

4.

Implications for future development interventions

4.1 KEY MESSAGES

The LinKS study findings have raised many relevant issues which can contribute to a better understanding of the complex relationship between crop diversity, seed management, local knowledge and food security. The key messages identified in this analysis can be grouped and summarized as follows:

Key messages related to the local seed system:

- **Overall importance of local seed system.** The report emphasizes that the local system contributes to seed distribution and management. For resource-poor farmers, and especially for female farmers, the local system is the main and most reliable source of seed.
- **Importance of local knowledge for the continuous management of seed diversity.** The report concludes that there is an important link between seed diversity management and local knowledge. Seed loss can cause the loss of related knowledge, which is practical in nature and is not formally written down or recorded. This could also be a factor that contributes to loss of crop diversity in HIV/AIDS-affected households, as knowledgeable household members die early without passing on the relevant knowledge.
- **Existence of intra-community differences in seed management and seed needs.** The study has pointed out that seed management skills are not homogeneously spread across all community members. There are differences between and within families and communities (e.g. nodal farmers, gender and socio-economic differences). These differences need to be understood in order to build on them.
- **Existence of a range of drivers that impact seed diversity.** The studies have revealed three main drivers that impact crop diversity at the local level: the introduction of new crops and varieties, unpredictable extreme weather events and climate change, and shocks to the vulnerability context such as HIV/AIDS.

Key messages related to the formal seed system and seed interventions:

- ***Equity considerations are important, as disadvantaged groups are currently not targeted to receive improved seed varieties and “new” crops.*** The studies emphasize that the formal seed system is more successful in targeting men than women and richer rather than poorer farmers. One reason for this is that gender-specific seed demand is not taken into account by the formal sector.
- ***Clear poverty focus of formal seed sector is missing.*** The formal sector does not differentiate between socio-economic groups. The formal sector focuses mainly on market-oriented crops and varieties without taking into account the specific demands and needs of poor households.
- ***Lack of well defined monitoring and evaluation (M&E) systems.*** The studies reveal a lack of well-defined M&E systems to understand the medium- and long-term impacts of crop and variety introductions on agro-biodiversity, food security and local seed management practices.
- ***Importance of crop diversity to allow for adaptation to future changes (socio-economic, political, environmental, etc.).*** The report emphasizes the important role crop diversity can play in mitigating different types of changes, especially in adapting to climate variability. This is an emerging research area and future studies are urgently needed to develop clear policy guidance.
- ***Dysfunctional relationship between local and formal seed systems.*** The studies show that there are no functioning linkages between the formal and the local system despite the recognition that these systems could be complementary. Crop diversity is little studied as part of a socio-economic and agro-ecological system. Models of a seed system need to consider the diversity of farmers. Some of them were “sources” of local improved seed, while others were “sinks,” to whom the improved seed flowed. Genetic resources circulated within a community, including farmers who were relatively more open to new germplasm and to adopting new ideas. Identifying those special farmers and knowing what makes germplasm and ideas suitable for absorption through those farmers would help make research and extension services more relevant and useful for the community (Haddis and Berg n.d.). This must be explored in more detail.

The main critique resulting from both the LinkS studies and a wider literature review is that services and associated research initiatives have too often focused on the development of seed-related technologies without taking into account the circumstances, needs and priorities of different households. They have also often failed to analyse and understand delivery system constraints, which are common (e.g. ill-functioning extension services). To overcome the shortcomings mentioned above, a conceptual change in seed development interventions is required. The conceptual change suggested is outlined in Table 2 below:

