Farmer seed systems (FSS) in Sub-Saharan Africa

A Study on Farmer Managed Seed Systems (FMSS) in Zimbabwe: Case Studies of Mutoko, Zvishavane and Masvingo Districts

Implementing Organization: ZIMSOFF

Zimbabwe Small Holder Organic Farmers' Forum (ZIMSOFF)

Researchers: Mr Nelson Mudzingwa and Mr Richard Mambeva

Contents

List of acronyms

ACB:	African Centre for Biodiversity
AGRA:	Alliance for Green Revolution in Africa
AFSA:	Alliance for Food Sovereignty in Africa
ARIPO:	African Regional Intellectual Property Organisation
COMESA:	Common Market for East and Southern Africa
CSOs:	Civil Society Organisations
CIMMYT:	International Maize and Wheat Improvement Center International Maize And Wheat Improvement Center
FAO:	Food and Agriculture Organisation
FMSS:	Farm Managed Seed Systems
FSM:	Food Sovereignty Movement
GMOs:	Genetically Modified Organisms
IFAD:	International Fund for Agricultural Development
IOS:	International Operative Secretariat
IPRs:	Intellectual Property Rights
LVC:	La via Campesina
MNCs:	Multi-National Companies/Corporations
NGO:	Non-Governmental Organisation
PBRs:	Plant Breeders' Rights
PELUM:	Participatory Ecological Land Use Management
PVP:	Plant Variety Protection
SADC:	Southern Africa Development Community
SFOs:	Small Holder Farmers Organisations
SIRDC:	Scientific and Industrial Research and Development Centre
UPOV:	International Convention for the Protection of New Varieties Of Plants (1992)
SHFs:	Small Holder Farmers
ZIMSOFF:	Zimbabwe Small Holder Organic Farmers Forum

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1.0 Introduction

1.1 Description of ZIMSOFF

ZIMSOFF envisions improved livelihoods of organized and empowered smallholder farmers in Zimbabwe practicing sustainable and viable ecological agriculture and its mission statement is to influence policies and public awareness towards agroecology and smallholder farmers' rights. It is a lobby and advocacy organization made up of pioneering farmer members particularly women across Zimbabwe who are practicing agroecology and seed/food sovereignty as a climate change resilience strategy.

ZIMSOFF want to voice on these issues as a sustainable and just way forward for farming in Zimbabwe to address basic human rights such as access to adequate and nutritional food and access to clean water and air. ZIMSOFF is backing up its advocacy work by strong evidence from the ground with good internal information flow and a well thought-out communication strategy working with a number of stakeholders and allies at different levels from the grassroots.

ZIMSOFF works in rural areas in Zimbabwe and its national reach is realized through the organization of regional clusters of local farmers' organizations. In each cluster households are organized in group/club. A number of this form a community of agroecological practices which in other words is called Smallholder Farmer Organization (SFO) and a number of these form a cluster. There are four clusters with over 19 000 members namely the Central Cluster covering Masvingo and Midlands Provinces, the Eastern Cluster covering Manicaland Province, the Northern cluster covering Mashonaland East, West and Central provinces and the Western Cluster covering Matebeleland North and South. Each cluster has an average of 15 smallholder farmer organizations with varying membership ranging from one hundred to a thousand.

ZIMSOFF is an active founding partner of the Zimbabwe Seed Sovereignty Programme (ZSSP), an alliance of seven Zimbabwean civil society organisations working towards greater seed sovereignty in Zimbabwe. This ZSSP programme places strong emphasis on being farmer-led and strengthening women farmers' voice, hence ZIMSOFF is a pivotal partner in this long-term programme. At regional level through collaboration with farmers' organizations, civil society organizations, research institutions and the academia in Malawi, South Africa, Zambia and Zimbabwe, ZIMSOFF has become an active participant in the regional Seed and Knowledge Initiative (SKI). ZIMSOFF is a member of the Eastern and Southern Africa Small scale Farmers Forum (ESAFF) and La via Campesina. As a member of LVC Southern and Eastern Africa region (SEAf), ZIMSOFF is participating in the regional collectives on climate justice and agroecology, seeds and biodiversity including the women and youth articulations. The farmers' organization leaders are also active in the Alliance of Food Sovereignty in Africa (AFSA)'s advocacy and campaigns. In recognition of the work of ZIMSOFF on local seed systems, the United Nations (UN) Food and Agricultural Organisation (FAO) nominated its chairperson, Mrs Elizabeth Mpofu as the Special Ambassador for the 2016 year of Pulses in the African region. In 2017, ZIMSOFF was the international winner of the US Food Sovereignty prize for its role in empowering rural farmers in the struggle for seed and food sovereignty.

1.2 Description of the research carried out

The Zimbabwe Smallholder Organic Farmers Forum (ZIMSOFF) collaborated with the Alliance for Food Sovereignty in Africa (AFSA) and GRAIN on conducting a research study of the Farmer Managed Seed Systems (FMSS) in Zimbabwe specifically focussing on the experiences of its members.

The study was carried out to showcase and unpack Farmer Managed Seed Systems (FMSS); how they work and how they contribute to food and seed sovereignty and maintains and enhances proper nutrition in selected three Smallholder Farmer Organizations (SFOs) illustrated in the table below. The research is intended to contribute to a study on FMSS in Africa based on cases studies in 6 Sub Saharan African countries commissioned by AFSA & GRAIN that will also provide an overview of the main threats to

FMSS on the continent. The ZIMSOFF case study showcased the diversity, resilience and rich traditions that exist within its three affiliated smallholder farmers' organizations.

Zimbabwe's economy is mainly agro based and the bulk of farming is still mainly done by smallholder farmers especially after the land reform program of 2000. Analysing the diverse food crops that are being grown in Zimbabwe; it is clear that FMSS stands out as the most reliable and affordable source of seeds for the vast majority of farmers. In the three study areas we noted that farmers especially women work at a local on seed selection of diverse varieties of food crops of their choice, they are saving these varieties, exchanging with other fellow farmers, and planting. The ZIMSOFF research study is one of the case studies and insights from across the continent, drawing conclusions and offering recommendations for strengthening support around FMSS.

The right to healthy and sustainably produced food is at the heart of food sovereignty. Yet without access to quality, affordable seeds and the legal right to save select and share seeds, no farmer or consumer can fully achieve this sovereignty. Through analysing the food consumed by the family farmers, the decisions that are being made on what to grow and how that food is produced we have concluded that FMSS is proving to be a powerful tool in the struggle to reclaim seeds, food and biodiversity in the researched smallholder farmers' organizations below.

1.3 Summary of the research study areas

Name of Cluster	Small Farmer Organisation	Baseline study sites	Agro-ecological region	Dates of study
Central Cluster	Shashe block of farms Smallholder Farmer Organization	Masvingo Rural district Ward 6	AEZ 4	26-28 March 2018
	Upenyu Ivhu Smallholder Farmers' Organisation	Runde Rural District, Ward 18	AEZ 5	29-30 March 2018
Northern Cluster	Rural Farms Smallholder Farmers' Organization	Mutoko District, Ward 12	AEZ 3	2-4 April 2018

2.0 The current context of the seed systems in Zimbabwe

In Zimbabwe there are two types of seed systems: The first is the formal system, which is market-oriented and is developed by the public and/or private sectors that produces the so called 'high quality seed' based on government regulation. This is mainly characterised by production and marketing of mainly certified hybrid and other improved seeds[1]. The second is the informal systems that includes family or community production system which is based mainly on seed saving, seed selections, self-provisioning exchanges and gifts among neighbours, as well as the informal market. This farmer managed seed system is an age old practice which dates back to the time when our ancestors first began farming.

