



THE REAL SEED PRODUCERS

Small-scale farmers save, use, share and enhance the seed diversity of the crops that feed Africa

About this report

This report unpacks and explores farmer-managed seed systems and their contribution to food and seed sovereignty, including the benefits they provide to farming communities as a part of their sociocultural, economic, spiritual and ecological livelihoods. The report highlights, exposes and explores how these systems work. It builds on reports of the seed systems of six African countries: Ethiopia, Mali, Senegal, Uganda, Zambia and Zimbabwe. We are grateful to all the partner organisations and individuals across the continent that made this research and work possible. They are organisations and people directly involved in farmers' seed systems and work with communities to revive, rebuild and maintain seed work in their countries: CEFROD (**Centre d'études et de formation pour le développement en Afrique**) – Mali; **Community Technology Development Trust** (CTDT) and **Zambia Alliance for Agroecology and Biodiversity Conservation** (ZAAB) – Zambia; **Senegalese Association of Farmers' Seed Producers/Association Sénégalaise des producteurs de semences paysannes** (ASPSP) – Senegal; **Eastern and Southern Africa Small Scale Farmers Forum** (ESAFF Uganda) – Uganda; **Zimbabwe Smallholder Organic Farmers' Forum** (ZIMSOFF) – Zimbabwe, and **Fassil Gebeyehu Yelemtu** (PhD) – Ethiopia. Their national reports and this report's annex, including further information about them and their work methods, are available online at: <https://www.grain.org/e/6035> and <https://afsafrica.org/category/publications-resource/>.

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This report draws on the different country reports but does not attempt to cover all the diversity of information, approaches and views expressed in the country reports. AFSA/GRAIN remain responsible for the content of this report.

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Introduction

Seed is life

Farming started when local communities started collecting, planting and selecting seeds – modifying them to meet their needs in the process. Today's seed also embodies centuries of knowledge about how to conserve, change, plant and guide it to fruitful expression. Seed is about culture, tradition, spirituality, cooperation and diversity. And finally, seed is about survival, about getting diverse and healthy food on the table every day. If Africa has such a tremendous rich diversity of food crops and other plants, it is thanks to local farming communities collecting, conserving, developing and exchanging seeds for millennia.

But seed is also about control. Ever since the giant corporations started to gain control of the seed market globally, seeds have also been about making money, big time. Uniformity replaced diversity as the standard. Monopoly control based on property rights increasingly took over from sharing as the new system of seed distribution. And seeds have been turned into a global commodity in the service of industrial farming and huge corporations, with short shrift given to local adaptedness to the specific methods, ecosystems, and needs of family farms.

The picture often painted for us is that we need corporate seeds to feed the world: they are alleged to be more efficient, productive and predictable. Locally developed farmer varieties are painted as backwards, less-productive and disease-ridden. But those of us with our feet on the ground know that this is not the reality in Africa. Just to start with a sobering fact: the vast bulk of food produced on the continent comes from homegrown farmers' seeds (some studies put the figure at 80%). If these seeds are so "backward," what moves farmers to keep preserving and planting them? What benefits do they derive from them? What challenges do they encounter in this effort? How must they be supported so that they can do their work more effectively?

AFSA and GRAIN decided to find out. We work with numerous partner organisations across the continent, many of them involved in local seed diversity activities. AFSA along with many other civil society organisations (CSO) on the continent have adopted the term farmer-managed seed systems (FMSS) to acknowledge certain practices that have been dismissed as "informal" by some.

We proposed a collaborative research project to these CSOs designed to answer these questions, involving interviews with the farmers they work with in order to document their responses. We also asked them to assess the policy situation in their country: what policies are being pushed and implemented, by whom, and to what end? What policies are actually needed? This on-the-ground work was complemented by a literature review and further reflections on the subject.

The outcome of these efforts is captured in this report and the six country case studies on which it is based. We think the results are encouraging. There are so many initiatives promoting the diversity of farmer-managed seed, and there is a widespread appreciation of that diversity and the need to nurture it. But we also note worrisome developments. The corporate lobby for industrial seeds, GMOs, and commodity plantations is relentless. Policymakers are often seduced by the grand narrative and propaganda purveyed by these interests. We hope that this report will serve to refocus our collective attention on the real food and seed producers of Africa, and make sure that their needs are met. We also intend for this report to spur debate on the kind of food system that Africa really needs: one based on diversity, on our own resources and our knowledge? Or one based on uniformity, plantations and foreign corporate control? This report is intended to help us ensure that we proceed down the right road for Africa.

*Million Belay, AFSA
& Henk Hobbelink, GRAIN.*

Summary of key messages

- **Farmers' seeds feed Africa.** *Farmer-managed seed systems are the principal source of seeds of food crops in Africa, yet national and regional seed policies undermine them.*
- **Farmers' seeds are reliable, available and affordable.** *Small farmers prefer farm-saved seeds, which are stored locally, require no cash outlay, and can be relied on to produce nutritious crops and seeds.*
- **Farmers' seed practices are diverse and knowledge-rich.** *They are highly diverse, sophisticated and based on the rich cultural heritage and traditional knowledge of local communities, which have been handed down over generations.*
- **Women are Africa's seed guardians.** *Although acknowledged as the principal seed keepers within their communities, their contribution seldom receives official recognition and support.*
- **Farmer-managed seed systems underpin small-scale agroecological production and food sovereignty.** *Farmer's diverse, ecologically resilient seeds are appropriate for biodiverse, agroecological food production.*
- **Farmers are being pushed to abandon their seed systems.** *Well-funded promotion, subsidies, coercion and advertising are being deployed in an attempt to roll out industrial seeds designed for monocultures and chemicals, and to displace heterogeneous farmers' varieties suited to biodiverse agroecological contexts.*
- **African governments are giving in to corporate pressure and undermining local seed systems.** *Governments are being pressured to join regional agreements on intellectual property, trade and seed, such as OAPI, ARIPO, UEMOA, COMESA and SADC, which benefit corporations and the industrial seed system, and in many cases the governments are giving in.*

1. Understanding farmer-managed seed systems

“Seed diversity and its preservation lies largely in the hands of us women — from seed selection to storage to deciding which varieties to plant and how much.”

Ms. E. Kaunda, Shashe, Zimbabwe

Farmers’ seeds are feeding Africa

For centuries, peasants and small farmers in Africa have managed, selected, enhanced, multiplied, stored, planted and exchanged seeds, using their own inter-generational knowledge, experiences and skills. Today, many millions of small farmers in sub-Saharan Africa, most of whom are women, still supply 80–90% of all the seeds planted in Africa. These local seeds varieties of hundreds of different food crops are available to farmers without needing to buy them or depend on other knowledge systems. This collection of activities is embodied in what are now being called farmer-managed seed systems (FMSS), which are culturally appropriate, practical, customary and inclusive. These systems produce biodiverse, ecologically resilient seeds that can adapt to the changing climate along with many other challenges. FMSS are also known as “informal,” “local,” “community-managed,” “farmer,” “indigenous” and “peasant” seed systems. These seed systems underpin the diverse, localised agroecological food systems, the “peasant food webs” that feed more than 80% of the people in sub-Saharan Africa. To sustain these diverse food systems requires genetically biodiverse seeds that are selected by farmers each season to suit local ecosystems and can adapt through farmers’ dynamic management to external threats such as climate change.