Table 2. Conceptual change model for seed intervention approaches

<p>Approach to date</p> <p>Seed intervention mainly driven by market-orientation and “food security through increased yield” paradigm through formal seed system.</p>	→	<p>Challenges for the future</p> <p>Seed intervention driven by sustainable development consideration taking into account the importance of local seed systems and their potential contributions and limitations.</p>
<p>Gender bias through focus on male-dominated crops and information channels which favour better-off male farmers.</p>	→	<p>Recognition and inclusion of women’s crops into the portfolio of extension and formal seed system to contribute to food security through crop diversity.</p>
<p>One-fit-all approach. Lack of differentiation between socio-economic groups and agroecological conditions.</p>	→	<p>Recognizing intra- and inter- community differences in socio-economic status and agro-ecological resource base.</p>
<p>Market-demand dictates crop and variety development.</p>	→	<p>Farmers’ specific needs and demands are taken into account in crop and variety development.</p>
<p>M&E system based on yield and production criteria as main indicator for success.</p>	→	<p>M&E system based on broader set of evaluation criteria, including potential for future adaptation to changes in socio-economic and environmental conditions.</p>
<p>Lack of interaction between formal and local seed system due to limited understanding and analysis of existing local structures and mechanisms.</p>	→	<p>Local structures and mechanisms strengthened through the exploration of complementarities between both systems based on in-depth analysis of local seed systems (e.g. potential links between nodal and QDS farmers).</p>
<p>Pseudo-participatory approaches limited to consultation of local stakeholders in final approval of new crops and varieties.</p>	→	<p>Participatory approaches based on empowerment and collegial relationships in all stages of the project cycle.</p>
<p>Resource allocation biased towards technology development and research in formal organizations.</p>	→	<p>Resource allocation at the local level to strengthen existing structures and processes.</p>
<p>Belief in “trickle down” of benefits to poorer farmers and households.</p>	→	<p>Need for targeted approaches that benefit the poor and other specific groups that tend to be left out.</p>

4.2 SUGGESTIONS FOR IMPLEMENTATION

In order for FAO and its partner organizations to address these challenges and to implement the conceptual change model developed, some suggestions are presented below.

“Recognition and inclusion of women’s crops into the portfolio of extension and formal seed system to contribute to food security through crop diversity.” This aspect is very important and needs to be addressed in the initial assessment and diagnosis phase of any seed intervention. Women’s crops will only be considered in extension and research if their importance to family nutrition and income generation are well understood. Extension and formal seed systems need to target women specifically to involve them in future seed interventions. Empowerment and capacity building are important elements of such a strategy.

Furthermore, farmer participation in extension will require a shift to a user-centred approach to extension, in which farmers can request the services they require. Changing from a supply-driven extension model to a demand- or user-driven model would ensure that **“farmers’ specific needs and demands are taken into account.”** This would also require a financing mechanism (e.g. a cost-sharing mechanism) that could provide farmers (men and women) with financial resources to pay for these services. In such a scenario, women and men could request information and inputs related to their specific crop and variety choices and needs. This is related to another element of the framework, which suggests **“Resource allocation at the local level to strengthen existing structures and processes.”** FAO could take a leading role in facilitating and setting up these mechanisms on a trial basis initially.

“Recognizing intra- and inter-community differences in socio-economic status and agro-ecological resource base” is a pre-requisite for addressing the **“Need for targeted approaches that benefit the poor.”** Too often, communities have been perceived as homogenous groups of people living together and sharing similar constraints and opportunities. Realizing and accepting that this is not the case is the first step in targeting interventions more appropriately. There are many tools and manuals available⁴ that provide guidance for involving local people and other relevant stakeholders. Once the differences have been identified, a thorough analysis of seed intervention demand can be conducted. Furthermore, appropriate communication channels can be identified for the different target groups through this process. FAO could play an important role in capacity building and training of extension and formal seed-sector staff and in insisting that collaborative projects and programmes recognize intra- and inter-community differences.

“Local structures and mechanisms strengthened through the exploration of complementarities between both systems based on in-depth analysis of local seed systems (e.g. potential links between nodal and QDS farmers).” Nodal farmers, who are often women, can be involved in enhancing farmer-to-farmer dissemination of genetic materials. Nodal farmers’ expertise in selecting and maintaining genetic materials could be effectively used in Participatory Plant Breeding to enhance diversity on a larger scale. A network of nodal farmers could act as conservation farmers and their farms could be used as a “Community Genebank.” Their involvement in community biodiversity registration activities and their link to development opportunities could be very effective. Strengthening local structures and processes does not take place only at the community level; a shift in attitude and a process of learning are required in the formal system, changes which could be facilitated by FAO.