1 . Syngenta Foundation for Sustainable Agriculture; Seed Policy Harmonization in SADC and COMESA: The Case of Zimbabwe; September 2015

It provides more than 80 per cent of the seed used in producing food for the majority of Zimbabweans. It is an old practice that has resulted from many years of smallholder farmers' selection and saving of seeds and is rich in agro-biodiversity.

2.1 The formal seed system

Key institutions related to the formal seed sector development are the Crop Breeding Institute (for variety development) and Seed Services (for variety release, seed production and certification, quality control and marketing activities). Under the Zimbabwe Seed legislation, a regulatory framework for control of the quality of seeds produced, imported, exported and used by the farmers is provided. The law provides for a compulsory seed certification, laboratory seed testing, variety evaluation and registration under the control of the Ministry of Agriculture. Seed Services is an institute in the Department of Research and Specialist Services (DR&SS), responsible for administration of Seeds Act [Chapter 19:13] enacted in 1971, Seeds Regulations and Seeds (Certification Scheme) Notice 2000, and Plant Breeders' Act [Chapter 18:16]. The legislation basically governs production, processing, labelling and marketing of certified seed in Zimbabwe[2].

Under the formal seed system plant breeders are granted rights called Plant Breeders Rights (PBRs) that are governed by the Plant Breeders' Rights Act and the Plant Breeders' Rights Regulations, 1998 (Statutory Instrument 113 of 1998). PBRs are granted for a period not exceeding 20 years and Plant Breeders' Rights (PBRs) Act entails the recognition of varieties and variety protection. Zimbabwe's formal seed sector has historically included private seed companies and several large companies dominate the market. As evidenced by the number of active companies producing and marketing seed; maize seed is dominant. Private seed suppliers such as Seedco, Parner, Pioneer, Cargill, Syngenta, Agri Seeds and National Tested Seeds have been registered with Seed Services and are competing to supply hybrid maize seed to the smallholder farmers who are the majority. A number of research institutes that include the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) the Cotton Research Institute (CRI), and Zimbabwe Technological Services – Scientific Industrial Research and Development Centre (ZTS-SIRDC), the International Maize and Wheat Improvement Centre (CIMMYT) are supporting research and development for this formal certified seed system.

2.2 The informal seed system

The informal seed system is an old practice in Zimbabwe that was derived from the understanding that seed was inherited from the past generations as a resource that was given by the Creator. It is an age old practice which dates back to the time when our ancestors first began farming. The diversity of traditional seeds saved by smallholder farmers is rooted in the knowledge that seeds are the foundation of life, and more than a source of food—they are a history and culture handed down by our ancestors. They hold a special place in the struggle for food sovereignty.

Under this system, seed is not treated as a commodity; it is the farmer's basic right. Seeds are seen as the first link in the food chain and the repository of life's future evolution. As such, it is the inherent duty and responsibility of all the farmers to protect them and to pass them on to future generations. The growing of seed and the free exchange of seed among smallholder farmers in Zimbabwe has been the basis of maintaining the stability of biodiversity and the source of food security.

These small grains are the basis for the future hence their diversity is a solution to the climate crisis. They shape, at each life cycle, the type of food people eat, how it is grown, and who grows it. This holistic thinking about the value and sacredness of seed over the past generations has been the basis for sustaining diversity and hence stability, in the surrounding environment.

2 . Plant Breeders' Act [Chapter 18:16].

The struggle for seed and food sovereignty in Zimbabwe entails supporting and enhancing traditional practices on seed saving, especially as practiced by elderly women, who have bred seed freely in partnership with each other and with nature. The practice further increases the diversity of that which nature gave us, for biodiversity and cultural diversity mutually shape one another.

3.0 The seed laws and protocols

Seed our common heritage, is now also within the radar of corporate control and under threat from the proposed seed protocols under COMESA and SADC. The former seek to easy the flow and the marketing of commercial seeds in the Eastern and Southern Africa Regional markets and the latter, to harmonize the SADC Regional Seed Policy on Plant Variety Protection (PVP) basis respectively. Of recent is the African Regional Intellectual Property Organisation (ARIPO) Protocol on Plant Variety Protection (PVP)[3]. This Protocol is based on UPOV 1991 and was adopted in Arusha, Tanzania, in July 2015. The ARIPO PVP Protocol; puts in place a regional PVP system that only favours commercial plant breeders and undermines the rights of farmers to freely use, exchange and sell farm-saved seed of a protected variety; gives powers to the ARIPO Office to grant very strong Plant Breeders' Rights (PBRs) to commercial breeders; makes PBRs granted by the ARIPO Office valid in all ARIPO member states; makes it very easy for foreign seed companies to take over Africa's seed systems and illegally use local varieties; and replaces national PBR laws and systems. In 2017, Zimbabwe hosted a meeting in Harare to review the draft ARIPO Regulations for the Implementation of the Arusha Protocol for the Protection of New Varieties of Plants. These laws will, with time open up the whole region to transgenic seed (GMOs) which have found space in South Africa and recently in Malawi. Traditional seeds will be pushed out and smallholder farmers' use and exchange of seed will be criminalised[4].

These laws and protocols are being pushed by transnational corporations like Monsanto and Cargill among others who have now opened a pathway for expansion into Africa through the AGRA (Alliance for Green Revolution in Africa) supported by the Bill Gates Foundation and the US State Department's USAID "Feeding the Future" Program". There is also the G8 program for Sub-Saharan Africa, the "New Alliance for Food Security and Nutrition in Africa" that provides support for European interests to impose on. These corporate-controlled initiatives have been framed in terms of the African Union's Comprehensive African Agricultural Development Programme (CAADP) which gives them a cover of legitimacy. Zimbabwe has put in place a framework for the implementation of the CAADP[5].

Zimbabwe is a signatory of the International Treaty on Plant Genetic Resources for Food and Agriculture (also known as the 'Seed Treaty'), which came into effect in June 2004. The Treaty recognises farmers' rights to save, use, exchange and sell farm-saved seed and other planting material. It also aims to protect traditional knowledge, giving communities the right to get profits or other benefits if third parties use their knowledge or resources to make commercial products. The Seed Treaty obliges governments to; ensure that farmers participate in decision-making on issues relating to seeds and planting material; and enforce farmers' rights to reuse and exchange farm-saved seeds[6].

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[3] . ACB: Policy Discussion Document on Towards National And Regional Seed Policies In Africa That Recognise And Support Farmer Seed Systems; March 2018

[4] AFSA: Resisting Corporate Takeover Of African Seed Systems And Building Farmer Managed Seed Systems For Food Sovereignty In Africa; Summary Report 2017

[5] . Waithaka, M., Nzuma, J., Kyotalimye, M. and Nyachae, O. et al. 2011. Impacts of an improved seed policy environment in Eastern and Central Africa. ASARECA

[6] . Syngenta Foundation for Sustainable Agriculture; Seed Policy Harmonization in SADC and COMESA: The Case of Zimbabwe; September 2015

4.0 Description of the study areas

The smallholder farmers in the study sites have a direct work with seeds themselves, a task in which women are important protagonists: recovering local varieties and knowledge about them, as well as re-valuing, conserving, reproducing, selecting, breeding, multiplying, exchanging and selling farm saved seeds through their organizations. The boxes below illustrate the detailed work being done by the SFOs;

Box 1: Upenyu Ivhu water harvesting innovation to reduce moisture stress on farm managed seed demonstration plots

18 members started working with the late Zephaniah Phiri, another innovative farmer well known as 'the Water Harvester', to set up the Upenyu Ivhu (Life is Soil) Farmer Innovators' Group in 1989. Now the SFO membership has increased to over 180 members harvesting water at household level and saving local seed varieties of diverse crops such as pearl millet, finger millet, maize, cow peas, ground nuts, round nuts, pumpkins just to name but a few.

