Participatory seed security assessment AND action plan: A GUIDE

PRATAP SHRESTHA

SEEDS OF SURVIVAL TOOLKIT BY

SeedChange

Participatory seed security assessment AND action plan: A GUIDE

PRATAP SHRESTHA

SeedChange

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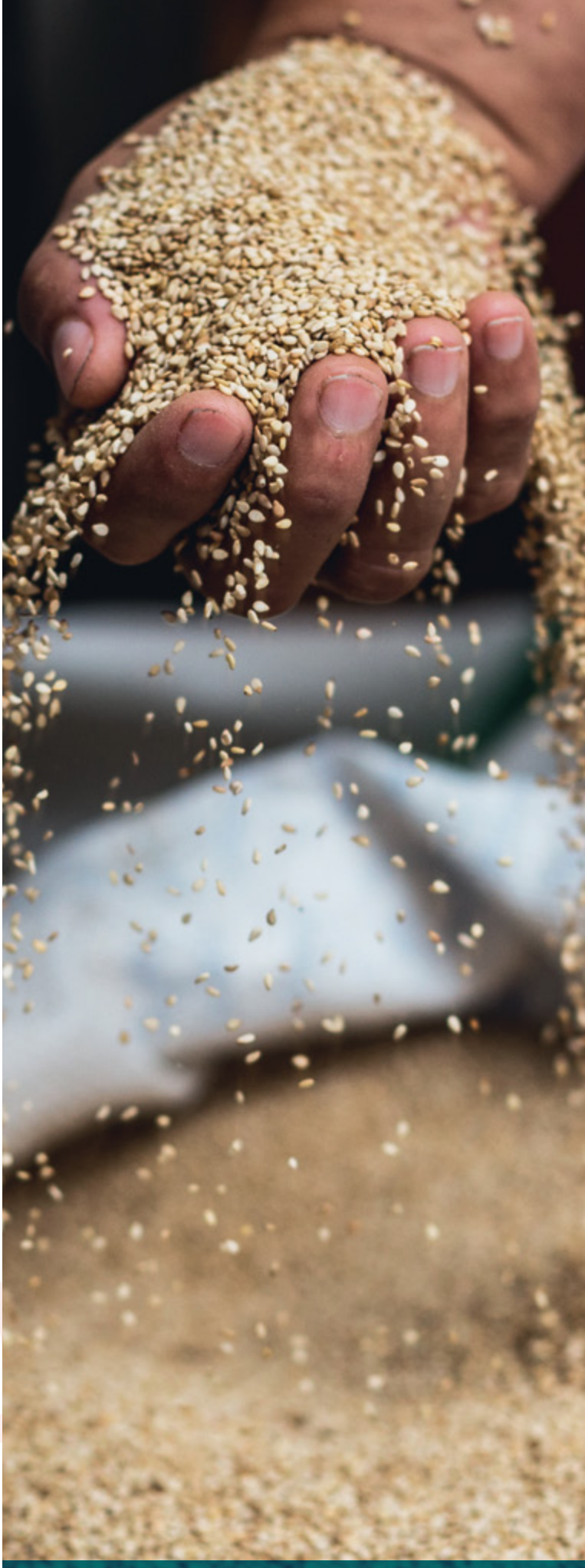
About
SeedChange

SeedChange was founded by Dr. Lotta Hitschmanova in 1945 as the Unitarian Service Committee of Canada (USC Canada). We are a non-profit organization rooted in the notions of human dignity, social justice, and equity. In the 1980s, famine and civil war in Ethiopia brought the power of seeds and farming to our attention. Our Seeds of Survival approach was born in collaboration with Dr. Worenda Melaku. Working with farmers to grow healthy food using good seeds and sustainable practices became our sole mission in 2007. In 2013, we extended our work to farmers in Canada. Today, we are part of a global movement fighting for justice, health and sustainability by shifting the way our food is grown. We work with farmers around the world to strengthen their ability to grow food sustainably, using locally adapted seeds. By harnessing the power of good seeds, farmers' leadership and global solidarity, we help communities thrive. For more information visit **weseedchange.org**.

About
the author

Dr. Pratap Shrestha has a Master's degree in Agricultural Economics from the University of East Anglia and a PhD in Participatory Technology Development and Local Knowledge Systems from the University of Wales, UK. Pratap has been working in agricultural research and development for nearly 30 years, particularly on participatory crop improvement, seed systems, community-based approaches to biodiversity conservation, and policy. In 2014, he worked as an advisor, helping the Government of Timor-Leste draft its National Seed Policy. Pratap is passionate about working with farmers and supporting policies that protect their rights and livelihoods. He is based in Pokhara, Nepal.



