembaya khunyi*) is usually responsible for obtaining seed and organising the labour required for the cultivation of the main household farm (*khe khumbe*). In some cases other members of the *dembaya* (usually young married men or occasionally the wives of the household head) might be allocated a smaller, private plot of their own (*lokho di makhei* or *khe khuri*). Groundnuts, once regarded as a women's crop, are now cultivated by men and women in roughly equal numbers. They are an important cash crop. Swamp rice can also be cultivated by either men or women.

Among the Limba of the case study area, broadly similar agricultural practices are followed, though the tendency of the Limba is to cultivate much greater quantities of rice (both upland and swamp) and considerably smaller amounts of groundnuts.

The upland agricultural system is best described as a form of shifting cultivation in which a large tract of land (*khe kankay*) is sub-divided into plots (*khe*) and allocated to particular farmers (usually household heads) by the leaders of the families that are recognised as the landholders. The size of the land tract varies and there might be anything from about 30 to 100 household rice farms on a single tract. The plots are cleared and a rice-groundnut-fundi crop rotation is followed for about three to four years. They are then left to fallow for at least seven years before the landholders allow further cultivation.

There is an overall shortage of suitable upland farm land which prevents all households – particularly in the more densely populated areas such as Kukuna – from cultivating upland rice every year. This shortage may have been exacerbated in recent times by a slight increase in the length of the fallow period reported by farmers in the case study area. The increase is explained by the greater frequency of bush fires and the longer time subsequently required for fallow regeneration. Due to the overall land shortage, as well as farmers' involvement in the production of cash crops, the Susu of Kukuna are unable to produce enough rice to meet their subsistence needs. They therefore rely on trade relations with their Limba neighbours to make up for rice shortfalls.

The choice of rice varieties sown will depend upon a number of factors including: the local agro-ecology of the particular upland plot; the labour available to the

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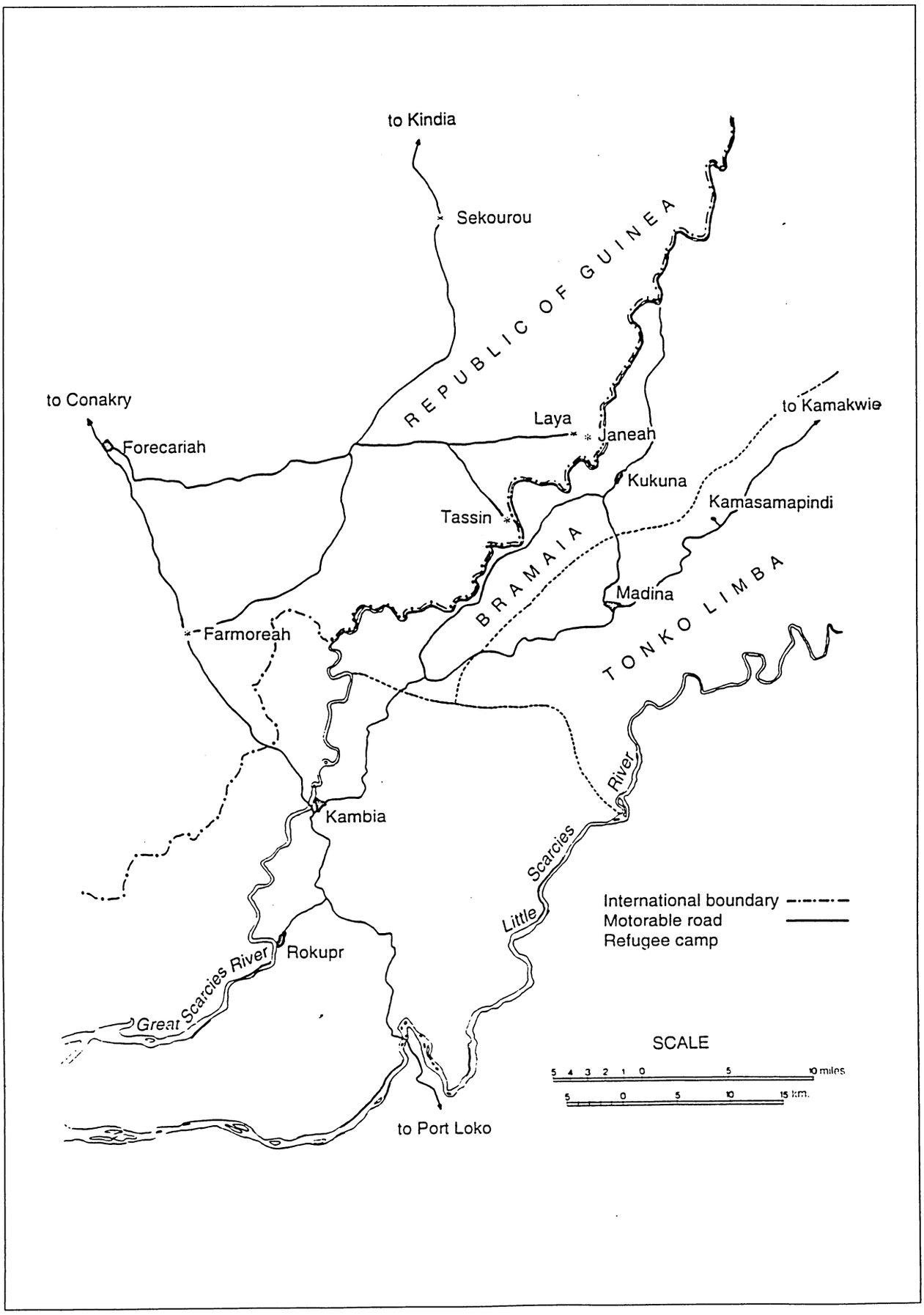
**Map 1. Map of Sierra Leone, showing the case study area**



