

a glance at LinkS

LinkS project case study
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The Role of Social Relations in Farmer Seed Systems and Reconstruction of Agricultural Production in a Post-disaster Situation

■ Background ■

Social networks constitute an important part of local seed systems. In times of crisis, such as the devastating floods that occurred in southern Africa in 2000, farmers rely on the social relations established with other farmers in different agro-ecological zones. The traditional values of mutual help, solidarity and reciprocity were used to acquire seeds contributing to the reconstruction of the disrupted agricultural production systems. Although some of the local crop varieties were lost, the farmers proved that they have put in place practices and skills that can result in sustainable seed security systems.

This article is based on Leif Tore Traedal's study on seed flow in the post-flood situation experienced by Southern Mozambique in the year 2000. The objective of the study was to understand the local processes of seed acquisition based on the traditional values of help and solidarity. The study showed that the local processes of seed exchange induce seed flow within different agro-ecological zones. Genetic resource limitations, however may affect seed transfers, as some seed varieties adapt to certain agro-ecological conditions.

■ Study Area ■

The study was conducted in the Valley of Limpopo River, in the Province of Gaza. This area was chosen because of the presence of two different agro-ecological zones, the lowlands and highlands. One village was selected from each zone, Fenisseleni in the lowlands and Zongoene in the highlands. During rainy seasons, the floods of the Limpopo River greatly affect the low-lying areas by bringing in nutrients and keeping the lowland soils wet in the dry season. The different agro-ecological conditions of the highlands and the lowlands are reflected in the cropping systems and crop varieties grown.

Most farmers in the Province of Gaza grow maize, beans, sweet potatoes, cowpeas, rice, bananas, pepper and different types of vegetables. Besides these crops, the light sandy soils in the highland areas are ideal for cassava and groundnut. Maize is the most commonly grown crop because of its high capacity of adapting to different temperatures and soil regimes. Rice and sugarcane, which are relatively new in the local farming system (introduced by the Portuguese during the colonial era), are exclusively grown in the wet organic soils of the lowland areas. The agricultural practices in the highlands combine both highland and lowland cultivation practices and thus reducing the risk of some Zongoene farmers compared to those cultivating in the lowlands or highlands only.



Methodology

Information was gathered through qualitative methods (semi-structured interviews with individuals and groups), field observations and use of secondary data from previous work done in the area. Twenty in-depth interviews were conducted with 13 women and 7 men, as well as two group interviews that consisted of 10 elder women and 5 men. Women constituted the majority of the respondents because of their important role in rural farming. Field observations of the crops and cropping patterns were important for developing an understanding of local agricultural practices and differentiation of crop varieties.

Seed selection and storage

Farmers practise “kutlhaisa”, which refers to the management and keeping of seed stocks, involving the selection, treatment and storage of seeds for planting in the next growing season. The strength of local seed systems is highly dependent on farmers’ abilities to retain seeds from the previous harvest. By storing seeds, farmers are securing the future harvest and food security. Farmers in both villages select seeds after the harvest considering physical characteristics such as shape, colour and size. For example, the colour and size of the maize ear are used to predict seed germination.

Seed storage methods depend on the farmer’s preference and storage practices and vary between different households. Seeds are stored in the house or in the field depending on the crop. Seeds kept at home in containers are first dried, sometimes smoked and treated with chemicals. Maize, cowpeas and groundnuts may be dried in the sun or smoked and then mixed with ash, sand or gasoline in containers. The seeds are normally kept inside the house in containers or they may be kept in a traditional place called “tsala”, which is found beneath the roof, where the seeds are dried, smoked and stored. Seeds may be kept in bottles or other glass containers, sacks and traditional drums. Some farmers hang maize cobs on the walls inside the house. New innovative ways of storing seeds are being developed in the village. Cassava cuttings and sweet potatoes are stored in the field. Sweet potatoes can be buried for about a month or replanted shortly after harvest. One woman, for instance, reported that she stored her bean seeds in a plastic container where it is protected from moisture, insects and other pests and diseases.