During these times of erratic rainfall patterns, the smallholder farmers are practicing water management techniques such as digging earth dams and deep dead level contours to capture the scarce water. **"We don't allow water to just run through our fields; we keep every drop of water. We harvest rain water which flows from the rocks, the road and also as it rains, into contours which we have built"** said one farmer.

The earth dams have enabled farmers to raise the water table in their arable lands and thereby enabling good quality harvests of diverse seed and food crops even during bad seasons. The abundant water resource has also led the farmers to embark on fish farming that is contributing to household diets and income thus enhancing their local economies and livelihoods. This is a farming initiative that was previously not possible in the area which receives low and infrequent rainfall but in this case local solutions have had the answer by simply seeing a threat as an opportunity.

The dammed and contained water ensures that farmers can grow even their vegetable gardens throughout the year thereby sustaining the diverse nature of their food system. Recharging of underground water has contributed to stability of the local environment, increasing diversity of local plants species, establishment of orchards and reducing work for women who used to walk long distances to fetch water. The SFO has held several seed and food fairs where individual households have displayed diverse farm saved seed varieties. In 2017 one woman seed custodian made a record after she displayed over 50 varieties of different food crops and showcased diverse recipes of nutritious food crops.

According to one farmer the process of building the contours is done progressively and one contour can take up to a year to build depending on the size, however the process is worth the effort in affording farmers local and alternative solutions to counter the effects of inadequate rainfall affecting their livelihood and also enhancing their struggles for seed and food sovereignty. 22 members of Upenyu Ivhu smallholder farmer organization participated in the study (15 females and 7 males). The study interviewed a few individual farmers and held group discussions where local government extension officers participated.

Box 2: The farmer to farmer training methodology at Shashe Agroecology School

The Shashe Agroecology School refers to a 184ha block that was developed to an agroecology learning center by landless farmers during the GoZ Fast Track Land Reform Program in Masvingo province, Zimbabwe. The Shashe Agroecology School is part of the LVC's network of over 40 Agroecology schools around the world. Shashe area is a classic case study on how smallholder farmers have been able to build their capacities to adapt and be resilient to the impact of climate change through farmer to farmer training and exchanges on agroecology and local seed systems. Twelve families are developing what are dubbed "centers of excellence" with good practices of water harvesting, manure making, agro forestry, crop and livestock diversification and production of diverse food that includes small grains (millet, rapoko, sorghum), pulses (round nuts, beans, cow peas) and oils (ground nuts, sesame and sunflower). The research team visited site where 30 members (21 females and 9 males) participated in discussions and interviews.

The School promotes farmer to farmer training and exchange of experiences imparting knowledge and skills vertically and horizontally, along the process disseminating agroecological and sustainable smallholder agricultural practices as local solution to climate crisis. The members have organized several farmer-to-farmer "look and learn" visits, group meetings and workshops, together with seed fairs and other exchange meetings as a way of exchanging knowledge and information in the ZIMSOFF central cluster. The farmer leaders in the School are currently coordinating the implementation of the **"Seed, Soil and Culture"** project that targets to share its learning with others around the world. The members believe that in all corners of our beautiful planet, there are smallholder women and men farmers who sow and conserve local seeds, and manage their land as a living soul. They grow their crops with hard work, trust in traditional knowledge, and believe in deeply-rooted spiritual values thereby building own resilience.

Through organizing and facilitating farmer to farmer training and exchanges in the central cluster of ZIMSOFF; reaching out to over 10 000 smallholder farmers, the Shashe Agroecology School is promoting the production of pulses that can also withstand harsh climatic conditions. The family farmers have devised their own ways of being climate change resilient through developing living examples of soil and water management, agro forestry and bio cultural diversity conservation. Responding to their control over food systems; the members have organized to the voice of change in their local area resettled over 500 families on 15 020ha, by showcasing models of seed and food sovereign farming families. The farmers have also shifted to small livestock such as goats, sheep, pigs, free range local chickens and guinea fowls that are being given supplement feed from the local diverse food crops being grown.

Some family farmers within the School are now trying to grow rice in a dry area that receives about 400-600 mm rainfall in good seasons. One of the members introduced an innovation in 2002, that focused on developing water harvesting infiltration pits to collect and retain rain water around the crop fields to fight climate change related droughts and, at times, floods. In 2016, after experimenting with and improving the innovation, the farmer dug more pits and increased area under the innovation. As a result the water level of the adjacent areas has increased allowing the farming family to try rice growing. The grass growing around the pits has increased and is used it to feed their animals and as bedding during rainy season when the cattle kraal becomes water logged (reducing incidence of diseases and also increasing manure). Most important the farmer was awarded the 2017 national prize for the Energy globe Award.

The Shashe Agroecology School is scaling up the use of this innovation through farmer to farmer learning and exchanges to build capacities of its farmer members and other communities to fight climate change related droughts (collection and retention of water– making available for crops during the growing season- minimizing effects of dry spells) and floods (reduces run-off and loss of nutrients through soil erosion). Some farmers have harvested a lot of water and are now engaged in fish farming-improving their diet and diversifying income sources).

Box 3: The Rural Farms SFO struggle for climate justice

The Rural Farms SFO is located in Kawere area ward 12 in the Mutuko rural district council that is about 200 kilo meters away from Harare. The SFO has four main groups and these are Chiedza, Eastern, Zoza and Pepukayi. The major economic activities in Mutoko are mining (granite) and agricultural practices being crop and livestock production. Maize and small grains (ground nuts, rapoko, sorghum, round nuts, millet and cow peas) are mostly produced in this area because the district receives normal to below normal rains. The district is well known for its horticultural produce and fruits supplying neighbouring areas and towns with tomatoes, mangoes, cabbages, pumpkins, butter nuts, potatoes, sweet potatoes, okra and rape.

Government departments such as Agricultural and Extension Services (AGRITEX) and Environment and Management Agency (EMA) are providing extension services that promote conventional agriculture but members of Rural Farms are resisting by showcasing ecological agriculture majoring local seed systems. However the Ministries of Youth, Gender and Employment Creation, Health and Education are playing a fundamental role to supporting education of young children; maintain good health of the local community by even promoting consumption local foods and initiating local entrepreneurial projects generated from local produce respectively.

The 36 farmers (26 women and 10 men) interviewed through this study are part of Rural Farms SFO and were coming from different surrounding villages within the groups mentioned above. The farmers detailed their efforts to avert the effects of climate change through use of indigenous seeds that can withstand harsh climate conditions, in Zimbabwe. They are struggling for food sovereignty through conservation agriculture, sustainable water and soil management practices and crop diversification. Most of the farmers have begun growing food organically; they are producing small grains which are drought tolerant such as peal millet, rapoko, sorghum, cowpeas beans, sesame and round nuts. They are applying kraal manure, humus and compost on their soils in order to keep their soils alive and retaining the little moisture they are receiving year after year. Where there is successful water harvesting others are maintaining orchards .g. banana, avocado, mangoes, etc.

Unique to this community about their struggle for climate justice is their proximity to the tarred road connecting Harare and Nyamapanda bordering Zimbabwe and Mozambique has an influence to the Government and NGOs Farm Inputs Subside Programs (FISPs). FISPs are being implemented year after Members of Rural Farms continue to nurture and maintain the vast majority of food crops and varieties, without which hunger and suffering would be much deeper than they already are experiencing with the impact of climate crisis.