farmer for particular tasks at particular times; and personal preferences relating to morphological and gastronomic characteristics. The degree of effort required in the various post-harvest processes undertaken by women (threshing, parboiling, milling, cooking) also influence a farmer's choice of varieties.

Although farmers tend to keep seed from one year to the next, the nature of the shifting cultivation system is such that an upland rice variety kept from the previous year's plot may not always be appropriate to the agro-ecology of the subsequent year's plot. Once the upland plots have been allocated and the particular agro-ecological conditions have been assessed, farmers may find that they need to exchange the seed they have kept for a rice variety which is better suited to that year's conditions. By contrast, farmers often cultivate the same swamp plot year after year. For this reason, overall rates of farmer-saved seed for swamp rice tend to be somewhat higher than for upland rice.

Farmers who do not have any saved upland rice seed to plant, whether because they did not have access to an upland plot the previous year, or due to accidental seed loss or unplanned events, acquire seed in various ways. It must be stressed that the successful acquisition of appropriate seed is highly dependent on the existence of good social relations with a network of relatives, friends and neighbours. Farmers may: (i) borrow seed from neighbours who have seed but no land on which to plant (particularly significant among Limba farmers); (ii) exchange swamp seed varieties for upland seed varieties; (iii) receive gifts of small quantities of seed from relatives; or (iv) purchase seed for cash (though this tends to be more common for groundnut seed). Although a number of agricultural development projects had, in the past, provided seed to farmers in the case study area, no such project was actively distributing seed at the time when the fieldwork reported in this paper began.[2]

## 3 THE WAR IN SIERRA LEONE

Rebels of the Revolutionary United Front (RUF) first entered eastern Sierra Leone from Liberia in 1991. For the first three years the insurgency was mainly confined to the eastern and southern parts of the country where small groups of lightly armed rebels established a number of forest camps and launched attacks on rural villages and main roads, forcibly conscripting young captives into their ranks. The north of the country was widely thought to be a 'safe area' up until about 1994 when a small group of rebels moved into the north. By early 1995, all of Sierra Leone's twelve districts were experiencing sustained rebel attacks, though the intensity and effects of rebel activities were not uniform throughout the country. Kambia District, in which the case study area is located, has been hit by only two raids during the war period, and the rebels have not established any permanent base in the vicinity.[3]

RUF attacks typically last only for a few hours and the rebels have never controlled any significant area of the country. Nevertheless, particularly in the south and east, the rebels have often promoted social divisions within communities by gathering information on on-going local disputes prior to an attack and then directing violence towards those villagers who are prominent on one side of the dispute or the other. Largely invisible, perhaps minor, tensions within a community are thus transformed into bitter factional disputes.

A number of different explanations of the causes of the war in Sierra Leone have been put forward. Whilst some reports (e.g. Kaplan, 1994; Sawyer and Dowden, 1995) have emphasised the anarchic and tyrannical nature of the rebel incursions and searched for ethnic explanations, other analyses view the insurgency as a conflict over control of resources and focus on the pivotal role of Sierra Leone's disadvantaged youth (e.g. Bradbury, 1995; Richards, 1996). Despite the lack of consensus as to the precise causes of the war and the political motivations of the RUF, it is generally agreed that civilians and rural communities have been the main victims of the war, and that the actions of some government soldiers have, at times, increased the suffering of the rural populations.

The rebel activities which are relevant to this case study include the RUF attack on Kambia Town on 25th January 1995 and the rebel invasion into Kambia District in February-March 1996. Both these attacks took place shortly after the harvest season, when seed from the upland rice farms had been gathered and stored.