The threat from industrial seeds

The multiple influences of colonisation, commerce and corporations are eroding these localised, biodiverse food systems through the aggressive imposition of industrial commodity production, often destined for export. Africa is being promoted as an emerging and profitable market, the ‘last frontier’ for global agribusiness. This industrial system

of production of agricultural commodities replaces farmers’ biodiverse food varieties with genetically uniform monocultures of industrial seeds of just a few species such as maize, soybean, wheat, commercial vegetables and flowers. These industrial seeds and the interests of the companies that produce them are protected by perverse laws and other state- and corporate-controlled measures, such as monopoly control over seeds. Yet these laws and controls are applicable not only to industrial seeds but to all seeds, including farmers’ diverse varieties. While farmers’ local seed systems are feeding most people in Africa, increasingly powerful seed companies, now merging into mega-corporations, supported by their host governments through aid and trade agreements, are pressing African policymakers to accelerate the uptake of their industrial seeds through “formal” seed systems. To achieve this dominance, the corporations require protections and incentives both nationally and regionally.

“Farmer-managed seed systems are culturally appropriate, practical, customary and inclusive and they produce biodiverse and ecologically resilient seeds.”



Photo: Cheryl-Samantha Owen / Greenpeace Africa

Prisca Mayende, Naigai, Bungoma County. Building environmental resilience: farmers adapting to climate change in Kenya, East Africa.

If the corporations become as pervasive in Africa as they are on other continents, and their industrial seeds continue to spread in monocultures across the land, they could eclipse the farmer-managed seed systems that underpin the food sovereignty of Africa's peoples.

Resisting the monocult

Even in the face of these pressures, in all the countries studied, women and men small-scale farmers still manage their culturally and nutritionally valuable and diverse seeds. From seed production, selection, enhancement and storage through to seed sharing and exchange, women and men farmers continue to play a critical role in decision making processes about seeds. Indeed every household is a seed developer and producer in their own right.

These seed systems are not one-size-fits-all; they vary from community to community. They are centred around community values of selecting, exchanging and sharing seed, and sharing knowledge about planting, cultivating, harvesting and processing the crop. They support the best use of local resources within local

ecosystems. They respect and value the gender roles within farming communities, where women, men and children have different parts to play. Often, for example, women are predominantly in charge of food and nutrition security crops, while men address the cash crops. Knowledge of these context-specific African seed systems helps remove the pall of negativity that has been placed on them by industry; it helps us recognise that farmers are the "primary agents in these systems" and that they should therefore be treated as "equal partners in any attempts to support their farming practices." Overall, these farmer-controlled systems celebrate the work and pride that farmers take in the management, production, storage, selection and sharing of seed.

For millions of African small-scale producers, diverse farmers' seed varieties are crucial to food sovereignty, nutrition, enhancing biodiversity and agroecology, and sustaining livelihoods in rural and peri-urban areas. It is therefore imperative that these farmers' seed varieties are available for agroecological production for localised food systems, and that legally binding

farmers' rights to save, improve, exchange, sell and use their seeds are never limited or tampered with by laws, policies, commercial pressures, property rights or technologies.

Yet farmers' rights to their seed systems are being rapidly undermined, despite denials by the proponents of industrial seed systems, and despite widespread government ratification of global agreements to safeguard agricultural biodiversity and the right to food. Africa is the main focus of the global resource grab, as global corporations — chiefly agribusiness and big pharma — turn their attention to the continent. According to the World Bank's *Unlocking the Potential of Agribusiness* report, "Africa represents the 'last frontier' in global food and agricultural markets." The spread of industrial seed is a key tool paving the way for corporate control over African food systems.

In this context, it becomes crucial for us to understand **why** it is imperative to support farmers' local access to and control over their seeds, **how** farmer-managed seed systems operate, and **what** support is needed to enable them to continue using and enhancing their biodiverse and resilient seeds, which feed most of Africa's people.

“I can observe that my friends are becoming dependent on government [industrial] seed supply. They are also losing their seed diversities and they are vulnerable to different environmental hazards, due to weak ability of ‘improved’ seeds to cope with the changing environment.”

Ethiopian farmer

A variety of local seeds on display at a farmers' fair in Zimbabwe in 2017.



Photo: ZIMSOF

2. The push for corporate seeds in Africa

“We do not believe a word of the commitments to responsible behaviour on the part of multinationals. Who will ensure that responsible practices are used in the field? Who can claim that, in such an unbalanced relationship between a multinational and a small African farmer, one will not lose? What serious and reliable recourse is offered to farmers in case of excesses?”

Mamadou Cissokho, CNCR, Senegal, Former President of ROPPA¹

A battle is raging across all the countries studied for control over precious agricultural resources, and this battle has had negative impacts on local food systems. Powerful multinational forces are moving aggressively to implement a system in which farmers are no longer the principal providers of healthy local foods, but rather primary producers or workers delivering raw products to commercial “value chains.” These chains do not add value for the food producers themselves; instead, they are designed to extract commercial profit from the food system. Our research shows that small-scale farmers in most countries are not satisfied that their local and indigenous seed systems knowledge are properly reflected in development planning and policy implementation at almost all levels, and that this is increasingly affecting farmers’ integrated livelihood strategies and the sustainability of their seed systems.¹

Farmers, in this development model, are persuaded or forced to buy and use industrial seeds each season, and to purchase the expensive pesticides and fertilisers needed to grow these varieties. We found that this commercialisation mantra has not only de-prioritised local food security, it has also greatly destabilised farmers’ management of their seeds by negating the role of women and children, thereby contributing to intergenerational inequalities and further deepening their vulnerability and marginalisation.

A warning was sounded during the research in Uganda: *“Those who have granaries would store seeds for the next season but the granaries*

started disappearing because of the “scientific method” of farming that came with the use of pesticides and hybrids.”

Through agricultural extension, advertising and other media, society is being influenced to accept the narrative that farmers’ seed and localised food systems are an outdated, “informal” way of doing things. The purveyors of these messages seek to normalise and popularise industrial seed, “value chains” and monoculture at the expense of farmers’ diverse seeds of a wide range of food crops grown on their biodiverse farms for local consumption.

The research shows that the industrial mantra is being repeated and promoted in all the countries studied. It is asserted that what today’s consumer society requires are “modern” practices, implemented “responsibly” of

“The advertisements are always made sweet to the extent that most people run for them. It leaves most farmers confused and they end up running to go and buy the hybrid seeds from the seed suppliers that exist in the community.”

Ugandan farmer

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¹ Network of Farmers Organizations and Agricultural Producers of West Africa.



polyp.org.uk

course, that will organise and formalise the seed and food system. The intention is to shift and ultimately change public perceptions, so that people come to believe that the problem of feeding the growing population can only be solved by using genetically uniform industrial seeds of relatively few crops pushed by private seed companies, development organisations and the government. This approach is shown to be in line with the Green Revolution model of intensification which promotes the uptake of chemical-intensive agriculture, especially monocultures of commodity crops, using so-called “improved” seeds and the agrichemicals they require.

When promoting industrial seeds, state and private sector actors at local levels are complicit in spreading negative messages about local seeds. For example, Senegal’s private service operators assert that *“local seeds are always dependent on rain and their growing cycle is long,”* despite the even greater dependence on rain for hybrid seeds. Operation Wealth Creation (OWC) in Uganda promotes hybrid maize because, say local agents, the

“government is focused on wealth creation and one can’t create wealth with local or traditional seeds because they take long yet yield less.” Yet the exact opposite is true: it is the hybrid varieties that cost more and struggle to demonstrate their reliability. These ads claim that traditional/local seeds are not good enough and that private seed companies are currently producing the bulk of the seeds planted, despite overwhelming evidence to the contrary.

Some of these local agents go so far as to warn farmers that they might be breaking the law if they exchange their own biodiverse seeds, thus weakening farmers’ rights and making afraid to share seed. For example, in Iganga District, Uganda, a farmer subjected to this propaganda explained that she had been told, *“the law does not allow the free sharing of farmers’ diverse seeds between communities unless they are Quality Declared Seed (QDS)”* — a government-approved label for uniform seed. These farmers are seriously concerned that a diverse and sustainable seed system, one that is crucial to enhancing nutrition and sustaining livelihoods, is being targeted in this way.