The province of Gaza, with the two study sites, Zongoene and Fenisseleni (the latter being a suburb in the city of Xai Xai)

Same taboos exist on who is allowed to handle seeds in storage. Stored seeds are not to be touched by sexually active people and may only be handled by children and those that are sexually inactive. The belief is that the blood of a sexually active person is too hot and may destroy the seed. However they are encouraged to plant seeds as they may increase the vigour of the seeds during the germination process. Most farmers in both Zongoene and Fenisseleni reported that this tradition was fading, so it is losing its importance.

Seed acquisition and seed flow

For planting next season’s crops farmers usually depend on their own saved seeds. However, the farmers who produce too little and are thus not able to store any seeds are always in need of seeds from external sources. Strong social networks exist between families and friends, imposing upon the local farmers a responsibility of helping those in need. In the post-floods period, farmers had to look for seeds from other villages that had not been affected, especially in the highlands. Seeds are acquired in several ways depending on the social networks and economic situation of the farmer.

Farmers can buy seeds, “kuxava”, from other farmers, in local markets or in the urban areas. One woman born in Maputo and married to a man in Fenisseleni reported about how she would buy seeds in Maputo when visiting her family.

CHANGES IN CROP DIVERSITY

Droughts and floods are a common phenomenon in Xai-Xai and farmers have developed coping strategies over time. These disasters have resulted in a high turnover rate and loss of local varieties. For example, due to floods and droughts the Catholic Church has introduced the cassava variety “Diocese” in the past 5-10 years and this has been grown together with another new variety “Munhassa” and the old variety, “Gangasole”, which is slow growing, but is preferred for its drought resistance properties. For cassava, the high rate of turnover is not market-related, but is linked to environmental stress, growth rate, drought resistance and cooking qualities. The old local variety of groundnuts “Nsatinculo”, meaning first wife, has been taken over by “Xigongondzuane” and “Ntxutxhlulo”, which give higher yields, have a good taste and do not rapidly spread in the soil, which makes their harvesting easily manageable. Although the old variety had a higher oil content, it is not a prioritised quality at the local market. Farmers managed to a high degree to reconstruct their lowland agricultural production without extensive rehabilitation programs by any relief agencies, but some of the local crop varieties were lost. The floods of the year 2000 showed that although farmers are well adapted to their variable physical environments, their strategies are insufficient for the conservation of local seed systems. It is of interest to assess to what extent the plant genetic resources have been impacted by the flood in 2000.

She grew 7 varieties of bean, which she also sold to other farmers. Seeds can also be acquired on a loan-basis, “kulomba”, but farmers are abandoning this method due to dishonesty, trusting only relatives or very reliable friends. Seeds can also be exchanged with other scarce resources, “kutxintxana”.

Seeds can be used to create and maintain social relationships, when seeds are given as gifts, “kunhiquiva”. These gifts can evoke an obligation and thus a chain of gift exchange is created, which forms the base for social relations. Men and women create friendships during intercommunity dance festivals where small gifts are exchanged between new friends. These friendships can also be formed while travelling on the bus, at the well, in the shops and wherever there are possibilities of meeting new people. These friends create strong social networks of security in crisis situations. Family and friends may strengthen their friendships through marriages between their children. The value of having family in other areas in times of crisis can be crucial for the survival of the household, and therefore it is of great importance to keep a good relationship with the family-in-law.

Seeds can also be acquired by merely asking or begging, “kukombela”, and this differs from “kuthekela” because the latter method obliges one to give something in return. “Kuthekela” is the principal method used to secure circulation of resources between different ecological zones. “Kurimela” involves providing labour in exchange for seeds and other agricultural products, but is threatened by the market economy and the increased dependency on money. After the floods, the majority of the farmers in the lowlands acquired seeds through buying and those in the Zongoene

BOX 1

Impacts of the year 2000 floods on the local seed system

The floods had a devastating effect on the farmer seed systems due to their abruptness and the timing of the disaster, occurring just before the harvesting time and lasting for about three months. All the lowland resources like livestock, seeds and shelters were destroyed.