The 1995 attack on Kambia Town is thought to have been largely aimed at seizing military ammunition and abducting civilians. On the morning of Tuesday 24 January 1995 official messages were sent from Madina, the headquarters of the neighbouring Tonko Limba Chiefdom, to the local authorities in Kukuna and Kambia, reporting that a fisherman had seen a group of rebels on the southern bank of the Little Scarcies River the previous evening. The rebels had apparently requested the fisherman to ferry them across the river so they might enter Kambia District and it was widely believed that the rebels were planning an attack on Madina. This news spread rapidly throughout the District and many families began to pack their belongings in preparation for seeking refuge either across the Guinea border or in villages located along the lower reaches of the Great Scarcies River estuary.

On the morning of 25 January 1995 a group of RUF rebels, numbering perhaps 50 to 100, launched an attack on Kambia Town (some 40 km southwest of Madina). This took the resident population largely by surprise. The rebels had a 'hit list' of prominent individuals whom they attempted to search out during the four or so hours that they were in the town. About seven civilians were killed, a few people drowned in the river as they tried to escape, and over 100 civilians – mostly school children and able-bodied youths but also including seven expatriate nuns – were abducted by the rebels. The police station and several houses were burnt down and considerable looting took place.

A sense of fear and panic was felt throughout the District in late January 1995. This caused considerable displacement both before and after the attack on Kambia Town. Many of those who were not quick enough to run away before the attack later decided to evacuate both because of rumours of a further attack and because of the tensions generated by the government soldiers who subsequently arrived in the district. International news reports at the time estimated that over 20,000 people from Kambia District had crossed the border into Guinea. One year after the attack, the five refugee camps housing those displaced from Kambia District were still full, despite the fact that no further attacks had taken place. This scenario is perhaps typical in Sierra Leone. Although the RUF attacks themselves tend to be short-lived and aimed at specific targets in specific towns or villages, the resulting crises are neither short-term nor localised.

The main motive of the 1996 disturbances was to disrupt the second ballot of the national elections, scheduled for 26th February 1996. On 20th February the town of Rokupr, almost 20 km southwest of Kambia Town, was attacked by a lightly armed group of rebels in military uniforms. The attack took place in the early hours of the morning as people were preparing for the Muslim festival of *Id-ul-Fitr* (Pray Day) which celebrates the end of Ramadan. Three civilians were killed by the rebels and nine people drowned trying to escape. News of the attack spread rapidly throughout Kambia District and, once again, thousands of people fled towards the coast and into Guinea.

Four days after the Rokupr attack, there was an attack on Kukuna. A total of 49 houses were burned and three people were killed. The rebels then progressed to Madina and remained in the Tonko Limba chiefdom for a period of about two weeks; they made a base in a village from where they roamed around in small groups attacking, burning and looting some 50 Limba villages throughout the chiefdom.

It has been estimated that the 1996 attacks in Kambia District affected over 50,000 people. The large majority of these people were small-scale farmers. However, unlike RUF attacks in other parts of the country, the 1996 rebel activities in the case study area did not appear to promote enduring social divisions within the local community.

## 4 METHODOLOGY

The data presented in this paper were collected between April 1994 and January 1997 from a sample of 248 semi-subsistence farmers (145 men and 103 women).[4] Farmers in the sample came from the Susu-speaking group of the Bramaia Cheifdom and the Limba-speaking group of Tonko Limba Chiefdom. Both are located in Kambia District, northern Sierra Leone. Most of the respondents from the Bramaia Chiefdom came from the rural town of Kukuna (pre-war population c.3,000) and four smaller settlements nearby to the south and east. The Limba-speaking farmers sampled (n=41) were all based in the village of Samapindi which lies about 10km south-east of Kukuna.

Surveys undertaken just after the planting seasons in 1994 and 1996 recorded the amounts and varieties of rice, groundnuts and fundi sown, together with information on the farmers' source of seed. Even before the first population dislocation of January 1995, it was often difficult to re-trace some of the sample farmers for checks and follow-up interviews. As a consequence, the data set for the 1994 farms is partly incomplete. At the end of 1996, after the disruptions caused by the rebel attacks of January 1995 and February 1996, it was possible to re-interview just 189 of the original sample of 248 farmers. These farmers were asked about their movements immediately following the attacks and about their farming activities for 1995 and 1996. Most of the data presented refers to the 161 sample farmers for whom details of both the 1994 and 1996 cropping patterns are complete. Additional insights were provided by direct personal observation in the project area from late 1993 to February 1995 and again in late 1996.