4 See SEAGA Package, FAO

“Participatory approaches to crop and variety development based on empowerment and collegial relationships in all stages of the project cycle.” Much experience has already been gained in participatory approaches to crop and variety development through methods that are now some two decades old. Participatory breeding, community seed banks, seed fairs and home gardens can offer effective strategies to maintain or increase agro-biodiversity and to strengthen local structures. In order to function successfully, these approaches must consider community and gender differences. There is a large body of literature on participation and the different kinds of relationships, including contractual, consultative, collaborative and collegial (Biggs 1989). The participation mode determines the level of community control over the process and its impact in strengthening local structures and processes. FAO could systematize past and present seed interventions based on community and gender differentiation in order to learn more specific lessons.

“Developing an M&E system based on a broader set of evaluation criteria, including potential for adapting to changes in socio-economic and environmental conditions.” Robust M&E systems are crucial for documenting the progress and impact of any seed intervention. Too little attention has been paid to implementing M&E systems, which has partly contributed to a lack of policy-relevant data. Participatory approaches do not lead immediately to policy dialogue. Their outcomes need to be assessed and recorded; the findings can then be communicated at different levels. Having identified the complex interactions of crop diversity, food security and seed systems, FAO could make an initial step to develop a solid M&E system, which incorporates changes in socio-economic and environmental conditions.

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Annex 1

Project background information

A. EXAMPLE FROM TANZANIA

Title: A study of local knowledge in relation to the management of agro-biodiversity and food security in Southern Highlands and Central Tanzania

This study used a participatory and interdisciplinary approach to investigate men and women farmers' local knowledge of seed management in relation to food security. The study was based on ongoing research and development activities in the two selected areas, involving different partner institutions (National Research Institutions, Extension Service and local communities.)

The main objectives were to:

- Increase the understanding of local knowledge about maintaining and using agro-biodiversity to improve and strengthen seed and food security.
- Explore to what extent local knowledge of seed diversity and seed management is differentiated by gender, age, ethnicity and socio-economic status, and whether these factors matter when transferring significant knowledge about seed management.
- Document farmers' local knowledge and disseminate it in appropriate forms to increase awareness about the importance of local knowledge in seed management and household food security.
- Document social, political and environmental threats to local seed security posed by internal and external interventions and unsustainable policies.

The project aimed to have a larger impact on national policies and practices regarding seed management and food security issues by encouraging development agencies and policy makers to attend to local communities, their interests and knowledge and to see these as assets that could contribute to future rural development strategies.

B. EXAMPLE FROM MOZAMBIQUE

Title: The impact of HIV/AIDS on farmers' knowledge of seed: Case Study of Chókwè District, Gaza Province, Mozambique

This research focused on understanding how seed and seed management knowledge and information is transferred and the likely impact of HIV/AIDS on these systems. This understanding can help improve the effectiveness of external interventions aimed to strengthen local coping capacity in the face of crisis.

The main objectives were to:

- Collect secondary information regarding: local food security strategies; local dynamics around information and knowledge about seed and seed management among women and men smallholder farmers; and the impact of HIV/AIDS in the study area.
- Conduct field work with men and women farmers to: obtain information on local food security strategies; understand the dynamics of information and knowledge on seed and seed management used by women and men smallholder farmers; and investigate the impact of long-term illness and death on food security strategies at the household level, especially in relation to the availability and dissemination of information and knowledge on seed and seed management.

Annex 2

Consolidated Checklist

This consolidated checklist summarizes the lessons and suggestions that are explored in detail in the full report. This checklist should be used when planning, monitoring or evaluating seed interventions and can be used by project managers, extension officers, ministry officials and evaluators.

Determining seed diversity of crops and varieties

To understand seed diversity in the local context, the following questions need to be asked for different socio-economic groups (better-off households, medium and resource-poor households) taking into account the perspective of men and women.

- What crops are cultivated in the fields? Who is responsible for cultivating which crops? Are these responsibilities delegated according to gender, age, capability? Are wild or collected crops included in their diet? Are wild or collected crops used for other purposes (e.g. medicinal qualities, beauty products)?
- What crops are the staple crops, which are cash crops, which are traditional, which are the introduced crops? Who takes the lead in cultivating these crops? Men or women?
- Is the seed of these plants available for men and women in sufficient quantity, within reasonable proximity and in time for planting?
- Do men and women have adequate income to access these seeds or other resources to purchase or barter for them?
- Is seed supply stable over time or do people experience acute or chronic seed shortages?
- How do local men and women define seed security?