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Preface

Participatory assessment and planning for farmers' seed security and seed sovereignty

SeedChange, formerly USC Canada, promotes biodiversity-rich ecological agriculture to build community resilience and support food and livelihood security of smallholder farmers. The promotion of seed diversity and security among smallholder farmers has been the core of SeedChange's work and is reflected in its Seeds of Survival (SoS) program. The SoS program evolved in response to the acute shortage of locally adapted and farmer-preferred seeds due to civil wars and repeated droughts in Ethiopia in the 1980s. Assessing farmers' seed security needs is one of the key elements of the SoS program, and various methods have been used by SeedChange and its partners for this.

Smallholder farmers throughout the world produce, save, use, conserve, exchange, and sell their seeds. Such practices constitute *farmers' seed systems* and contribute more than 80% of the seed needs of these farmers. Smallholder farmers also keep a very high seed diversity which helps maintain a rich on-farm agricultural biodiversity. Keeping seeds in their hands and maintaining a high diversity of seeds are critical for farmers in building a resilient food production system in the face of climate change. The SeedChange Seed Security Assessment and Action Plan (SSAAP) methodology recognises the importance of farmers' seed systems and includes them in the assessment along with formal seed system. The methodology helps identify seed security interventions necessary to strengthen the farmer seed systems.

Smallholder farmers are both producers and users of seeds. As they use seeds to meet their diverse food and cultural needs, their seed needs are unique and diverse. For them, having access to good quality seeds at the time of planting is not adequate. For smallholder farmers, seed security also means ensuring their seed sovereignty. The SeedChange SSAAP methodology recognizes the shortcomings of many prevailing SSA methodologies and expands the definition of seed security to seed security parameters important for smallholder farmers. It includes three distinctly defined new seed security parameters: seeds adapted to farmers' production environments, which meet farmers' food and cultural needs, and which can be produced and saved by farmers. These parameters also address the seed sovereignty issues and needs of smallholder farmers.

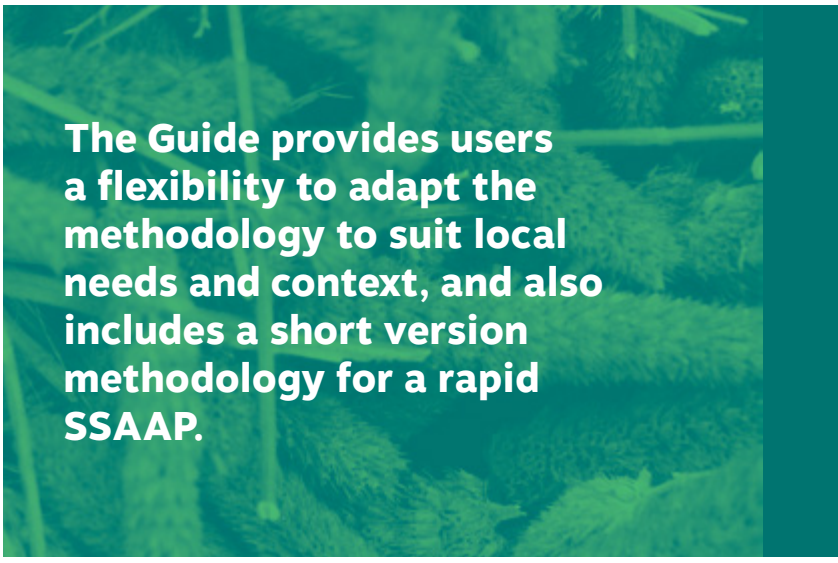
The purpose of this SSAAP Guide is to help research and development organizations, and farming communities to assess seed security situations and needs on their own without much external support.

Another striking feature of the SeedChange SSAAP methodology is the recognition that the seed security needs of smallholder farmers are not only influenced by various kinds of disasters. Rather, farmers may experience seed insecurity on a day-to-day basis and in any cropping season when there is a breakdown in their seed systems. The methodology is designed to assess all

relevant factors, including farmers' knowledge and practices, market, and institutional and policy environments, that influence and impact seed security. It also emphasizes the need to conduct SSAAP on a regular basis and not just at times of disaster.

The purpose of this SSAAP Guide is to help research and development organizations, and farming communities assess seed security situations and needs on their own without much external support. It describes the concept of seed security, outlines our methodology, provides methods and tools for data collection, includes instruction for data collection and analysis, provides guidelines for developing community-oriented seed security interventions, and suggests a format for preparing SSAAP reports.