## 5 POPULATION DISLOCATION

By the time of the 1996 survey eight of the 248 sample farmers had died (these deaths were in no way related to the rebel attacks) and 78 were no longer living in the same place in which they had resided in 1994. Of those that had moved, it was reported that: 51 (65.4%) had moved due to local insecurity; five had given up farming to find paid work; five had moved elsewhere to farm; and four women had divorced their husbands and returned to their parents' homes. The majority of those who were displaced by the war (43 out of the 51 that had relocated) were living in refugee camps, six were living in villages in Guinea and two had moved to Conakry, the capital of Guinea. Similar proportions of men and women were reported as displaced though there was some significant variation in the profiles of those displaced. Slightly more elderly people – women in particular – were displaced, whereas the proportions of displaced adult men (c. 30–55 years old) and young adult women (c. 18–25) were low in comparison to the proportion of these groups in the population as a whole.

Although most Susu families had, by 1996, built a house in one of the refugee camps or at least established a secure base somewhere in Guinea, adult men from these families and their young wives, tended to return or stay in the original family home to guard against theft and to continue with the farm work. The elderly, by contrast, remained in the new homes partly to maintain the family's position in the refugee camp and partly due to the effort involved in returning home on foot. This concern was heightened if there was the remotest likelihood that the family might have to flee again. By early 1997 the survey area was thought to be safe from rebel attack and many refugees were planning to return to their homes altogether after Ramadan.

Of the 158 Susu-speaking farmers that were present in the survey area at the time of the 1995 rebel advance,

over half (60%) fled from their homes and did not return for at least a month. The mass panic witnessed in Kukuna on 24 January 1995 was so great that it seemed unlikely that there was a single household from which the majority of family members did not run. BBC news reports the previous week had indicated that a group of RUF rebels was moving towards Kambia District, creating a widely-spread sense of apprehension. When the news that rebels had actually been seen wanting to cross the river into the District at a point some 20 miles from Kukuna was conveyed to the Paramount Chief – in a private meeting, so as not to cause alarm – it was only a matter of minutes before a rumour of the rebels' imminent arrival had spread and people had begun to pack up their belongings and run for the border. The speed at which the rumour spread was increased by the fact that the news came at a time of the morning when people had not yet left for their farms. This meant that the throng of people running to and fro was that much greater.

People began to panic and many (mostly women and children) ran at once without any possessions. In some cases they even left cooking pots on fires. Others began to throw their belongings into bundles and within an hour or two the majority of the population – perhaps as many as 2,000 people – had gathered what they could carry and started heading towards the banks of the Great Scarcies River, about a mile from the town, in order to cross into Guinea. The sense of anxiety was clearly evident at the river bank where people were struggling against one another to get into one of the three large canoes which were ferrying people across the water. Women were crying for their children who had got lost in the rush to evacuate and children were crying for their mothers. Belongings were dropped into the water and many later remarked it was a miracle that the overloaded canoes did not capsize and that no one drowned in the crush to clamber aboard. At this point, many did not know exactly what had happened. They had merely assumed that the rebels were about to enter the town when they saw others running. It was only after a few hours that it became apparent that the rebels were not in the immediate vicinity. At this point people – predominantly men – began to return to the town to secure their household's property.

When people fled, they moved in stages: first to the river bank, then across the river to the border village of Wundilaya, then to a temporary shelter and, finally, to one of the refugee camps. The first three stages – from Kukuna to the temporary shelters – took place on the day of the evacuation, 24th January 1995. It then took five weeks before the refugee camps were established and the refugees began to receive supplies. Many of those who had crossed into Guinea in fact returned the same day or a few days later. In the days following the initial flight, some of the evacuees – particularly boys and young men – made a number of visits back to their homes to secure the family's belongings. These belongings were then transported in similar stages as those described above. At each stage, many of the evacuees were forced to leave their belongings – including seed, in some cases – in someone else's care, thus incurring the risk of loss or damage. Many informants reported that the loss of their seed occurred in the village of Wundilayah, just across the river, as the capacity of the local store was not sufficient to cope with the enormous quantity of possessions left there.

By the time of the 1996 attack the population of Kukuna was already considerably reduced. Large numbers of local residents had already transferred to the refugee camps and those that were in town either hid in their houses or ran into the bush as the rebels arrived. A much smaller proportion of people who fled in the face of the 1996 attack stayed away for over a month; presumably those who felt that it was not safe to stay had already moved in 1995 and were not around to witness the 1996 attack on Kukuna. Also, by this time, many people had experienced the negative effects of displacement and had decided to risk facing the rebels rather than suffer the losses incurred by being displaced.

The news that the rebels were about to attack was initially conveyed by a boy on a bicycle. The boy had passed the rebels on the road just outside the town and raced around ringing his bicycle bell and shouting, 'They're here! They're here!' (As in 1995, the resident population was vaguely expecting the rebels' arrival.) Looking back people often joke about this but, at the time, the sense of alarm would obviously have been acute.