Under the stewardship of members of the Rural Farms, farmers' varieties are constantly evolving; adapting to dynamic socio-ecological conditions. Rural Farms members are maintaining a diversity of farmer varieties that are ensuring that these other traits such as pest or disease resistance, drought tolerance, taste and aroma, storability and many more are not lost.

"We have engaged our local authorities and members of parliament on the challenges we are facing but there hasn't been any change or improvement for our situation; in fact it has just worsened; we however continue to engage on these issues whilst setting up good practices of land management that is contributing to our evidence. We really need evidence based advocacy so that we can are able to prove the facts. Besides we are influencing more people to be advocates of change towards sound policies that that respect the wills of the affected. We are envisaging a community where basic smallholder farmers' rights such as access to clean healthy food, clean air and water are respected" said one elderly woman.

5.0 The research process

5.1 Objectives of the research

The case study sought to achieve the following objectives:

- To understand how FMSS work in Zimbabwe and on the broader African continent and how it relates with other components of FMSS.
- To present case studies of FMSS in Zimbabwe to challenge the current narrative on seed and ultimately influence policy on seed regulations.
- To explore and document the justification for support for the FMSS in Zimbabwe,
- To reveal how the FMSS benefit farmer communities (in terms of food security, livelihoods, nutrition, health, democracy, food sovereignty etc),
- To analyse and document the extent to which the FMSS are supported / not supported by national policy and legislation and,
- To identify challenges and how the FMSS can be supported, and by whom and cultivate buy in for FMSS amongst CSOs, researcher and policy makers in Zimbabwe.

5.2 Research methodology

Through liaising with the target SFOs leadership the ZIMSOFF research team developed the research methodology and daily programs for the study. The methodology and programs guided the team to collect data on the farmer managed seed systems from the 3 sites. The strategy also reviewed the activities that have been undertaking over the years, understand the seed varieties the farmers have been growing as well as provided an overview of the current farming practices of the farmers in the areas comparing to the previous farming practices and knowledge systems. This process provided platform for the farmers to share experiences, learn from each other and come up with actions and recommendations emanating from the farmers. Nevertheless this exercise covered the whole ward population but focuses more on the membership of the SFO. The basis was also to analyse the agreed criteria for a member and commitment of that member to the principles and values of ZIMSOFF regarding FMSS.

The team organized individual interviews with key informants such as traditional leaders, Government extension officers and local NGOs representatives. It facilitated group discussions that recognized gender differences by allowing spaces for men and women to discuss separately and comparing their knowledge, opinions and attitudes to the issues of FMSS. The study targeted to collect quantitative and qualitative data in order to build a strong argument in support of the good practices of FMSS by the farmers. Most important the methodology helped ZIMSOFF to identify major concerns and agricultural trends and provided some insight into the opinions of the community in relation to farmer managed seed systems.

The illustration below in figure 1 summarises the methodology:

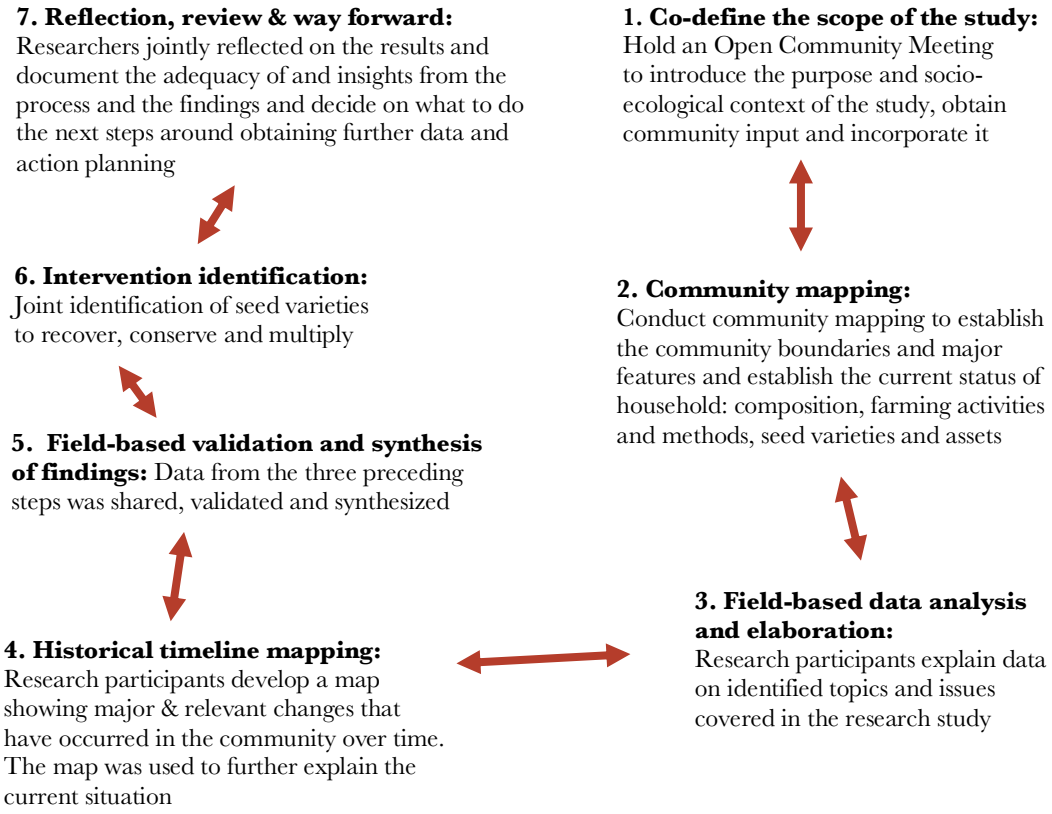


Figure 1: Inferred ZIMSOFF research study methodology

6.0 Findings of the research study

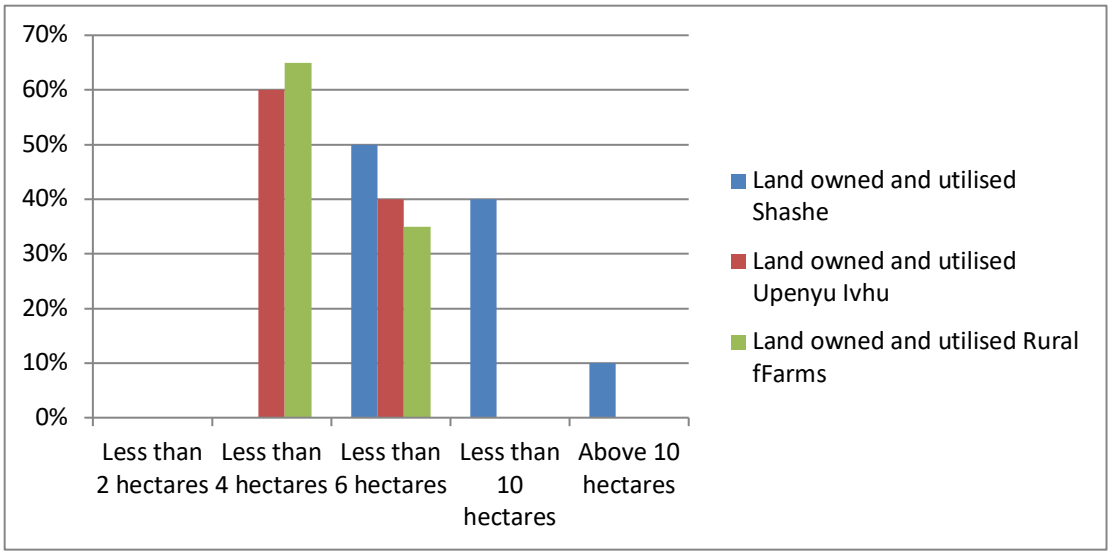
6.1 Farmer Responses

This section was divided into section A (Quantitative) and section B (Qualitative) data analysis.