‘Improved’ seeds increase debt

“When we plant ‘improved’ seeds it is a must that we have to also apply chemical fertilizers which are damaging our soil. Agricultural extension agents still insist we use the same and yet they ask to pay for external inputs which made us lose productivity. We buy 1200 Ethiopian birr per one quintal and sell it for 200 Ethiopian Birr only because we can’t apply it on our farm since we know this was harmful. For example, I buy certified tef seed like kiros (CR 37) and fertilisers because I know that I will not be treated well by local administration whenever I need service from government. As a result, I had to sell my oxen to pay the government debt. I then downgraded from my economic as well as my social status so that now I have to beg others to lend me oxen for ploughing my farm. I therefore decided not to take external inputs from government anymore.”

Ethiopian farmer

The policy situation in Uganda tends to favour commercial farmers and scientists who are promoting new seeds and biotechnology. Policies on seeds are strongly geared to the interests of corporations and traders, who want a market for their seeds and chemicals. *“That is why they promote monoculture.”*

In Zambia, the government operates a Farm Input Subsidy Programme (FISP) for small-scale farmers, including the provision of a package of subsidised chemical fertiliser and hybrid seeds sufficient to plant one hectare of maize. The input pack for farmers in 2017–18 comprised 800 kg of fertiliser and 10 kg of maize hybrid seed, on condition that the farmer contributes a quarter of the cost of that fertiliser in advance.

Such government investment on behalf of the commercial seed sector and monoculture commodity production goes against the very essence of diverse, farmer-managed seed systems used in local food production. This has led to deliberate misuse of terms such as seed quality which should normally refer to viability and vigour but now refers to uniformity. As a farmer in Zimbabwe stated: *“Farming has changed in a way that is more about cash cropping than growing the seeds we know.”*

In Ethiopia, the Biosafety Act has now been revised to facilitate the introduction, testing and release of genetically modified (GM) crops.

This is expected to promote research on GMOs. In the Tigray and Amhara regions, farmers explained that they have been pressured to use “improved” seeds by agriculture extension agents who claim these seeds have higher productivity, despite the additional risks and the need for farmers to buy new seeds every season.

In addition to the extra costs, some farmers interviewed in Ethiopia who were exposed to industrial seeds said that they were also *“particularly concerned about our health, and we suspect that this is because the hybrid/improved seeds are grown with chemicals.”*

Similarly, farmers in Senegal say that hybrid seeds often do not produce enough to cover their costs, which the farmers have never before incurred, and that this results in them not being able to repay the seed suppliers, thereby increasing their debt:

“We do not know what to do with the fact that the purchase of the seeds is not always paid back, neither to the state nor to SODAGRI for lack of money.”²

Senegal’s Agricultural Acceleration Program (PRACAS) is working hard to make public-private partnership (PPP) the main force for

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² Société de développement agricole et industriel du Sénégal.

“rebuilding seed capital” by revitalising the commercial seed sector and supporting the cereal certification system, especially for rice. Seed treatment centres with seed laboratories are being built in northern, central and southern Senegal with equipment provided by the USAID Economic Growth Project at a total cost of \$1 billion FCFA (USD \$1.75 million).

USAID is also a partner in the New Alliance for Food Security and Nutrition (NAFSN), which creates an enabling environment for increased private sector investment in agriculture in ten African countries, including Ethiopia and Senegal. NAFSN encourages policy, legal and institutional restructuring, comprising a set of changes to national land, seed and trade policies and practices to facilitate transnational corporations’ access to and control of markets and resources. The marketing of traditional seed varieties is discouraged in favour of a unified seed market restricted to legally protected industrial varieties.

By its nature, this type of agriculture requires commercially available or state-subsidised industrial seeds which are protected by tight laws and regulations, and a production and distribution process that is formal, linear and costly. The attempt to make these changes,

and simultaneously to eliminate farmer seed saving and seed sharing mechanisms, involves several organisational and policy-oriented processes designed to control and regulate the seed sector. This strategy harnesses internationally supported investment programmes to state and commercial power to force farmers to use seed technologies, such as hybrids, that require new seed to be purchased every planting season. It is reinforced by legal measures at the international, regional and national levels and is backed by corporate and international donor funding. Important among these measures is the introduction of new, regionally and internationally recognised plant breeders’ rights that protect the industrial seed varieties owned by commercial seed corporations.

These measures directly threaten farmers’ traditional practices and their freedom to manage their own seeds, and will further limit the use of farmers’ seed varieties.

Meanwhile, national laws are being made more restrictive by harmonizing them with regional seed frameworks and imposing intellectual property protections in line with international agreements and conventions. Traditional seeds are being pushed out, and smallholders’ use and exchange of seed is being criminalised.

Laws and regulations that undermine farmers’ seed systems

At the international level, the World Trade Organization’s Trade-Related Agreement on Intellectual Property Rights (WTO/TRIPS), which most African countries are party to, states that members must implement some kind of intellectual property protection on plant varieties. This has been interpreted by industry as the requirement of states to join the Union for the Protection of New Varieties of Plants (UPOV), which protects the rights of industrial plant breeders and restricts farmers’ rights to freely use and exchange seeds. The USA and Europe have insisted on adherence to UPOV provisions in their bilateral trade and economic partnership agreements (FTAs/EPAs) with African states. Some FTAs even require industrial patenting of seeds. These tools help to gain market advantages for the donor states’ transnational corporations, ensuring they get a good return on their investment by obliging farmers to pay for seeds – including some farm-saved seeds.

At the regional level in Eastern and Southern Africa, these measures include the Arusha Protocol (Arusha Protocol for the Protection of New Varieties of Plants) developed by the African Regional Intellectual Property Organisation (ARIPO), which is in line with UPOV.

Similarly, in West Africa, the Organisation Africaine pour la Propriété Intellectuelle (OAPI) became a member of UPOV in 2014, resulting in the rights of plant breeders getting stronger and those of farmers getting weaker. OAPI and ARIPO may merge to form a single Pan-African Intellectual Property Organisation (PAIPO) which will help extend the continental reach of industrial seeds under a single harmonised legal regime.

The Arusha Protocol was hotly contested by farmer groups and civil society, including AFSA and members such as ACB and Commons for EcoJustice. They are on record vehemently opposing the Protocol on the grounds that it severely erodes farmers' rights and the right to food, but their protests were ignored.

Within the regional economic communities of COMESA, UEMOA and SADC,³ there has been a concerted effort by private sector and policy lobby groups to develop national seed markets and increase exports of industrial seed across African regions. Laws related to this commercial sector, often stipulated by trade agreements, also relate to the use of farmers' varieties of seeds by small-scale farmers. Civil society is concerned about the multiple mechanisms through which current legislation can undermine the conservation, use and enhancement of farmers' seeds and critically decrease diversity in farmers' fields. CSO's observe that there has been only limited consultation by governments before they sign regional and international documents and treaties with far-reaching impacts on small-scale farmers and their seeds.

For more on these restrictive laws, protocols and trade agreements, see "Further Reading" at the end of this report.

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3 COMESA is the Common Market for Eastern & Southern Africa. UEMOA (Union économique et monétaire ouest-africaine) is the West African Economic and Monetary Union, an organization of eight, mainly francophone West African states within ECOWAS (the Economic Community of West African States). SADC is the Southern African Development Community.