The attack on Kukuna was typical of the RUF's hit-and-run tactics. The rebels remained in town for a matter of hours, set light to over 50 dwellings and looted the majority of houses, taking clothing and any money or valuables they could find. Three civilians were killed and a few were forcibly abducted (either to carry the looted property or to point out the paths into the neighbouring chiefdom) but later released. From Kukuna the rebels went on to attack Madina, the capital town of the neighbouring Limba chiefdom. They later established a temporary base in a Limba village which they used over a period of about two weeks.

The displacement suffered by the Limba-speaking farmers in the sample was quite different to that of the Susu. In 1995, only a very few people in the survey village of Samapindi had fled into the bush and none had registered at the refugee camps. Whereas it was relatively easy for the Susu to cross the border into Guinea to stay with their Susu relatives until the camps were established, this option was not open to the Limba who, in effect, had nowhere to run to. The rebel presence in 1996, however, caused considerably more disruption amongst the Limba. Though the village of Samapindi itself was never attacked, the presence of the rebels in the chiefdom posed a very real threat of attack and forced all of the Samapindi residents (total population c. 150) to flee from their village. Amongst the 30 who were interviewed at the end of 1996, the average time of displacement was 19 days. Only one

**Table 1. Number of farmers who planted particular crops, 1994–96**

| | Upland rice | Swamp rice | Groundnut | Fundi |
|---|---|---|---|---|
| 1994 | 43 (27%) | 103 (64%) | 131 (78%) | 62 (39%) |
| 1995 | 52 (32%) | 110 (68%) | 90 (56%) | 67 (42%) |
| 1996 | 82 (51%) | 118 (73%) | 106 (66%) | 66 (41%) |

n = 161

young man was based in the refugee camp; most people from Samapindi hid in the bush throughout this period, occasionally returning to the village during the day to check their houses and any belongings they had left behind. After a while some thought it safe to return to the village. However, when a boy who had gone to check for news of the rebels' whereabouts narrowly managed to escape capture by the RUF, residents of Samapindi retreated once more into the relative safety of the bush.

## 6 CHANGES IN FARMERS' CROP CHOICES DURING THE WAR

Table 1 offers a broad overview of the effects of the war on the crop choice of the 161 sample farmers for whom information was collected in both 1994 and 1996. Comparing the figures for 1994 (pre-displacement) and 1996 (post-displacement), it can be seen that considerably more farmers were growing upland rice post-displacement. Slightly more farmers were cultivating swamp rice, whereas far fewer were growing groundnuts. The numbers of farmers growing fundi did not alter significantly over the 1994–96 period.

It appears that the strategy of farmers during this period was to concentrate on food crop, as opposed to cash crop, production. This led to a relative emphasis on rice as opposed to groundnuts.[5] An alternative explanation for the changes in cropping patterns might be that in 1994 there was simply not much land available for upland rice cultivation; by 1996 previously fallow areas were deemed suitable for cultivation. This would also explain the 1995 decline in groundnut production; due to the small land area that was cleared in 1994 there would have been a shortage of land for the second year of the crop rotation (1995). However, data collected on the length of fallow for land cleared in 1995–1996 reveals unusually short fallow periods (e.g. one tract of land cleared in 1995 had been fallowed for only six years). This observation, together with the overall decrease in the average upland farm size (from seed inputs of 32.9 pans in 1994 to 23.9 pans in 1996 – see Table 3),[6] suggests that the main change was on the demand side rather than the supply side. There appears to have been a marked increase in the overall demand for upland rice farms following the events of 1995 and 1996. This is consistent with the increased emphasis on food crops remarked upon earlier.

The increased amount of upland rice cultivation was, as Table 2 shows, due not only to an increase in the number of household heads growing upland rice; in addition greater numbers of women and other household dependents, who had not previously cultivated upland rice, were undertaking rice cultivation.

Greater numbers of both men and women were cultivating upland rice in 1996. The increase in the number of women is particularly striking since, traditionally, the cultivation of upland rice is predominantly associated with men. The gender structure of the *dembaya* as a unit of agricultural production was not drastically altered by dislocation, so it does not make sense to claim that women were forced to undertake upland rice cultivation because their husbands were absent. It seems more reasonable to suggest that the overall increase in the number of individual farmers cultivating upland rice was a direct response of the household as a whole. Women took on an added responsibility to produce more rice to meet household subsistence needs. The data suggest that some were able to do this only by giving up their production of the main cash crop (groundnuts).