The SSAAP methodology is drawing the interest of many organizations working internationally, including (at the time of writing): SUCO, a Canadian international NGO, who has used the methodology to support the establishment of community seed banks in Honduras; Groundswell International has used the methodology to support their food security program in Mexico; Development Fund, a Norwegian NGO, has supported its partners in Somaliland and Puntland to use the methodology in a project funded by the Darwin Initiative; and the West African Peasant Seed Committee (COASP) has organized SSAAP training for its member organizations in the region. The demand for the SeedChange SSAAP methodology is constantly growing.



The Guide provides users flexibility to adapt the methodology to suit local needs and context, and also includes a short version methodology for a rapid SSAAP. SeedChange takes great pleasure in offering the SSAAP methodology to the public and encourages practitioners to use it to strengthen the seed systems and seed security of smallholder farmers. Organizations using SeedChange SSAAP methodology recommend it as an entry point for seed security and diversity programs. We hope to continue receiving feedback from users in order to further refine and adapt the methodology to local contexts.

This Guide is part of a broader set of tools and resources developed by SeedChange. These tools and resources include guides on how to develop the action plans in Chapter 6 as well as resources on the types of programs and projects organizations may wish to implement. These are available on our website: **weseedchange.org/ssaap.**

We are also available to support your organization in the implementation of a SSAAP. Please contact us at **info@weseedchange.org.**

Dr. Pratap Shrestha

Bean seeds in Honduras

Acknowledgements

The SeedChange Participatory Seed Security Assessment and Action Plan methodology and this Guide were developed for the Program for Local Agricultural Innovation (PIAL) implemented by the National Institute of Agricultural Sciences (INCA) in Cuba with financial support from the Swiss Agency for Development and Cooperation (COSUDE). The methodology was piloted in three municipalities across Cuba in 2014 with participation from a wide range of stakeholders. The PIAL/ INCA team, particularly Sandra Miranda Lorigados, Dagmara Plana, Regla Maria Cárdenas, Ortiz Rodobaldo and Dania Vargas Blandino played important roles in successful piloting of the SSAAP methodology in Cuba. The valuable support of the PIAL/ INCA team and funding support from COSUDE is gratefully acknowledged. This guide is the result of work done from 2014 to 2020.

The SSAAP methodology was shared with SeedChange partners in 2015. Based on the experiences and feedback from the use of the SSAAP methodology in Cuba, Guatemala, and Nicaragua, the methodology was further revised and strengthened for wider use by other SeedChange partners. The revised SSAAP methodology was then validated with SeedChange's African partners in a workshop held in Ethiopia in early 2016. Subsequently, the full version of SSAAP was conducted by SeedChange partners in Burkina Faso and Mali in late 2016 and in Honduras and Guatemala in 2017, which provided further inputs to help produce the SSAAP Guide in the current form. My sincere appreciation goes to all the SeedChange partners and their staff involved in conducting the SSAAP for their critical insights and feedback on the methodology.

A number of SeedChange colleagues contributed at various stages of the development of the SSAAP Guide. The credit for the development of the SSAAP methodology and the Guide goes largely to Dana Stefov, former SeedChange program manager for Latin America and Cuba. She requested that I develop the methodology and later provided critical insights and Spanish translation support to the first version of the guide. I will remain indebted to her for putting her trust in me and providing all the support for the development of the Guide. I am also very thankful to Sylvie Perras, former program manager for West Africa; and Beatriz Oliver, program manager for Latin America for their valuable feedback and support for French and Spanish translation of the Guide. I am also grateful to regional facilitators, Ibrahim Ouedraogo in West Africa and Marvin Gómez in Latin America, for providing valuable feedback and inputs from the field implementation of the SSAAP methodology in their regions to help further strengthen the Guide. Regretfully, Ibrahim Ouedraogo passed away recently. His contributions and thoughtful leadership in the food sovereignty and peasant farmer movements in West Africa were immeasurable and he will be greatly missed.

I take this opportunity to extend my sincere thanks to Jeff de Jong, director of SeedChange International Programs, for constantly motivating me to prepare the Guide for publication. I am equally thankful to Susie Walsh, former executive director, and Jane Rabinowicz and Martin Settle, current executive directors of SeedChange, for their continuous encouragement and support for the publication of the Guide. Last but not least, I am grateful to Julia Laforge of SeedChange for her tireless work in editing and finalizing the Guide.

We believe that good food comes from good seeds. Household food and nutritional security starts with smallholder farmers' seed security.