In harmony with these regional processes, there are national processes and laws that incorporate these restrictions into domestic law; the countries of the region have agreed to adopt plant variety protection and seed laws benefiting the private sector. The countries included in this report are at different stages of introducing plant breeders' rights acts. In Ethiopia, for example, the draft Plant Breeder Rights Proclamation (PBRP) would facilitate the protection of domestic and foreign plant varieties, thus building private-sector confidence and attracting investment to the commercial seed sector. The requirement, frequently imposed by such legislation, that all seeds be registered can seriously impinge on farmers' and community rights; it may prohibit them outright from selling or exchanging seed. For farmers'

diverse, heterogeneous varieties generally cannot meet the criteria of distinctness, uniformity and stability required by the Union for the Protection of New Varieties of Plants (UPOV). By implementing these and related measures, states undermine farmers' seed systems.

“Industrial seeds are protected by tight laws and regulations, and a production and distribution process that is formal, linear and costly.”

A governance conflict: plant breeders' or farmers' rights?

All the governments of the countries included in this study are signing up to restrictive intellectual property rights and trade agreements, including UPOV, which promote industrial seeds and commodities. Yet at the same time, they are also parties to international agreements designed to protect agricultural biodiversity and sustain the diversity of farmers' seeds. Such agreements include the Convention on Biological Diversity (CBD), which also recognises Indigenous peoples' and local communities' rights to resources and knowledge and has a target of zero losses of biodiversity by 2020, and the International Seed Treaty (ITPGRFA), which covers all agricultural plants and recognises farmers' rights — to their seeds and associated knowledge and to their right to participate in policy and decision making. These latter measures are overwhelmingly supported by African governments at treaty meetings, and the signatory governments are obligated to incorporate these agreements and any subsequent decisions of their governing bodies into domestic law. Many do so, but implementation does not necessarily follow, because resources and power are invested in other laws promoting the industrial seed system.

Consider the case of Zambia. Its national policy on agriculture recognises the importance of the informal seed sector, stating that maintaining agricultural biodiversity and promoting conservation are among the strategies adopted to achieve the policy objective of food security. Simultaneously, however, the [Plant] Breeders' Rights Act now prohibits farmers from exchanging seed, an essential component of farmers' seed systems. *"It would appear to be a policy contradiction that the government now wants to formally join UPOV 91, which could make farmer exchanges illegal."*

In Ethiopia, proclamation 482/2006 on community rights and proclamation 782/2013 on seeds provide a legal framework for farmers to access and exchange genetic resources and community knowledge within their localities. But government interventions imposing "new" seeds, often protected by plant breeders' rights, are undermining farmers' seed systems. *"This demonstrates that written policies and regulations, even if they appear powerful advocates for farmers' seed systems, are not implemented on the ground."*

While legal and regulatory measures strengthening farmers' seed systems often exist at the national level, implementation is not a priority. Meanwhile other, more powerful measures dominate, prioritising plant breeders rights. It's a governance conundrum, and farmers' seed systems and farmers' rights are the losers.

This report confirms that regional and national policies and legislation increasingly focus on defending the interests of those promoting industrial seeds and commodity production, with little support for farmers' diverse varieties and their technical know-how about managing seed systems. Small farmers in Senegal, who produce most of the country's food, have taken note of an abdication of duty on the part of their government, which they hold accountable for curbing the excesses of the industrial

commodity sector — however "responsible" the multinationals may claim to be::

"The state is responsible for the problems faced by the farmers because it is developing intensive rice production to the detriment of local food crops. The state must direct its agricultural policy towards the promotion of local crops based on local seeds."

3. Why farmers keep using their diverse and productive seed systems?

“Smallholder farmers play major roles in multiplying seeds, hence contributing to seed preservation; they provide storage for the different varieties of seeds and ensure that other farmers get seeds ready for the planting seasons.”

Local leader, Gulu District, Uganda

Importance of local seed systems

The biodiverse agroecological food production systems used by small-scale farmers to provide most of the food in Africa require local varieties of seeds that are adapted to local growing conditions, tastes and cultures. These seeds are intentionally diverse and heterogeneous. Farmers can plant and replant the seeds from season to season, sometimes in mixtures of varieties and with other crops, thus increasing resilience and overall productivity. The seeds in these farmer-managed systems are very differently nurtured from the way that “sow-once” genetically homogeneous seeds, produced primarily for industrial monocultures, are manufactured and grown. In farmer-managed systems, the farmers select, save and enhance seeds, and they share, exchange knowledge and sell seeds among themselves, within their communities and with farmers in a wider region. In Zambia, farmers generally move with samples of peculiar seed, some of which have crossed borders. These seed are referred to by their country of origin (e.g. “Zimbabwe” or “Kenya”).

In order to share seeds and knowledge more widely, farmers organise seed fairs, build

community seed banks, and visit centres of agricultural excellence like the Shashe Agroecology School in Zimbabwe, where they are given hands-on training in the use of the age-old practices of seed saving and seed management.

This study confirmed that local farmers’ varieties in Zimbabwe provide more than 70% of staple foods in various forms, such as bread, *sadza* (maize), *maheu* (a traditional non alcoholic drink), cooking oil, and beer brewed for local consumption and cultural practices. Farmers in Senegal concurred that local seeds produce the best-yielding crops for their families; for this reason, they favour farmers’ varieties, maintaining their own and seeking out good varieties from neighbours. Apart from just yield, farmers also value other traits in their varieties such as taste and time of maturity. In southern Zambia there is a maize variety called *Tandanzala*, meaning “chase away hunger”. This variety has very small cobs but matures very early and is available during the hunger period between planting and harvesting. During this period *Tandanzala* sustains communities as they wait to harvest the higher yielding, longer maturing varieties.

Saving and sharing farmers’ seeds in Senegal

The exchange of local seeds is very prevalent and accounts for 83% of the all the ways through which farmers obtain new seeds. But the family’s own local seed stock still provides 43% of staple rice producers and 40% of staple millet producers with their own seed for planting. A farmer trainer from Senegal speaks of their pride in local seeds and the history of these seeds within the country’s agricultural systems: *“Some farmers still keep local seeds that have been renewed for over 100 years! These farmers inherited the seeds from their grandparents. The seeds were produced in harmony with nature and they withstand the test of time.”*



Photo: ZIMSOFF

A mixed garden with ground nuts, bananas, maize and trees, in Zimbabwe, in 2018.

Farmers prefer and trust local varieties of seeds that are saved on the farm, as they know where the seeds come from and how they were selected. Farmers also know, because the seeds are grown locally, that they are productive, reliable and adapted to the local ecosystem. Most importantly, the seeds will produce food of desired nutritional value and taste. Additionally, this study confirms that some of these local seeds have medicinal characteristics and may also have cultural and spiritual significance.

Farmer-managed seed systems recognise and integrate farming activities with local and context-specific knowledge, and they uphold the benefits of seed diversity for nutritious and culturally appropriate food production systems and for their resilience.

Resilience to climate change

With the increasing challenges resulting from climate-induced stresses, building resilience is a high priority. Small-scale farmers in the countries studied can respond to these challenges by exploiting the drought resistance,

hardiness and resilience of local indigenous varieties. They say that they are much more in control when they plant local varieties, as they know which ones to plant based on what they observe in the environment around them.

The farmers interviewed in Zimbabwe detailed their efforts to avert the effects of climate change through use of indigenous seeds that can withstand harsh climate conditions. They are producing local drought-tolerant varieties of crops such as pearl millet, finger millet, sorghum, cowpeas, beans, sesame and round nuts (*Vigna subterranea*, also known as Bambara nuts).

Farmers in Uganda enhance the resilience of their seed in the face of climate change by planting diverse seeds obtained from multiple sources. They say this is important because seed security has direct links to food security, and to resilient livelihoods in general. They are concerned, however, that their seed systems have not been recognised as valuable community-based strategies for climate change adaptation, even though their seeds are repositories

of the local genetic diversity needed to adapt to new climate conditions.