**Table 2. 1994: Farmers with primary responsibility for planting upland rice**

| | Female | | Male | | All farmers | |
|---|---|---|---|---|---|---|
| | 1994 | 1996 | 1994 | 1996 | 1994 | 1996 |
| Dependent | 2 (4.7%) | 12 (14.8%) | 6 (13.9%) | 12 (14.8%) | 8 (18.6%) | 24 (29.6%) |
| Household head | 0 | 0 | 35 (81.4%) | 57 (70.4%) | 35 (81.4%) | 57 (70.4%) |
| All farmers | 2 (4.7%) | 12 (14.8%) | 41 (95.3%) | 69 (85.2%) | 43 (100%) | 81 (100%) |

**Table 3. Upland rice types planted**

| | Number of plots | | Total pans | | Average pans per plot | |
|---|---|---|---|---|---|---|
| Duration | 1994 | 1996 | 1994 | 1996 | 1994 | 1996 |
| Short | 4 (8.3%) | 11 (8.7%) | 55 (3.5%) | 99 (3.3%) | 13.8 | 9.0 |
| Medium | 43 (89.6%) | 112 (88.9%) | 1438 (90.9%) | 2849 (94.7%) | 33.4 | 25.4 |
| Long | 1 (2.1%) | 3 (2.4%) | 88 (5.6%) | 60 (2.0%) | 88 | 20.0 |
| All | 48 (100%) | 126 (100%) | 1581 (100%) | 3008 (100%) | 32.9 | 23.9 |

## 7 CHANGES IN VARIETAL DIVERSITY

Associated with the increase in the number of farmers growing upland rice is an apparent increase in the diversity of varieties under cultivation. The data presented below draw on farmers' own names for rice types and their knowledge of the duration of cultivation of different varieties (rather than on results from on-station trials of farmers' material). It is possible not only that a particular variety may be known by more than one name but also that a name which appears to be used in reference to a single variety may in fact be a generic term to cover several different varieties of a similar duration (e.g. types known as 'three months' or types which are perceived to have the same origin, such as *forto maleh* [lit. white man rice], often used to refer to 'improved' varieties previously distributed by development projects).[7] The inadequacies of such a classification as an indicator of varietal diversity are recognised. However, this is the only indicator presently available for the sample.

Sample data for 1994 reveal that 43 farmers planted a total of ten differently named varieties. In 1996, 98 farmers planted a total of 20 differently named varieties. Despite this apparent increase in diversity, the proportions of short-, medium- and long-duration types remained fairly constant, as shown in Table 3.

The data also showed that in 1996 a number of farmers appeared to have planted varieties best suited for swamp ecologies on upland farms (a feature which has not previously been encountered in the case study area). This seems to indicate that not everyone was able to obtain the varieties most appropriate to their needs during the 1996 planting season. The increase in diversity shown in Table 3 might therefore be due to the fact that many farmers resorted to planting any variety they were able to obtain, regardless of suitability or their personal preference, in the season following the rebel attacks. This would indicate that there was a relative lack of availability of preferred varieties which would, in turn, mean that yields in 1996 would be sub-optimal. On the other hand, it is also possible that this situation might promote innovation amongst farmers. Whether or not the increased varietal diversity is maintained in future years remains to be seen.

## 8 SEED ACQUISITION BY FARMERS

The 'new' varieties (i.e. those that were not previously planted by the farmers sampled in 1994) were obtained largely from local farmers and farmer-traders rather than relief agencies. Precise details of the seed provided by the relief agencies was not recorded and only one farmer in the sample reported planting upland rice seed that had been provided by such an external agency (he claimed that the seed was provided by the German agency, GTZ). Table 4 compares the sources of upland rice seed for 1994 and 1996.

Table 4 clearly indicates that there have been some significant changes in the source of seed since the disruptions of 1995–96. What is most noticeable is that the amount of farmer-saved seed as a proportion of total seed planted has decreased from 69.6% to 42.5%, whereas the purchase of seed for cash has increased from just 6.0% to 33.2%.

Many farmers who planted upland rice in 1996 may not have had access to saved seed because they did not cultivate upland rice the previous year (though one farmer had managed to keep seed from two years previous). Equally, some farmers had attempted to save seed but had lost their stocks before planting time. In a number of cases, seed that had been stored was either destroyed by fire when the rebels burnt houses or by pests or moisture which were left unchecked after civilians fled. Many farmers reported that their seed had been stolen. Some who took their seed reserves with them when they fled reported that the seed was stolen, eaten or somehow spoilt. This was despite the fact that farmers went to considerable lengths to secure their seed stocks. In one case, two farmers jointly dug a large pit in which to hide their seed. In another case, the farmers of one whole village reportedly transferred all

their seed reserves onto a specially-constructed platform in the bush which was then permanently guarded.