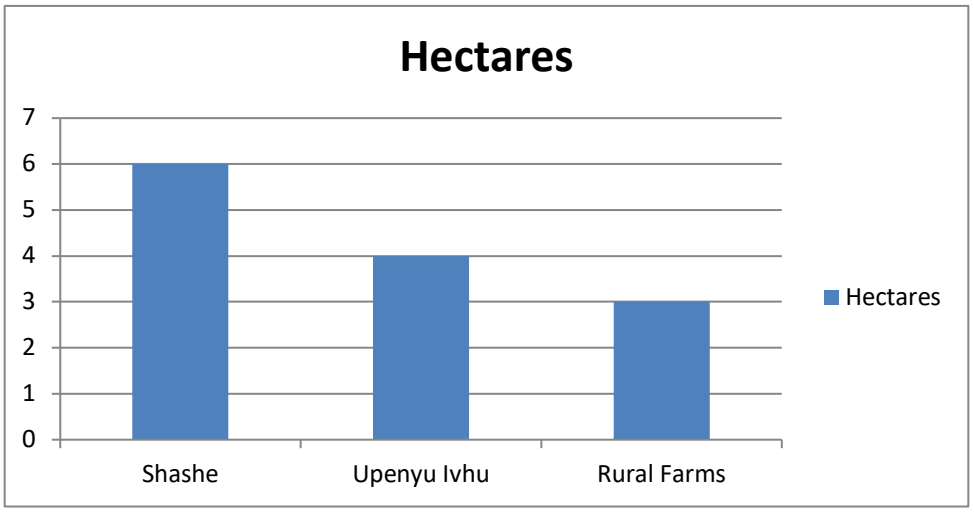
6.1.1 Section A: Quantitative data analysis

Farm Land Owned and Used in all areas

The graph below shows that farmers Shashe own between 6 -10 hectares with most farmers using 4-8 hectares for cropping and the rest for houses and a building cattle kraals. These are mainly resettled farmers that benefited in the 200 Land Reform by the government. The good practices on ecological agriculture based on FMSS have influenced other resettled adjacent owning 50 to 100 hectares. All these farmers use communal grazing of livestock. Rural Farms members own about 2-4 hectares using 90% of their land on local food crops production and remainder on houses and kraals while also using communal grazing land. The Upenyu Ivhu members own about 2-5 hectares and also use 90% of their land on local food crops production and remainder on houses and kraals while also using communal grazing.



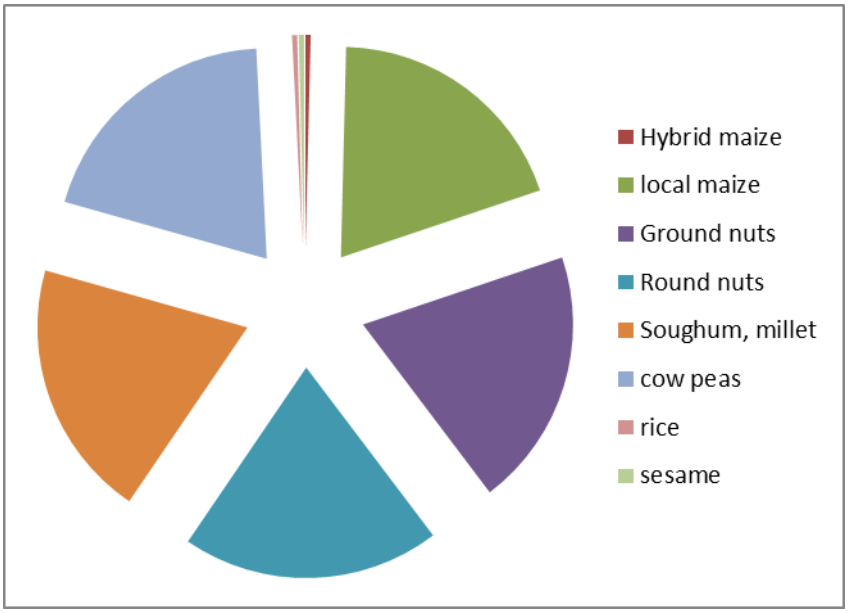
Land used for crops



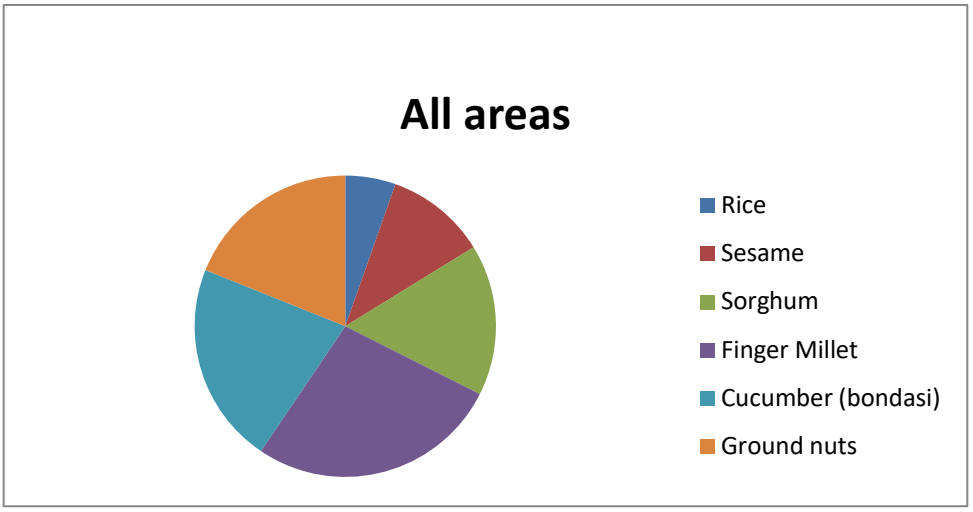
From the above graph it can be argued that nearly 70% of the land is used for local food crops production while the remaining is used for building homes and kraals for cattle, chicken and pigs.

Crops grown in the areas

The graph below highlighted that most farmers in all the areas grown local seeds with only a few growing maize hybrid seeds.