In Zambia, farmers prefer local seed varieties for their ability to adapt to climate change while also retaining specific characteristics such as taste and nutritional content, which are highly valued. Their farmers' varieties are necessarily diverse and can be bred and enhanced from year to year through selection by the farmers. The very diversity and adaptability of farmer varieties is what makes them so critically valuable in building resilience to climate change, among other things. The respondents said that the diversity of farmer varieties makes it possible for them to adapt quickly to changing environments and to new pests and diseases. In marked contrast, private seed companies in Zambia produce uniform seed varieties that may be early-maturing or drought-tolerant, but are less adaptable and have few of the other characteristics sought by farmers and their communities.

With growing climate unpredictability and the increasing costs of external farm inputs,

“Small-scale farmers can respond to the challenges of climate change by exploiting through the drought resistance, hardiness and resilience of local indigenous varieties.”

traditional knowledge of seed selection, conservation and enhancement in farmer-managed seed systems is critical to the future production of local food. To this end, farmers in Zambia and elsewhere are calling for increased recognition and support for the enhancement of their crop varieties through participatory methods. They are also demanding increased access to resilient local seeds by strengthening local community seed banks.

Threats from climate change to farmers' seed systems

“Though I am still preserving our traditional seeds, they also have challenges from this changing climate that really need to be addressed.”

Uganda respondent

Many respondents cited climate change, variability and unpredictability as major challenges they face in producing, saving and using their seeds. This was cited across the board as a major problem which led to poor harvests, due to unexpected rainfall patterns, late onset of the rainy season, and more frequent droughts, dry spells, and floods. Climate change, they said, is also causing increases in crop pests and diseases, including new ones such as fall armyworm.

The drought brought on by climate change is implicated in crop losses, for crops may fail to reach maturity before the rains end. Farmers may, for example, plant their seeds at the first sight of rain, only to have their seedlings destroyed by an unexpected dry spell. Climate change and variability may also take the form of unusually heavy rains, causing flooding and crop losses as seedlings and plants are washed away. These problems are often exacerbated by local farmers' inadequate access to early warning systems about changing weather conditions; as a result, they might plant long-maturing varieties in a season projected to have a short rainy season. At best, such climate change-related impacts may lead to farmers having to replant a second time; at worst a local indigenous variety may be lost forever.

Good, tasty, healthy food

“African traditional seeds are nutritious and good for our bodies; they improve our health.”

Zimbabwean farmer

Diverse local farmers’ seeds provide the variety needed for good nutrition, taste, dietary health and culinary diversity. The country-level studies showed that seed diversity, especially in this era of unstable and erratic climatic conditions, ensures that there is a sustainable supply of nutritious food for many families. This research confirms that indigenous and local seeds, managed by farmers, are preferred because they have high nutritional value compared to hybrid and other industrial seeds. Respondents from Senegal stated that the local seeds obtain the “best yields to meet family consumption needs.” In Zambia, farmers often plant hybrid seed for sale and plant indigenous seed for household consumption. Respondents argued that their own varieties taste better and store longer.

Apart from nutrition, families say that taste is the defining characteristic of good food. Many attest to the fact that food from crops grown with locally managed seeds tastes much better than food from hybrid seeds. People across the continent can quickly, by taste and even by sight, distinguish between food sourced from industrial varieties and food sourced from crops grown from indigenous seeds without the use of agrottoxins.

“The local seeds are healthy and do not contain chemicals. They are sweet and natural. They can be kept for a long time and can be planted for generations and generations. In this case, our children will also have a chance to see those crops and eat them and they can feel how it tastes.”

Ugandan farmer

In Uganda, women note that a groundnut paste mixed with leafy green vegetables makes a good and healthy sauce for new mothers. Also, sorghum that is mixed with cassava makes a local flour called atapa which can be used to make a bread that is good to eat with meat. One Ugandan farmer said: “An Itesot man is always

excited and gains a lot of appetite when he sees atapa and meat. This is really a perfect combination for his diet.”

Communities in Tigray, Amhara and Oromia, Tebi regions in Ethiopia stated that they prefer local seeds because of their taste and how they cook. They observed that although so-called “improved” teff seed looks good, *injera* (fermented bread) made from this turns black after baking and is hard to digest. In contrast, the Bene local white teff is soft and the *injera* remains soft even after baking. All respondents concurred that: “*injera made from local seeds like Aba-are (white sorghum) is sweet and soft compared to injera made from improved seeds. Local varieties such as Gedalit and Jamyo also yield good animal feed as compared with Kudem (the ‘improved’ sorghum variety).*”

Nutrition and taste tie in closely with the health of communities in all countries. According to the respondents, farmers are becoming increasingly aware of how their health directly correlates with the foods they eat and the seeds they use. Different communities highlighted the importance of their locally managed seeds in addressing various health challenges. For example, locally grown seeds in Uganda and Mali yield food that can also be used for medicinal purposes. Communities in the Amuria and Hoima districts of Uganda say that millet and sesame play a critical role in replenishing the health and strength of new and lactating mothers.

“In Hoima district, people use nkole (greens) to prepare food to welcome in-laws; sesame seeds are used in offerings to the ancestors; millet is also used when babies are born and it is placed on the umbilical cord to speed up healing; and mothers who have just given birth eat millet to gain energy and revitalise their blood.”

In Mali, sesame has been prized for its benefits in managing cases of diabetes, gastric ulcers and colds. In Zimbabwe, *rapoko* (*Eleusine coracana*, also known as finger millet) can be used to treat wounds.

Seeds are culture and identity

Hafte Sibhato is a 75-year old smallholder in Ethiopia. He explains the difference between “seeds” and “grains.” There is a clear distinction between seeds that are used for cultural ceremonies and those that are not. Specific varieties are planted and used for particular life events or cultural ceremonies.

Food is culture, and it is within the context of their culture and beliefs that communities recognise and define what food is to them. In some communities, local seeds are a motivator for sustaining social gatherings as well as social, cultural and community ceremonies and practices. In Ethiopia, farmers stated that certain practices within farmer-managed systems help farmers to maintain their production according *“to ecological principles, which entails their sociocultural, spiritual/religious and economic life ways for many centuries. For smallholder farmers, seeds are shared elements. They have personality. Farmers respect them as sacred gifts from nature, so that their seeds cannot be held in custody/privatised or patented by individuals; rather, seeds belong to the entire community.”*

Across the continent, different millet varieties play a critical role in different ceremonies and occasions. In Zimbabwe, *rapoko* (finger millet) is the chief ingredient in a traditional beer used in rituals and cultural ceremonies. In Uganda too, millet is used to brew a local beer called *ajono* that provides refreshment for the community when they prepare food and drinks from local varieties of crops for a special occasion such as a good harvest. This may also be celebrated and praised with an offer of local farmers’ seeds to the church.

Social gatherings such as marriages and commemorations (e.g., *teskar*, the seventh-day memorial held for a deceased relative in Ethiopia) also involve the preparation of foods from local varieties of crops and livestock.

“We prepare different kinds of food like injera from teff and sorghum, and we slaughter goats and sheep. The reason for our choice for indigenous crops/cereals and animals is due to their quality and taste. When someone use indigenous

Farmers’ seeds are sacred and forever

“You see, seeds were not only for consumption in our case. They are sacred, and by the way, seeds and crops [grains] are different. Crops can be sold or consumed but seeds are only for multiplications and for sharing to provide the same service. Seeds are used to connect the physical and the spiritual world. We used to respect them a lot and used to believe they had personality. All our management systems regarding our seeds used to tie up with our material and spiritual ways of life. Our livestock, our land use system, soil and water conservation, household and communal life, etc. also used to tie up with our seeds. We had a range of socio-cultural norms to ensure sustainable governance. You can call this a farmer-managed seed system or whatever, but this was how we managed to keep our seeds for a long time.”