In 1996, despite a considerable rise in the price of seed on the local market, both the proportion of seed purchased by farmers and the average size of individual purchases had increased. Although the number of seed loans (from fellow farmers) had risen from 9.3% to 16.2% of the total number of seed 'bundles' planted, the average size of each loan had halved from about 41 pans in 1994 to about 22 pans in 1996. Similarly, the size of seed bundles received through exchange and gift-giving had decreased, possibly indicating an overall shortage of seed. This shortage would appear to have been caused primarily by the increase in demand rather than a decrease in supply.

The continued provision of seed through exchange, gifts and loans – albeit in smaller amounts – implies that the social networks of the informal seed system in north west Sierra Leone were not seriously affected by the events of 1994–96. This is perhaps due to the close proximity of the refugee camps as well as the fact that most of the Susu farmers, if not the Limba, had relatives and friends in Guinea from whom they could enlist support. Indeed, amongst Susu farmers the percentage of seed obtained through loans rose from 4.8% in 1994 to 14.4% in 1996. By contrast, the percentage of seed borrowed by the Limba, who did not have such thriving family networks in neighbouring areas, but who had traditionally depended to a far greater extent on seed loans, fell from 32.6% in 1994 to 20.5% in 1996. Importantly, the rebel attacks did not appear to precipitate the level of social discord which was experienced in other parts of Sierra Leone and which might otherwise have damaged the social networks on which local seed supply depends.

Yet, despite the continued functioning of the social seed networks, the increase in purchased seed in 1996 indicates that upland rice seed has now become more of a commercial commodity. Accounts were given of farmers selling whatever they had (often only the bulghur and vegetable fat supplied in refugee camps) in order to buy seed at double the usual price. At the time such refugee supplies were selling at well below market prices due to their widespread availability in the camps, hinting at the desperate measures which farmers took to acquire seed for planting.

## 9 CONCLUDING REMARKS

Whilst it was emphasised at the outset that the findings of this particular case study are not necessarily generalisable to other parts of Sierra Leone, various parallels with the Rwanda case described by Sperling suggest that the findings are not altogether unique either. There are similarities both in the nature of the conflict (the periods of actual fighting or rebel attacks were relatively short-lived compared to the periods of stability in both places) and in the outcomes with respect to local seed practices and systems (family and varietal stability, for instance).

Despite the rebel attacks of 1995 and 1996, the basic systems of agricultural production in the case study area remained more or less intact. The increase in the numbers of farmers growing upland rice and the capacity of local seed networks to allow for this increase, demonstrate the enormous resilience of the local farming systems in the face of substantial disruption. The response of the case study farmers to the rebel disruptions was to increase their cultivation, as best they could under the circumstances, and to concentrate particular attention on the production of food crops.

**Table 4. Acquisition of upland rice seed**

| | n (seed bundles)* | | Total seed amount (pans) | | Average bundle size | |
|---|---|---|---|---|---|---|
| | 1994 | 1996 | 1994 | 1996 | 1994 | 1996 |
| Bought | 5 (9.3%) | 39 (28.7%) | 95 (6.0%) | 1001 (33.2%) | 19.0 | 25.7 |
| Exchange | 5 (9.3%) | 10 (7.4%) | 144 (9.1%) | 168 (5.6%) | 28.8 | 16.8 |
| Gift | 2 (3.7%) | 8 (5.9%) | 38 (2.4%) | 79 (2.6%) | 19.0 | 9.9 |
| Kept | 37 (68.5%) | 57 (41.9%) | 1102 (69.6%) | 1274.5 (42.5%) | 29.8 | 22.4 |
| Loan | 5 (9.3%) | 22 (16.2%) | 202 (12.8%) | 485.5 (16.1%) | 40.6 | 22.1 |
| All seed | 54 (100%) | 136 (100%) | 1581 (100%) | 3008 (100%) | 29.3 | 22.1 |

* In a small number of cases, farmers revealed that they had acquired the seed planted on a single farm plot from more than one source. For want of a better word, the seed obtained is referred to as seed 'bundles'.

This resulted in significant increases in seed inputs used by case study farmers – from 1,581 pans in 1994 to 3,008 pans in 1996.[8] Women, especially, altered their crop choices in order to cope with the situation. From the data available, no varietal loss could be discerned. Yet this is certainly no cause for complacency; despite the continued functioning of local seed channels, many farmers appeared not have access to the varieties which were most appropriate to their needs due to the overall shortage of upland rice seed.

The ways in which relief assistance either helped farmers to adapt or possibly exacerbated problems is debatable. Although the local seed system was quite effective in coping with seed demand during the emergency period, it seems that much more could have been done to assist the large number of farmers who urgently required seed.