When smallholder farmers are empowered to take control of their seed security, they also build seed sovereignty. Keeping seeds in farmers' hands and maintaining a high diversity of seeds is critical for building resilient food systems in the face of climate change.

This Guide provides methods and tools for data collection and analysis, as well as guidelines for developing action plans. It is designed to be flexible and allows users to adapt the methodology to suit their needs and local context. We hope practitioners and communities will use this Guide to strengthen smallholder farmer seed security and seed sovereignty.

Our participatory methodology is sensitive to inequality including, but not limited to, gender, income, ethnicity, religious practices, (dis)ability, and refugee status. By creating a methodology that is sensitive to these differences, this tool can provide a comprehensive understanding of the seed security status of the entire community and highlight opportunities for action.

Need help?

If you need support using or adapting our methodology to suit your needs and context, we may be able to help. We can provide technical assistance to support you in the design of the project, up to and including developing action plans and reporting your findings. We also provide training for those who feel they need additional support before they begin the process.

Please contact us at info@weseedchange.org for more details and visit our website for additional resources: weseedchange.org/ssaap.

Dr. Pratap Shrestha works with participants at a regional training in Somaliland.

Abbreviations and acronyms

CBOs	Community-based organizations
CSB	Community seed bank
FGD	Focus group discussion
FOs	Farmers' organizations
GOs	Governmental organizations
HHs	Households
KIS	Key informant survey
NGOs	Non-governmental organizations
PPB	Participatory plant breeding
PVS	Participatory variety selection
SPSS	Statistical package for the social sciences
SSA	Seed security assessment
SSAAP	Seed security assessment and action plan

section 1

Sorghum seeds in Mali

Laying the groundwork

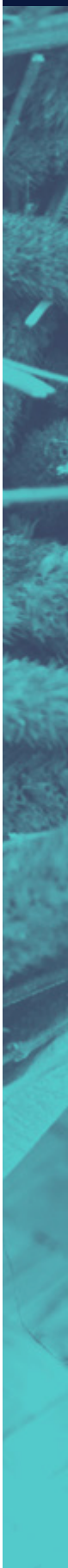
Chapter 1
Introduction

Fanta Traoré sifts onion seeds in her garden in Mali.

1.1
Context

Seed is a basic unit of agricultural production and an important source of on-farm agricultural biodiversity. Smallholder farmers, both men and women, throughout the world produce, save, and use their own seeds. They exchange seeds with fellow farmers and sell surplus seeds to supplement their income. These farmers mostly use seeds of their own local crop varieties but also use new seeds obtained from other farmers, market, and/or research and development programs to meet their seed needs and broaden their seed diversity. By maintaining a good diversity of seeds, farmers have been meeting their socio-cultural needs as well as building a resilient food production system in the face of climate change impacts. For smallholder farmers, seed diversity also means seed security.

Good food comes from good seeds, and food and nutrition security start with seed security. Farmers and gardeners have seed security when they have good quality, affordable seeds of their choice at the time of planting. These seeds should also be adapted to the local environment and meet the socio-cultural needs of communities. Seed insecurity occurs whenever there is a breakdown in the seed systems. These breakdowns may arise due to damage and loss of seeds during production and/or storage, disruption in farmers' seed exchange system, lack of adequate marketing mechanisms, or disaster, either human induced or natural (e.g., conflict, war drought, flood, earthquake). Thus, smallholder farmers may face seed insecurity both on a daily basis as well as when there are major disasters. A Seed Security Assessment and Action Plan (SSAAP) – conducted on a regular basis – provides a good understanding of the situation and causes of seed insecurity. The results of such SSAAP help farming communities identify and implement suitable action plans to ensure their seed security.



1.2

The need for this seed security assessment and action plan

Seeds and seed security are key elements in agricultural development programs aimed at increasing and sustaining agricultural production for the food security of farming communities. Developing appropriate seed related research and development programs requires a good understanding of farmers' seed systems and seed security needs. A number of seed security assessment methods have been developed and used by various organizations for this purpose. Most of these methods (ICRISAT/INIA, 2002; Remington et al., 2002; Sperling, 2008; FAO, 2015, 2016) have been designed to assess the seed security needs in post-disaster situations. The recent Food and Agriculture Organization of the United Nations (FAO) SSA Guide (FAO, 2016) and the multi-stakeholder framework of CGIAR Research Program on Roots, Tubers and Bananas (CGIAR, 2016) have expanded their SSA framework to include issues that are not just limited to disaster situations, but are relevant for seed security on a regular basis. However, a SSA methodology that takes a comprehensive and systematic approach to understanding seed security issues and developing relevant seed security action plans, particularly for non-disaster situations is generally inadequate.