Hafte Sibhato,
district of Raya Azebo, Ethiopia

“Food is culture, and it is within the context of their culture and beliefs that communities recognise and define what food is to them.”

seeds, he will be prestigious and his social position will be respected by the community."

Even for funeral rites, seed plays a critical role. In Gulu district in Northern Uganda, a ritual

called *yokopoto* is performed for a deceased relative before people go back into their gardens. Alcohol is brewed from local seeds and special local foods are cooked for a ceremony that ensures everyone is well-fed and happy.

Senegalese sowing rites

Farmers describe local seed in terms that show how it serves as a mobilizing force for all age and gender categories in the community. It is through the propitiatory rites that the social group expresses its communion for the advent of a favourable rainy season. An octogenarian in the village of Bounkiking explained how agricultural traditions are followed after the clearing of the fields: "There is, in the compound, a specific place reserved for women to pound the millet seeds for sowing. A girl carries the calabash containing the crushed seeds out to the field, remaining silent all the way. The head of the household deposits the calabash on the ground, and he alone is entitled to throw the first seed. It should be noted that the seeds are spiritually charged with incantations, holy water and plant powder that provide a lot of fruit. The first seed in the field is preferably sown at night: "Nocturnal sowing helps to realize the agricultural predictions," says a farmer at Ngueye Ngueye.

In the Hal Pulaar ethnic group, the sowing of millet is undertaken on Saturdays, when the water level drops, linked to the nineteenth and twentieth days of the lunar cycle.. The seeds are given to the wife, who purifies them with bovine urine before spreading them on a white loincloth. Pumpkin seeds are wrapped in cow dung before being sun-dried for sowing in water during a flood. They will germinate when the level of water drops.

Symbols of prosperity and abundance, the calabash and the hull that serves as a spoon to measure the quantity of seeds to be sown, are the primary instruments of cooking, which is the women's responsibility. This is why they play a central role in the ritual preparation of local seeds. The sacredness of the sowing is such that wearing shoes is forbidden in the rice fields. Displays of negative emotion, such as disputes or quarrels, are also prohibited. Nowadays, the spiritual relationship with the earth presents has been altered: "Before, the relationship between the farmer and the land was direct. Now, the mediator of mechanization causes the earth to be deprived of the human emotional charge that was formerly bestowed," said a fifty-year-old Soose (Mandingo). Similarly, a Hal Pulaar expressed his feelings in these terms: "Manual labour is essential if one is to establish bodily and human contact with the field."

Insect and bird pests are warded off by burying parts of animals from the same species in the fields as a kind of exorcism : "If they attack the crops, it's as if they were attacking themselves," said a widow from the village of Guédé. The animal parts used include squirrel skulls, guineafowl, partridge eggs, hawk crests and so on. Children are invited to beat drums to deter pests from venturing into the cultivated lands. Bird tamers are using birds to keep others of the same species away from the fields.

4. How farmers manage their seed systems

It may be said that the diversity of farmers' seed systems is commensurate with the diversity of the local seed varieties that they manage. There is not a single system that works everywhere. The strength of farmer-managed systems lies in their diversity, and this is what ultimately ensures food security and food sovereignty, especially as climate change and other threats bear down on us.

Farmers across the six countries listed the many crops they produce and demonstrated their depth of knowledge of each: how seeds should be selected, saved and preserved, when they should be planted, and which varieties are best suited to different environmental conditions.

The reports confirmed that farmers still produce and save most of the seeds and other planting materials they need across the whole spectrum of their crops: grains such as maize, sorghum, rice, millet and teff; roots and tubers such as cassava and sweet potato; legumes such as beans, cow peas and groundnuts; and vegetables such as onions, tomatoes, okra, and lettuce. In some countries, diverse populations of root crops, plantains, bananas and enset (*Ensete ventricosum*, also known as false banana) are also maintained.

The respondents reaffirmed their desire to keep a broad diversity of varieties and crops in their fields. They want support for their ecologically diverse cropping systems, which are better able to cope with changing weather patterns (although not all extreme weather can be withstood). They also recognised that breeding in new traits from varieties introduced by extension agents, NGOs or others can help them adapt their seeds to new demands.

Selection

“Seed diversity and its preservation lies largely in the hands of us women - from seed selection, to storage, to deciding which varieties to plant and how much, depending on the different weather forecasts. As women, we have

expertly selected crops with a wide range of characteristics to meet various needs, from yield to disease resistance, from taste to post-harvest use, from ease of cooking to storage.”

Ms. E Kaunda, Shashe, Zimbabwe

The respondents described their seed selection processes: how and when they select seeds and what criteria they use, so as to ensure an adequate supply of quality seeds for the next planting season.

Seed selection can take place at different times and places, for example in the fields at harvest time, after the harvest before storage, and/or at sowing time. A large majority of respondents — in Zimbabwe, 95% — agreed that the best time to select basic grain crop seeds is during the harvest, when it is easy to spot the best plants from which to derive quality seed.

Seed selection skills are typically passed down from generation to generation, often from women seed savers to their daughters and granddaughters. A typical example is *rapoko* (finger millet) varieties that have been selected and reused for centuries in Zimbabwe.

Some respondents stated that maize selection criteria include selecting healthy, pest-free cobs and cobs with large grains. For sorghum and millet, seeds are selected from robust, fully mature spikes or panicles showing no signs of disease that have bred true to the variety sown. Others mentioned that the important thing is to select seeds from healthy, strong, high-yielding plants to be preserved for sowing in the following season.

A respondent in Zambia said, “*We select cobs that look healthy and do not show any insect attack. When selecting pumpkin, we select based on the taste of the pumpkin and even just by looking. For example, if the pumpkin is sweet, we keep the seed for planting next season. For groundnuts, we save the big nuts and the small nuts are used for cooking.*”



Photo: ZIMSOFF

A traditional granary for seed storage and food.

Some of these farmers also related how different seeds from the same maize cob may have different characteristics. *“On a maize cob, different parts of the cob are used for different purposes. The seed from the tip of the cob is used for early maturity, the middle part is used for medium maturity and the bottom is used for late maturity.”*

Maintaining the quality of their seeds was also a common priority, as articulated by a Senegalese farmer. *“Local seeds are destroyed by proximity to hybrid seeds. This is why farmers have learned to avoid sowing near the hybrid seeds they use.”*

Storage

Seeds of some crops will keep for years if carefully conserved in household stores or community seed banks. Other seeds are only kept until the next planting season. Seed storage and location is determined by the type of crop and the space available in the farmer's home. Seeds can be stored in the kitchen or on the roof, while some farmers use their living rooms as the main storage space. Seeds collected for

the benefit of the farmers' group may be stored in a community facility.

Preserving seeds after harvest is a challenge for all farmers. Saved seeds are no exception and require special attention.

The respondents confirmed that they store their seeds more securely than other grains, protecting them against moisture, pests (insects and rodents) and diseases, so that they will germinate well and grow into healthy crops. Across the six countries, they described individual and collective seed storage practices: how they prepare the seeds for storage, the containers they use, where they keep them, and how they protect the seeds against pests and other damage.

Preparing seeds for storage

In the village of Bounkiling, Senegal, the women are launching a call for the valorisation of local seed protection techniques: *“The Baynuk and Balant ethnic groups' experiences in conserving local seeds must be rehabilitated because they use local products to ensure that seeds will keep for long periods.”*

Selected seeds or seed heads face the same hazards as grain crops, since both are often harvested at high moisture content, making them rot- and insect-prone. The Zambian respondents reported that they dry their selected seeds either in the field or at home, some (e.g., vegetables) in outdoor shade, others (e.g., maize cobs or millet heads) in the house in calabashes or above the cooking area, where the smoke protects them from pests and diseases, and still others in full sun. “We put some seeds, like pumpkin and sorghum, on the rooftops.”