Seeds stored in the lowland fields were lost in both regions. In Fenisseleni, lowland crops such as rice and sugarcane were almost extinct from the whole area. Sweet potato (12 local varieties) and banana varieties were completely extinct. Fenisseleni farmers have applied external sources and informal networks of seed exchange to rehabilitate their seed stocks in the lowlands. Farmers are today cultivating varieties of sweet potato adapted to highland conditions.

In Zongoene, only the seeds stored in the lowland fields were lost. Farmers in Zongoene, unlike the ones in Fenisseleni, did not have big problems in obtaining seeds after the 2000 floods. This is due to the fact that they did not only cultivate in the lowlands. To cope with draught Zongoene farmers get seeds from the lowlands to plant in the highlands, and in times of flooding seed is transferred from the highlands to lowlands.

highlands depended on their reserves spared by the 2000 floods. The farmers in the highlands were not affected by the floods, while draught affects both areas.

All farmers in Fenisseleni and Zongoene reported that drought is more damaging to seed stocks than floods because a larger geographical area is usually affected by drought. Farmers have to travel to far away places to seek seeds in a drought year, but floods affect the floodplains only. Long lasting exhaustive droughts may end up destroying the social networks of seed exchange to a higher degree than floods do.

■ Implications ■

The floods had a devastating effect on the local seed system in Fenisseleni because of the suddenness of the disaster. The recurring disasters have resulted in a high turnover and a loss of local crop varieties. The farmers did not have time to evacuate their homes and to save some resources. A more integrated and effective regional flood alert system could lead to less damage to farmers' homes and farming resources. An investigation of the seed exchange system focusing on the local crop diversity would be important in the assessment of plant genetic resources conservation. During the post-flood situation, farmers should be encouraged to seek seeds from areas with the same agro-ecological conditions as theirs when replacing varieties, so that yields are not negatively affected. A regional, national or even international germplasm exchange could be established and used in the future crisis situations. Farmers' abilities to reconstruct their seed stocks can be enhanced by establishing ex situ reserve facilities in the highlands beyond the reach of floods, although the issue of in field stored seeds would not be solved, especially that of the lowland varieties such as sweet potatoes and bananas.

The differentiation of agricultural practices and responsibilities along gender lines may affect the reconstruction of the agricultural systems, which also affects the conservation of genetic resources. Men are responsible for the cultivation of cash crops like maize, sugar cane, rice and bananas, while women have the responsibility and knowledge about food crops like cassava, sweet potatoes, groundnuts and cowpeas.

An investigation of the seed exchange system focusing on the local crop diversity would be important in the assessment of plant genetic resources conservation. The lack of money and other assets and limited social networks make some

farmers extremely vulnerable to flood hazards. Money has increasingly become important in transactions exchanging seed resources, which makes it a key asset in seed security, making the poorest farmers particularly vulnerable. Single-headed households consisting of old and childless men and women may be very vulnerable, as they cannot provide labour and may lack stable social relationships. Female-headed households usually have limited access to money and are amongst the most vulnerable groups.

Despite the penetration of markets in the local economy, traditional coping strategies based on local processes of seed exchange are still important. Any successful development interventions aimed at increasing the resilience of seed systems should take into account these traditional exchange practices. For example, a better strategy for improving local institutions and seed exchange networks could be aimed at increasing production and multiplication of seeds at the local level and facilitate movement of people between the two areas, rather than distributing seeds from outside to farmers in the lowlands. Development projects should be innovative and poverty-focused, rather than focusing on distribution of germplasm only. It is crucial to reduce the poor's vulnerability by increasing farmers' access to money and other valuable assets, which in turn are important for establishing and maintaining social relations.

Too often seed relief programs are based on the assumption that farmers themselves are not able to rehabilitate their seeds in times of crisis. However, as illustrated in the above case study, farmers' own methods of seed resource rehabilitation should be considered and used as a starting point for improving farmers' capacities to rehabilitate seed sources in crisis situations.

LinKS Project Gender, biodiversity and local knowledge systems for food security

The LinKS project works to improve rural people's food security and promote the sustainable management of agro-biodiversity by strengthening the capacity of institutions to use participatory approaches that recognise men and women farmer's knowledge in their programme and policies. The LinKS project has three main activity areas, which are capacity building and training, research and communication and advocacy. The project is funded by the Government of Norway.

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