Understanding gender differences in seed diversity of crops and varieties

Questions to help explore the knowledge differences within communities and amongst household members, with a specific focus on understanding gender differences, include the following:

- Who takes decisions about the different crops in terms of management and resource allocation?
- Who is responsible for seed selection, treatment and storage of seed and seed multiplication and exchange?
- What are traditional practices related to seed selection, treatment and storage of seed, and seed multiplication and exchange?

Determining the demand for seeds

An important aspect which needs to be understood well before planning any seed management intervention is the nature of the seed demand across different socio-economic groups (better-off, medium, and poor households) and for men and women. Questions to be asked include:

- Are farmers (men and women) searching for new varieties (which may simply require an initial introduction of seed)?
- Are farmers (men and women) purchasing hybrids (which can be supplied by a commercial enterprise)?
- Do farmers (men and women) have seed quality or management problems (which require specialized seed enterprises or extension advice to improve farm-level seed management)?

Understanding the functioning and structure of the local seed system

The functioning and structure of the local seed system should be assessed through the exploration and mapping of seed flows and the processes involved in maintaining diversity. Questions to be posed to the various socio-economic groups about the flow of genetic materials include:

- From whom do men and women usually get seed?
- To whom do men and women usually provide seed?
- What are the difficulties of obtaining seed from other people and what are the benefits?

Additional questions to be asked in order to understand the local system include:

- Are there notable differences in terms of crop and variety diversity within the community and between men and women?
- Who are the farmers with the largest crop and variety diversity? What is their gender, age, socio-economic position, etc.?
- What types of knowledge do men and women hold about their crops?
- How does this knowledge differ between men and women and between different socio-economic groups?
- Are these farmers recognized as seed and information sources in the community (i.e. nodal farmers)?

Understanding the functioning and structure of the formal seed system

Another important aspect is to explore past and present interventions from the formal system. As with the questions above, it is crucial to include men and women from different socio-economic strata. Questions to ask about the functioning of the formal system include:

- Which organizations promote or introduce seed in the community? Do they target men or women?
- Where do men and women obtain seed outside the community?
- What are the constraints for accessing the formal system for men and women?
- What are the benefits of accessing the formal system?
- Does the public research system have appropriate links with the rest of the seed system to ensure the effective delivery of its varieties?
- Do farmers (men and women) have access to information on seed characteristics prior to planting?
- Can farmers (men and women) afford access to the plant varieties they need and can they save, reuse and exchange them according to their customary practice?

Assessing the impact of new crops and varieties

Questions to address to the different socio-economic groups to gain a better understanding of the impact of new crops and varieties include the following:

- Is the number of plant varieties per crop grown by men and women in the locality stable, increasing, or decreasing?
- Is the amount of land devoted to modern cultivars increasing or decreasing? Are there gender differences in the allocation of land? Are there any compensating measures in place, such as the allocation of small plots to traditional crops?
- Is the number of male and female farmers engaged in in-situ management of PGRFA stable, increasing, or decreasing?
- Is the number of varieties of traditional crops – including staple crops – used in food production stable or increasing?
- Are there efforts to broaden the genetic bases of crops with narrow genetic bases?
- Can farmers afford access to the plant varieties they need and can they save, reuse and exchange them according to their customary practices?

Assessing the impact of extreme weather events

Questions that address the impact of extreme weather events and climate change include:

- What are the main criteria for you when selecting new crops and varieties?
- How frequently do you experience droughts in this area?
- How many of your crops and varieties are tolerant to droughts?
- Are those mainly local crops and varieties or are they improved crops and varieties?
- How do you cope in years with extreme droughts?

Assessing the impact of HIV/AIDS

The LinkS studies have shown that the issue of long-term diseases is very sensitive to discuss with household members and in order to obtain meaningful information the project needs to establish a strong relationship of trust before being able to explore this aspect in any detail. However, a few preliminary questions and observations can be made:

- Do HIV/AIDS-affected households have the same access to seeds and food as other households in the community?
- What are the main crops and food sources that HIV/AIDS-affected households rely on for food security?
- Are the HIV/AIDS-affected households involved in the formal and/or informal seed system?



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