Seed storage containers and locations

The respondents described their use of a wide range of seed storage containers. Some said the best of these are hermetically closed jars or barrels; others use sacks or polythene bags, bottles and calabash gourds, silos, big pots or drums.

The household kitchen emerged as a very common seed storage location. Women hang seeds from the kitchen ceiling, often amid the smoke from the wood- or charcoal-fired cooking stove, which keeps seeds dry and insect and rodent pests away. Other locations include sheds, entryways, rooms, small granaries, holes in the ground, seed huts raised off the ground and community gene/seed banks. When seeds are stored in traditional granaries (with treatment if there are termites), in some countries it is the women’s and children’s responsibilities to take care of them, and it is culturally unacceptable for men to climb into the granaries.

Keeping stored seeds safe

Saved seeds in storage are susceptible to insect and rodent pest damage. The farmers interviewed shared their traditional pest management techniques, which involve both physical barriers and traditional additives.

The Malian respondents listed several traditional local preservation methods centring around the use of local plant-based materials, including *tomichina*, *wangaraboubel* (*Cassia nigricans*), powder made from the leaves of *Boscia senegalensis*, ash or sand, leaves of *kaniba*, *denbagnouma* (a peanut variety),

wouloudiologo, *niokorodialani*, pepper, neem leaves, *djanadjarou*, grape oil, prune tree ash, wild grape, and *Balanites* spp.

Farmers in Zimbabwe explained that they know which crop varieties and plants are not attacked by pests, and use those plants as additives to stored seeds that are susceptible to pest attack. Such “preservatives” include finger millet residues, eucalyptus leaves, mint leaves, and ash, especially from burnt maize cobs, “because the ash from the maize cob is bitter.”

Farmers in Ethiopia know how to store seeds under different conditions, depending on their respective characteristics. “Some varieties, such as Abaare, Jamyo and Gedalit, are stored in *insira* and in *godo* (clay pots). Farmers mix in some teff to minimize rodent damage. Seeds such as wheat, barley, and teff are stored in *gota* (small granaries) made of straw and mud, or *gotera* (large granaries) made of special wood and mud. Seeds of sorghum may be stored underground in spaces protected with cow dung and the smoke of a particular plant.”

Many respondents reported that they infrequently use chemical seed treatment for reasons of cost, availability and their health. In Ethiopia, one noted that [“since we began using hybrid/improved seeds, which are treated with chemical fertilisers and pesticides, our health has deteriorated.”]. Smallholders interviewed in Gulu District, Uganda, reported that they “are not using chemicals, but only cow dung and other seed preservation methods. For example, they normally preserve beans with *kanlao* for the next planting season.” Ugandan respondents added neem tree leaves, red pepper and yellow sage (*Lantana camara*) to the list of botanicals/plant-based additives used.

Crops harvested in shells, such as ground nuts, round nuts and cowpeas, are often stored in the shell for better protection. “We just leave the Bambara nut unshelled to prevent pest attack, and shell when it’s time to plant.” In Uganda’s Amuria district, the dried bean pods are beaten in the bag containing them, then stored together with the husks.

Storage problems are also a contributory factor to the decision on whether to save or buy seeds. In Uganda, some farmers are now purchasing seeds from the market because they are unable to prevent pest and disease infestation until planting time. Farmers in Gulu district, for example, find that their beans and maize are easily ruined by weevils, while their groundnuts and sorghum have to be carefully protected against rats. Farmers may fear that their saved seeds will be destroyed before they can be planted, and ultimately decide to eat them instead. As well, when seeds are kept in the house, smallholders may be more tempted to eat them as food during times of scarcity.

Most farmers are looking to improve their seed storage using indigenous methods. They would prefer not to copy the few who plant hybrid seeds and use chemical methods of pest control (e.g., Shumba dust in Zimbabwe, which is a proprietary organophosphate- and pyrethroid-based insecticide.)

Sharing

“Traditional and farmer-saved seeds are not bought but exchanged among the farmers and thus are important in building stronger food sovereignty. Farmers without money can have seeds to grow and feed their families.”

Zimbabwean farmer

Some Ugandan smallholders said that they borrow seeds from their neighbours or get free seeds from friends and relatives through seed exchange. The Uganda report revealed that some communities have designated seed custodians, people in the community whose job is to save seed; for instance, those who keep maize are called *mawalampa*. These seed keepers, often prominent farmers, will sell, exchange or share the seed with smallholders when the planting season arrives. Seeds are exchanged mostly within the local community, but they may also be exchanged with farmers from other districts, increasing the number of local varieties available. Some seeds are maintained by elderly people who specialize in growing a particular variety, but in such cases quantities are small and they may not be able to supply

the whole village. The Uganda report also indicated that farmers feel very free to access seeds in their communities, with no laws hindering them from doing so.

“I can openly say that there are no laws here when it comes to the exchanging of the seeds, because for me, the crops that I planted in the last planting season I just went and got from “Cankwiyaagoro” [a farmers’ group], and I was given freely and no condition was attached to the seeds that I was given. So you see how we are free to get seeds here in our village.”

Respondent in Gulu District, Uganda

Seeds in Uganda are often exchanged by private arrangement between two parties. If a household lacks seeds, it may borrow some from others, especially relatives and friends, and pay it back after the harvest.

The Uganda report also found that there are existing seed sharing networks between farmers in different districts. Seed is exchanged mostly on market days, at seed fairs — often supported by NGOs — and at meetings. In addition to exchanging seeds, the farmers also share information and knowledge on how to manage local seeds, thus building their capacity in local seed management.

Small-scale farmers also mentioned some organisations that are doing outreach with smallholder farmers, offering them creating

“Small-scale farmers are being brainwashed by some companies that their local seeds are inferior, hence the need to run for the new seeds. This is killing the farmer-managed seed system.”

opportunities to network and to share seeds and corresponding indigenous knowledge. An NGO worker stated: *“Very many smallholder farmers appreciate the contribution of managing their own local varieties of seeds to their seed security and sovereignty, though currently they are being brainwashed by some companies that their local seeds are inferior, hence the need to run for the new seeds. This is killing the farmer-managed seed system.”*

The district officials and NGO staff interviewed noted that smallholders are exchanging seeds with other households and farmer groups and at social gatherings and markets. One key informant reported that seed exchange networks have been organised. An example is the “community managed seed system,” in which group members actively collect and pool local seeds from around the district and the region; the members then grow these out and exchange them with other farmers or groups.

Women are Africa’s seed custodians

Decision-making by women and men around seed-related activities, as discussed in this report, deals with matters such as: use of a particular seed selection method/practice; selection of seeds of a particular crop and variety for the upcoming season; quantity of seeds to save for the next season; seed cleaning methods and practices; other methods and practices for preparing seeds for storage, such as drying/curing; seed storage methods and practices; donations of seeds to other farmers; seed exchange practices and quantities of seeds exchanged (donation, loan, barter, exchange, sale); decisions on whether to replace old seeds, and type and quantity of seeds of a new variety to be sowed.

When asked about who is responsible for seed saving, one farmer responded, “We are all seed custodians.” Others referred to local seed banks run by farmers’ cooperatives. Others named specific seed-saving farmers. However, the key role of women was recognised, along with the perception that young people are moving away from seed saving, as they associate agribusiness inputs with modernity. Some went as far as to state that “women are responsible for

keeping seeds. Youth are not interested in seed keeping because they want to buy from the shop.”