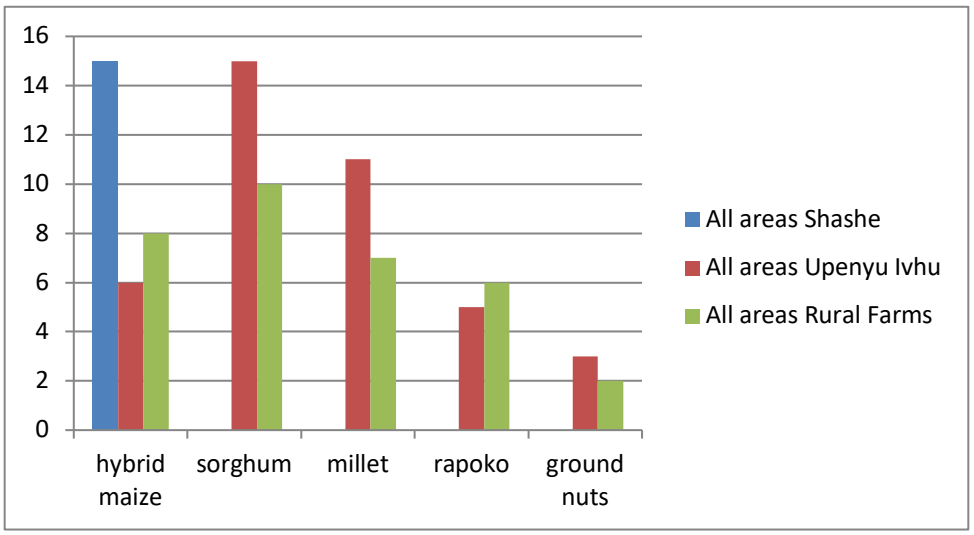
Crops with new farmers varieties introduced



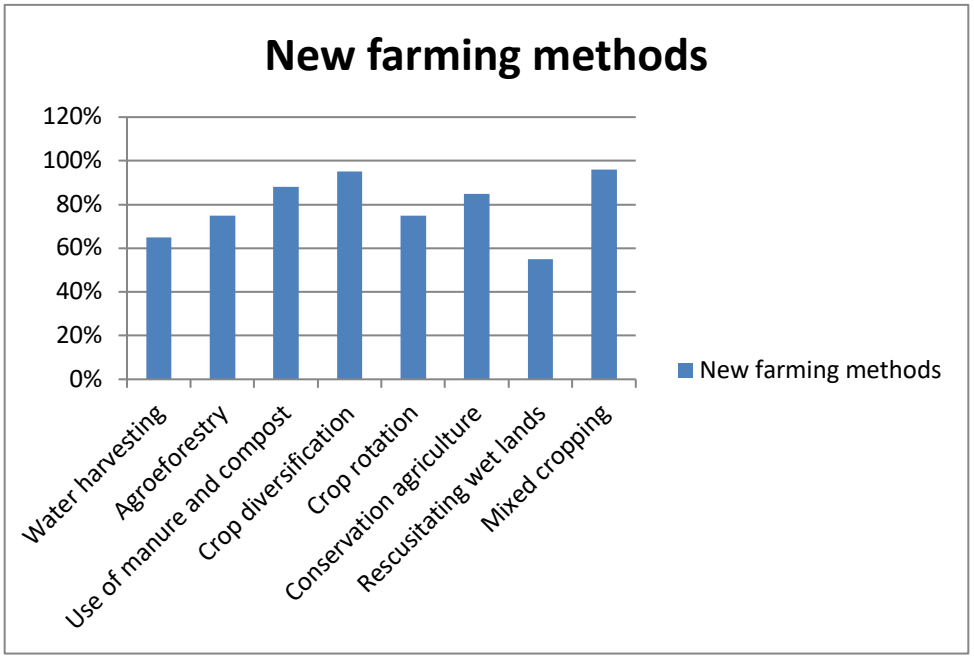
We noted the more smallholder farmers increasing household seed diversity of the FMSS through exchanges within the farmers' organization and between SFOs. The climate crisis also is causing speedy shift towards small grains and where water harvesting has been effective local brown rice varieties have been introduced.

Crops farmers have reduced production

From the diagram below most farmers Shashe have reduced growing hybrid maize seed because it is expensive to buy from shops, need fertilisers, chemicals both in fields and after harvesting. In Upenyu Ivhu the research team also observed reduced growing of pearl millet and sorghum, because of the problem of birds and shortage of preferred seed varieties. Land allocated for rapoko and ground nuts has been reduced as the farmers shift towards cereals claimed to produce higher yields such as maize.

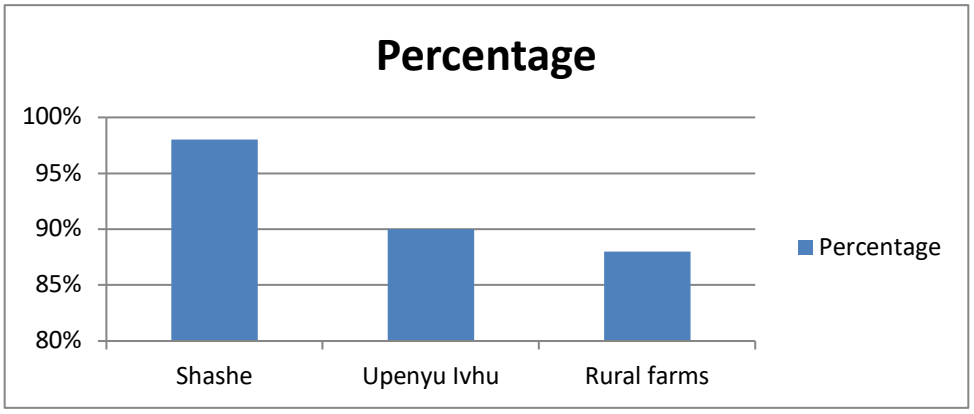


New farming methods as a percentage of ZIMSOFF members



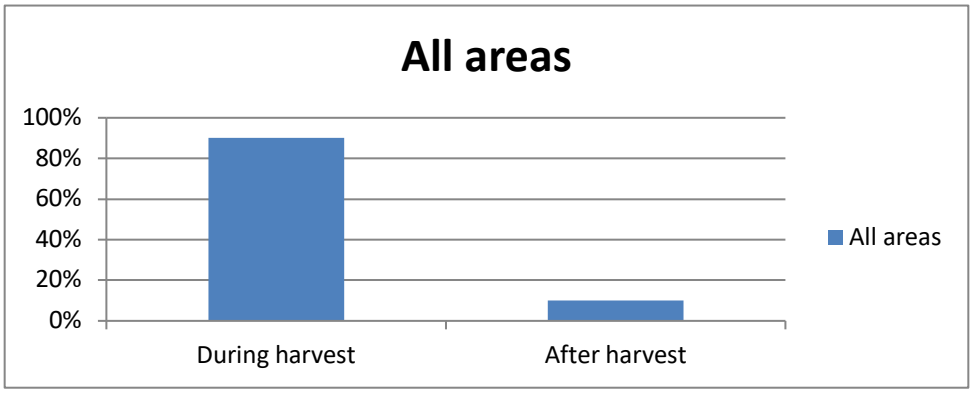
The study examined four dimensions of new farming methods, focusing on the application of (i) water harvesting, (iii) agroforestry, (iii) use of manure and compost, (iv) crop diversification, (v) crop rotation, (vi) conservation agriculture, (vii) resuscitating wetlands and (viii) mixed cropping. The graph above indicates that all the eight practices are used by most households in four study sites. We conclude that seed sovereignty cannot be achieved if not integrated to ecological farming methods as practiced by smallholder farmers in all the sites.