No rice was supplied as food to those who registered with the agencies providing assistance despite the fact that this grain is the national staple in Sierra Leone. (Presumably the choice of food provided was related to the desire to avoid creating dependency on food aid.) Regardless of the quantity of other types of food consumed, a Sierra Leonean considers that he or she has gone hungry for that day if rice is not eaten. This remark was a frequent complaint among the refugees. The question then becomes, was farmer-saved rice seed eaten in preference to the bulghur and cornmeal provided by the relief agencies? Here it is pertinent to point out that in many cases in which seed was stolen the culprit was often thought to be a member of the household who was suspected of having cooked and eaten the rice seed. The answer to this question is unknown, but the fact that it is being asked does suggest the importance of considering the link between food provisioning and seed requirements when planning relief interventions.

The case study makes it clear that some parts of the rural economy can continue to function in specific localities even under conditions of general destabilisation. Richards *et al.* (1997) have made a similar observation; they suggest that there is a need to understand more fully how different kinds of disruptions cause different kinds of damage to seed systems. More constant and prolonged disruptions to rural life, as experienced in southern and eastern parts of Sierra Leone, inevitably have a very different effect on local seed systems than the type of brief and localised incursions which took place in the case study area of north west Sierra Leone.

Relief agencies must have a detailed awareness of these differences when they devise locally-appropriate forms of assistance. There is already a growing awareness among relief and rehabilitation agencies of the need to supply locally-adapted cultivars to displaced farmers, yet it is often difficult for such agencies to acquire local seed types in the quantities required for distribution. If an holistic approach is adopted, areas in which seed systems have been less severely damaged may offer enormous potential as a source of seed for distribution to farmers from areas where agricultural production has been more substantially affected by war.

The case study location – partly due to its border location and partly due to nature of the rebel activities in this area – provides an example of an area in which appropriate support to local farmers might have produced seed for future distribution among farmers elsewhere in the country (the south and east, for example). Such a strategy was indeed adopted in 1995, when large quantities of local seed varieties were collected in the case study area by the Ministry of Agriculture to help meet the needs of future resettlement programmes. Yet it is suggested that a more proactive approach could be taken by relief and rehabilitation agencies to promote agricultural production in 'safe areas' with assured access[9] so that seed can later be bought and distributed in other locations where agriculture has been more severely affected.[10] The farmers in such 'safe areas' would not only benefit from the agricultural support provided but also from the greater opportunities to sell their outputs. Of course, 'safe areas' are rarely completely safe. Nevertheless, this case study of north western Sierra Leone has illustrated the considerable resilience displayed by local farming systems in the face of two short-lived rebel disruptions. This resilience is a feature of local seed systems which can be highly advantageous in planning for post-war national seed provision requirements.

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## ENDNOTES

1. Early fieldwork in Sierra Leone was funded by ODA's (now DFID's) Economic and Social Committee on Overseas Research (ESCOR). Fieldwork undertaken in 1995–96 was funded by Economic and Social Research Committee (ESRC). The author is attached to the Community Biodiversity Development and

Conservation project, administered by the Rice Research Station, Rokupr in Sierra Leone.

2. ActionAid, a British-based NGO working in the area, had previously provided seed inputs. However, at the time of the research the farmer groups promoted by this NGO were effectively managing their own seed loan system.
3. In mid-May 1997, renewed rebel activities in the north caused considerable anxiety in Kambia District and some residents in the case study area once again evacuated to Guinea.
4. Much of the survey data was collected and processed in collaboration with Abdulai M. Sillah, whose able assistance is gratefully acknowledged.
5. Though used in the preparation of soups and sauces, groundnuts are mainly considered to be a cash crop, particularly around Kukuna which is one of the national centres of groundnut production.
6. A pan is a commonly used measurement of volume in Sierra Leone. Though the precise size of a pan may vary, farmers in the case study area take one bushel to be equal to 22 pans.
7. For example, numerous samples of a popular variety known locally as *samban konko* were collected from farmers' fields and screened at the Rokupr Rice Research Station (RRS) by Malcolm Sellu Jusu. He found them to be identical to ROK 3, a pure-line selection released by RRS. The same variety is also sometimes referred to as IDA in the case study area since it was once distributed by an agricultural development project commonly known by this name.
8. Roughly equivalent to an increase from 72 bushels to 137 bushels.
9. In northern Sierra Leone, for example, accessible areas include not only border locations but also villages on river estuaries, since water transport was not adversely affected by the security situation.
10. A local NGO, Community Action for Progress, successfully provided seed and cash loans (through a grant from Womankind UK) to both displaced and resident farmers in the lower reaches of the Great Scarcies River estuary in 1996. After the harvest the NGO purchased a substantial quantity of the seed output which was subsequently sold to rehabilitation projects operating in other parts of the country.

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