The research confirmed that different members of the community play different roles in managing seeds but it is evident that women play a predominant role. Women largely manage seed diversity, preservation and use, including seed selection, storage, and deciding which varieties to plant, when and how much to sow based on the weather. Having identified which crop varieties should be selected for seed and food, women expertly select seeds with a wide range of characteristics to meet various needs, from yield to disease resistance, from taste to post-harvest use, and from ease of cooking to storage. “It is a fact that women have extensive seed selection criteria compared to men, because it is a process that requires a lot of patience to achieve quality.”

Women creatively and knowledgeably prepare quality food by mixing different crops and varieties. For example, female respondents from Tabya Stega, (Tigray region, Ethiopia) said that Aba-are is good for *injera* when mixed with teff. Jamyo is also good for *injera* when mixed with red teff in particular. Aba-are, Gedalit and Chibina are good varieties for making *tella* (a traditional brew). The local Saesa variety of barley is good for malt preparation. Likewise, yellow sorghum is used in traditional alcohol recipes. When it comes to marketing, local teff varieties such as white teff and Berke have good market value. Emmer wheat is good for healing a broken bone and chickpeas are good for children (see Ethiopia report, page 26). On the role of women, one Senegalese respondent said that they are “*empowered because they use relevant traditional methods with the use of appropriate plant leaves that serve as incubators. Women also know how to recognise and harvest seeds for better quality where they grow in proximity to certain plant species, such as *Faidherbia albida*.*”

Before the rampant introduction of hybrid seeds, it was always the practice that farmers exchanged seeds. This was more particularly the role of the women, who passed

on the knowledge to their daughters or the young girls within their communities. Women selected seeds based on desired traits such as drought resistance, ease of preparation, nutritional value, and pest and disease resistance. Some seeds are specifically saved by men (e.g., for use in cultural rituals performed by men). One role played specifically by the children is to help with seed preparation; for example, they do much of the work of shelling groundnuts for keeping or planting; another is dropping the seeds of groundnuts, beans, maize, cassava, and other plants into the holes at planting time. They also help their parents with garden preparation, obtaining seed from relatives and neighbours, weeding the garden, carrying seeds, drying and packaging seeds, and chasing away birds while the plants are still in the garden and once they have been laid out to dry.

The role commonly played by men is that of selling and buying seed; the women do this too, but they also participate at various stages of seed production, harvest, selection, storage and exchange. It has always been the role of women to select seeds from the harvest for subsequent planting. Men also help with identification and preservation of seeds. Where a shortage occurs, they will also look for seeds beyond the borders of their communities. Other

roles for men include clearing of land, planting, ploughing, mulching, and digging holes for bananas, cassava, maize, and groundnuts, as well as weeding and harvesting.

Older people have key roles in seed storage and in preserving indigenous seeds that cannot be bought at the market. As the number of people producing local seeds has declined, and volumes of locally produced seeds have lessened, elders have become critical links in the chain of local variety preservation, and prime sources of knowledge about the use of indigenous seed.

Ugandan smallholders reported that while they have derived knowledge on local seed management from generations of experience, they still felt the need for capacity building in the area of post-harvest management. Specific skills needed include drying of seeds after harvest, storage of harvested seeds, and preservation of these seeds until the next planting season.

Although all family members have roles to play in seed management, it can be said that women play a pivotal role in farmer-managed seed systems, including in variety selection, multiplication, preservation, marketing and exchange, with quality assurance based largely on mutual trust.

Key messages

1. Farmers' seeds feed Africa. *Farmer-managed seed systems are the principal source of seeds of food crops in Africa, yet national and regional seed policies undermine them.* They are the most resilient seed systems and they should be officially supported. But African seed policies and programmes are mostly silent about them, even though these systems provide the seed for the crops that provide the majority of Africa's food. Policies governing industrial seed systems should explicitly exempt the seed systems of small-scale farmers. These should be protected by legally-binding farmers' rights legislation recognising farmers' collective rights to seed and associated knowledge, and should be prioritised in policy and practice.

2. Farmers' seeds are reliable, available and affordable. *Small-scale farmers prefer farm-saved seeds, which are "free," stored locally, and can be relied on to produce nutritious crops and seeds.* These can be enhanced, through selection, to meet different needs and adapt to different stresses, including climate change. Farmers find their diverse, culturally appropriate seeds, for all types of food crops, to provide the variety needed for good nutrition, taste, health, and culinary diversity, as compared with the lesser quality of hybrid and other industrial seeds. Farmers' seeds ensure a sustainable supply of the nutritious food essential for food sovereignty.

3. Farmers' seed practices are diverse and knowledge-rich. *They are highly diverse, sophisticated and based on the rich cultural heritage and traditional knowledge of local communities shared across the generations.* These practices are largely based on social structures and mutual trust. Customary practices are collectively managed and include selecting, saving and enhancing local seeds, which may be stored in a community seed bank. Sharing, exchanging knowledge and selling seeds within and beyond their community borders are embedded practices. Local seeds also form an integral part of various customs, rituals, ceremonies, festivals and seed fairs.

4. Women are Africa's seed guardians. *Although acknowledged within the community as the principal seed keepers, their contribution seldom receives official recognition and support.* Women are the principal selectors of seeds for the next season and the principal keepers of the knowledge about how to store and use them. They expertly select seeds with a wide range of characteristics to meet various needs, from yield to disease resistance, from taste to post-harvest use, from ease of cooking to storage. This knowledge is handed down from mother to daughter to granddaughter.

5. Farmer-managed seed systems underpin small-scale agroecological production and food sovereignty. *Farmer's diverse, ecologically resilient seeds are appropriate for biodiverse, agroecological food production.* These seeds are intentionally diverse and heterogeneous, and are planted and replanted, season after season, sometimes in mixtures of varieties and with other crops, thus increasing resilience and overall productivity. Farmers' seeds are very differently nurtured from the way that "sow-once" industrial seeds, some of them genetically modified and all of them designed for monocultures, are manufactured and grown.

6. Farmers are being pushed to abandon their seed systems. *Well-funded promotion, subsidies, coercion and advertising are being deployed in an attempt to roll out industrial seeds designed for monocultures and chemicals, and to displace heterogeneous farmers' varieties suited to biodiverse agroecological contexts.* Small farmers can see how seed corporations and their host governments are pressing African policymakers to accelerate the uptake of industrial seeds. The respondents repeatedly reported how they were coerced into using industrial seeds, sometimes by saturation advertising, sometimes by official processes, sometimes by peer pressure. These

farmers can see that funding from agribusinesses and international donor-funded campaigns facilitates the promotion of industrial seeds, while their own threatened seeds are undervalued by the authorities, with the result being less diversity in their fields.

7. African governments are giving in to corporate pressure and undermining local seed systems. *Governments are being pressured to join regional agreements on intellectual property, trade and seed, such as OAPI, ARIPO, UEMOA, COMESA and SADC, which benefit corporations and the industrial seed system, and in many cases the governments are giving in.* These agreements are designed to harmonize with UPOV and with bilateral and multilateral trade agreements, which favour industrial seed and commodity production. As this report confirms, regional and national policies and legislation are increasingly focusing on defending the interests of those promoting industrial seeds and commodity production, with little support for farmers' diverse varieties and their technical know-how about managing their seed systems. AFSA and GRAIN believe that this defence of industrial seeds and commodity production should stop. Governments should instead support local seed systems and local agroecological farming within the framework of food sovereignty.

Further reading

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ALLIANCE FOR FOOD SOVEREIGNTY IN AFRICA

The Alliance for Food Sovereignty in Africa brings together small-scale food producers, pastoralists, fisher folk, indigenous peoples, farmers' networks, faith groups, consumer associations, youth associations, civil societies and activists from across the continent of Africa to create a united and louder voice for food sovereignty.

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GRAIN is an international non-profit organisation that works to support small farmers and social movements in their struggles for community-controlled and biodiversity-based food systems.

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