Crops grown from farmers varieties



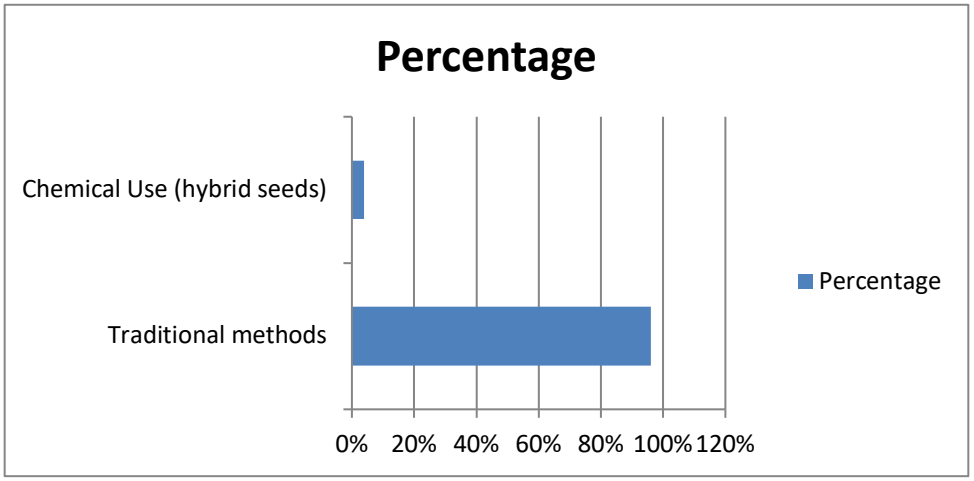
The graph above highlights that most members of the SFOs are now using their own local seed because it is readily available, cheap, can share with neighbours, not complicated to grow, is highly nutritious and retain cultural legacy.

Seed selection process



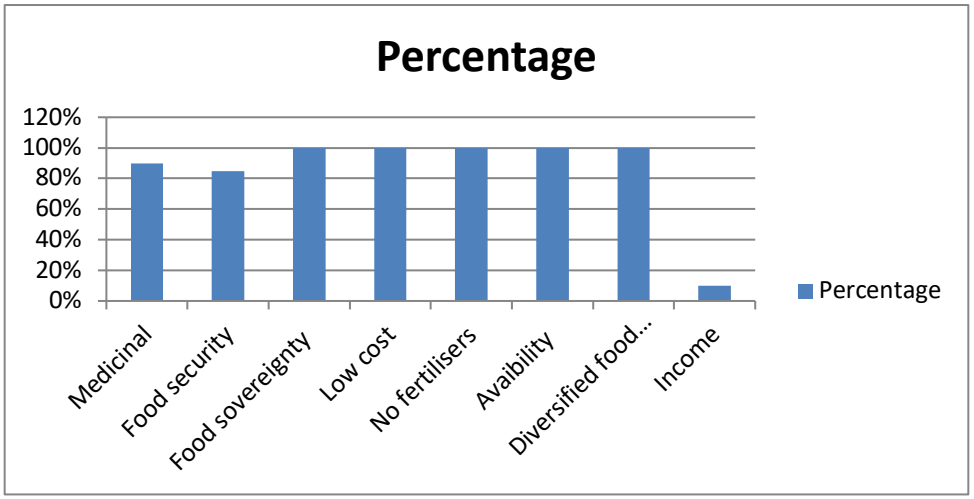
The above graph shows that nearly 95% of the farmers select their seed during harvesting when it is easy to identify quality seed from the different areas of the crop field. The practice indicated that farmers inherited skills from the past on how to carefully select quality from the field separating it from the food crops to avoid contamination. A typical example was rapoko varieties that have been selected and re-used for centuries.

Seed protection process



The table above highlights that some of the farmers' crop varieties such as rapoko varieties do not require any chemicals and those that maybe affected by weevils nearly 96% of the farmers use traditional methods of protecting their crop/seed such as use of the crop residue of those crop varieties that are not affected e.g. rapoko residue, gum leaves, mint tree leaves, ashes and smoke in their kitchens. 100% of the farmers interviewed agreed that they store their crop in silos, big pots while some in bottles and drums while some in sacks in their houses. For ground nuts, round nuts and cowpeas farmers do not remove their shells. For the 4% farmers using hybrid seed maize, they buy a local chemical called Shumba dust.

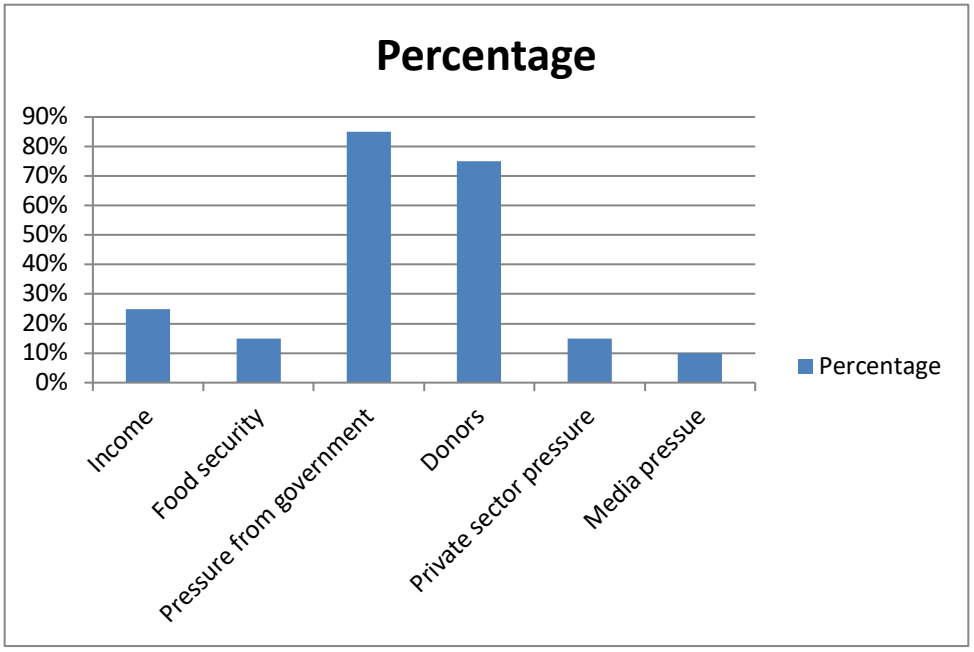
Reasons for Using Local seed



From the above, it can be noted that 100% of the farmers said that these seeds are available for free as these are from own local harvests or from neighbours. Farmers varieties in particular small grains do not require inputs such as fertilizers and chemicals; they can easily produce high yield on manure and compost as compared to hybrid seeds, farmers' varieties are locally available and are not affected by markets speculations, reliable as they are high in productivity and are resistant to harsh climatic conditions such as droughts. Local seeds provide a diversified highly nutritious and health food systems. These can also be used for medicinal and cultural aspects e.g. rapoko can be used to treat wounds and brewing traditional beer for rituals and ceremonies.

Reasons for Using Hybrid seeds

From the graph below it can be noted that 85% of the farmers use hybrid seeds such as maize to meet government demands on food security and nutrition for the nation. Pressure from the government and the donor community force farmers to use hybrid seeds as indicated by 24% of the farmers who said that it is to complement income as it is on demand in other parts of the country and region. The fact that farmers emphasize maize does signify the centrality of the crop to existing farming systems in the study sites, but it also shows the long-term effects of the Green Revolution's single-minded attention to maize yields.



6.1.2 Section B: Qualitative data analysis

Any Support Farmers receive on FMSS

100% of the farmers said that they do not receive any support from government except hybrid seed and fertilizers and sometimes technical assistance from extension services. The farmers also get donations from donor organizations on hybrid seeds. Farmers alleged that they do not get any support in managing their seed but sometimes are trained on post-harvest losses prevention by local extension officers.

Any organizations working with farmers and support

All members in the study sites are affiliated to ZIMSOFF where opportunities for farmers to interact during seed and food fairs, farmer to farmer trainings and exchanges are provided. Supporting is also being provided by members of Participatory Ecological Land Use Management (PELUM) and most important the Zimbabwe Seed Sovereignty program and the Seed and Knowledge Initiative to which ZIMSOFF is an active partner

Evolution of seeds over the past decades

85% of the farmers interviewed said that there has been a tremendous change as more farmers are now producing indigenous seeds or OPVs as compared to the past. This is due to the increase in farmer to farmer training and seed fairs. The issue of climate change has also led to farmers adopting indigenous seeds that can with stand harsh climatic conditions. The Shashe Agroecology School has also accelerated the adoption of indigenous seeds by farmers in the central cluster.

Gender roles of women, men and children in seed management

The research found out that most small grains are saved by women such as ground nuts, round nuts, cow peas and finger millet. Maize, sorghum and pearl millet it is mostly men and children play supporting roles in all aspects. But in all spheres, 75% of the respondents said that it is the family.

Importance of seed in cultural dynamics

100% of the farmers agreed that farmers' varieties are very important to their cultural dynamics; they believe that these seeds have been given by their ancestors over the years and passed for many generations. They are the foundation of life, and more than a source of food—they are a history and culture handed down by our ancestors. They hold a special place in the struggle for food sovereignty. Under local cultures, seed is not treated as a commodity; it is the farmer's basic right. Seeds are seen as the first link in the food chain and the repository of life's future evolution. As such, it is the inherent duty and responsibility of all the farmers to protect them and to pass them on to future generations.

Views about FMSS in the Communities

FMSS are a tradition based on ancient knowledge on type of farming practices by the past generations. Communities feel that ddiversity of the food that strongly consider different food produced locally from farmers varieties adapted to local conditions and that gives a full plate all times should be over emphasized. Due to the changing climate we need to strengthen the existing efforts by smallholder farmers to recover lost farmers varieties and integrating them in the production systems.

Support farmers' need to improve local seed management

Farmers agreed that there must be more extension services on post-harvest losses prevention, more farmer to farmer training on FMSS, increase number agroecology schools to reach out to many farmers, establishment of local seed banks in the communities, opening markets for local seeds and promoting farmer led research on FMSS.

6.2 Responses from public sector: local agricultural extension officers

In this section there were interviews with local extension officers, village heads and councilors working with local small holder farmers. This was also combined with interviews with some CSOs ZIMSOFF has been working with on issues of seed and food sovereignty. These were face to face discussions or personal interviews and the responses emanating were mostly qualitative in nature.

Importance of indigenous seeds for food security

It was noted that indigenous seeds are very important for food security because they are drought and disease tolerant(resist harsh climatic conditions, pests and diseases), they are very cheap since they are locally available as compared to hybrid seeds bought from open markets. Farmers can exchange these seeds for free. Some of the seeds can even grow without fertilizer such as finger millet, pearl millet, sesame and sorghum while hybrid seeds require fertilizers and chemicals to produce high yields. Indigenous seeds have high nutritional values as compared to hybrid seeds.

Proportion of food produced from these seeds

Farmers varieties contribute more that 70% of food in various forms such as bread, sadza(pap), maheu, cooking oil, beer for local consumption and cultural practices as well as relish.

Relevance of FMSS in agricultural sector in the country and challenges

The interviewees agreed that the FMSS have a place in the country's agricultural sector but not that much because there is a lot of work involved to have a picture in the sector. FMSS are not well supported, no policies and legislations set for FMSS and scarcity of resources, technical know-how on seed management, lack support from government and no markets for the produce.

Seed laws and policies

Current PVP laws and policies pose an obstacle to efforts to promote and develop farmers' seed, despite the centrality of these seeds to food security in the study sites. Revisions to these laws and policies are needed to create space for systematic work on farmers' varieties without requiring their incorporation into the narrowly defined formal system. Such revisions could include: securing farmers' rights to save and exchange seed in their possession; developing flexible quality controls that give farmers (as producers and users of seed) greater power in shaping standards to suit their conditions; exemptions on PVP regulations for smallholder farmers; and a policy emphasis, backed up by funded programmes, on supporting farmer activities in maintaining and developing diverse crops and varieties with local demand.

6.3 Summary of Research findings

Increasing the availability of agro biodiversity will become more and more important, not only in the pursuit of improved crop performance, but also in the context of adaptation to climate change, greater resilience, improved nutrition, maintaining the socio-economic balance of farming communities, and the rehabilitation of degraded ecosystems.

Farmers' varieties are essential to the future of food. A deep pool of biodiversity will ensure that we have plant species and varieties that can withstand changing weather patterns. Agricultural biodiversity is directly connected to nutrition, dietary health, cultural and culinary diversity, and to the resilience of local economies and markets. Farmers' varieties are central to the everyday practices of smallholder farmers that feed 70 per cent of Zimbabwe's population.

The role of rural women has been profoundly undervalued, despite the fact that around 80 per cent of Zimbabwe's population is dependent on smallholder agriculture—the backbone of the rural economy—where women provide 70 per cent of the farm labour. When it comes to seed, women are the custodians at the center of seed saving, with significant importance in ensuring food sovereignty and genetic diversity.

7.0 Conclusions and recommendations

From the evidence obtained in this research; it can be noted that the current seed policies and laws, as they are being developed in Zimbabwe and across Africa and globally today neither recognize nor support FMSS. The primary objective of these policies is to construct and maintain a commercial seed sector, driven by Seed Breeders' interests and the entire thrust of agricultural policy in Zimbabwe and the African continent is driven by these commercial interests through a combination of multinational public, private and philanthropic investments co-ordinated towards this end. Local FMSS practices are entirely displaced from this picture and these systems are not recognized in formal policy except as being 'outside'. Although, to a greater or lesser extent breeders and government officials 'informally' recognize these systems, for a long time they have been treated as backward, inferior, obsolete and destined for disappearance.

However in more recent times there have seen a growing recognition that FMSS remain the foundation of agricultural production in Zimbabwe and across Africa and in other places, globally, and are intricately linked to the ability to transition agriculture towards agroecology through supporting and strengthening biodiversity, with 'downstream' effects throughout the food system. Worldwide SHFs and peasant farmers are active inbreeding, selection, management, processing, storage and conservation of plant resources.

The research found out that SHFs play a critical role in the maintenance and stewardship of biodiversity, including agricultural biodiversity. This role falls specifically to SHFs because survival strategies incorporate poly-cultures, including agroforestry. Farmers have been actively involved in selecting, adapting, and enhancing agricultural biodiversity. Women, in particular, play a critical role in identifying and bringing wild plants into food systems and women hold extensive and detailed knowledge about food, fodder and medicine. Despite this importance FMSS are not well supported by government through funds and research and development, no policies and legislations set for FMSS and scarcity of resources, lack support for adequate extension services from government and there are no markets for their produce.

7.1 Policy and advocacy

- Strengthen the capacity of farmers' organizations and social movements to address policy matters that are central to FMSS.
- Support the development of policies and laws that promote and strengthen FMSS and remove harmful policies
- Create space for the participation of farmer organizations and social movements at policy fora at various levels and strengthen and support them on policy matters that are central to FMSS
- Support efforts to raise awareness of policy and decision makers about the key roles of agricultural diversity, in situ and on-farm conservation and community based diversity management.
- Divert public resources from subsidizing corporate consolidation of the seed industry to supporting and strengthening farmer seed systems.

7.2 Support scaling out of FMSS

- Create a supportive framework for FMSS initiatives.
- Provide support to achieve scale through interaction with various levels of government and other key seed and food security actors.
- Enhance collaboration and effectiveness among seed and agroecology networks operating nationally, regionally and globally.
- Build links between agro biodiversity conservation efforts to farmer organizations wherever possible.
- Build capacity of farmers' organizations to participate in national, regional and global seed policy discussions.
- Support rural women's participation in seed dialogues as they are central to seed diversity.

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