The SSAAP methodology developed by SeedChange is based on the recognition that seed insecurity is fairly common among smallholder farmers. This methodology takes a systematic, holistic, and biodiversity-based approach in assessing all aspects of both formal and farmer seed systems and recognizes the interrelatedness of these systems. Farmers' seed systems include the seed related activities of farmers, including producing, saving, using, conserving, exchanging and selling seeds. Farmers' seed systems are the major sources of seeds for smallholder farmers and contribute between 60 – 100 percent of their total seed requirements, depending on the crop (Almekinders and Louwaars, 2002). Formal seed systems are the seeds that have been developed through public and private research and which are registered and certified by governments or other third-parties. Both of these seed systems are used by farmers around the world.

SeedChange's SSAAP methodology focuses on building ongoing resilience in farmers' seed systems using a seed sovereignty framework. As a participatory process, the SSAAP analysis helps develop strategies and actions plans that strengthen formal and farmers' seed systems and builds the capacity of smallholder farmers and communities to achieve seed security on a sustained basis and promote their rights to seed sovereignty. The participatory approach contributes to ownership of the process and outcomes; increased interaction and trust between farming communities and seed sector actors; and institutional and policy support for seed security actions **(See Fieldnote 1)**.

FIELDNOTE 1

Piloting of first seed security assessment and action plan in Cuba

SeedChange has been collaborating with the National Institute of Agricultural Sciences (INCA) of Cuba on the implementation of its Program for Local Agricultural Innovation (PIAL) since 2007. One of the main objectives of PIAL is to contribute to a secure seed-supply system by promoting local conservation, production and sale of diverse, locally-adapted, quality seeds.

On the request of INCA, SeedChange developed a participatory SSAAP methodology to assess the seed security situation and needs of small-scale farmers engaged in PIAL in three municipalities in 2014. A workshop was organized in one of the communities the same year to validate and socialize the methodology. The participants consisted of PIAL and INCA technicians, farmers from areas not prioritized by the state seed production system, as well as representatives of both the municipal and federal governments.

Both INCA PIAL professionals and farmer representatives were impressed by the validation results and appreciated the methodology for its practical and participatory approach. After participating in the SSAAP validation exercise, Mr. Raymond Hernández, President of the National Association of Small Farmers (ANAP) said. *"I had the impression that we were quite seed secure but after using the SSAAP methodology I am quite worried to see how insecure we are in terms of our seed needs".*

The PIAL team piloted the SSAAP in three municipalities and the results were used to develop municipal action plans for seed security. PIAL helped support the implementation of these plans to strengthen farmers' seed systems in these municipalities.

Seed security assessment in Cuba

SeedChange's SSAAP methodology uses a gender sensitive approach and recognizes that men and women farmers often prefer and grow different crops and varieties with different goals. The guide is also sensitive to other forms of inequality including, but not limited to, wealth, ethnicity, religious practices, (dis)ability, and refugee status. By creating a methodology that is sensitive to these differences, this tool can provide a comprehensive understanding of the seed security status of the entire community and highlight opportunities for action **(Fieldnote 2).**

FIELDNOTE 2

SSAAP highlights the role of women in Honduras and Mali

Using the methodology developed by SeedChange, the Foundation for Participatory Research with Honduran Farmers (FIPAH) conducted an SSAAP in the municipality of Yorito. The four-cell analysis, one of the SSAAP tools, was used to assess the status of varietal diversity of common bean (*Phaseolus vulgaris L.*), which is widely cultivated by small farmers in the area as a major food and cash crop.

The SSAAP results showed that the communities maintained 37 varieties of beans, including 22 landraces, 9 varieties from participatory plant breeding (PPB), and 6 varieties from conventional plant breeding. Of the 22 landraces, 6 were black beans cultivated in small areas and 4 were at risk of disappearance. When asked about the reasons for this, the male farmers reported that these black variety beans were not important on the market and therefore not important for economic security. Men preferred red beans over black beans since they were in high demand and fetched a good price in the market.

However, a different picture emerged when women were asked about the black beans they cultivated in small areas despite their low market value. Women farmers stated that they were cultivating and maintaining black beans as a food security and nutrition strategy for their families. Since men were selling red beans for income, there was often none left for the family. Women saw black beans as an opportunity to grow and conserve varieties that were not at risk of being sold on the market to maintain a regular supply for family meals.

The SSAAP findings helped the communities understand the important role of black bean varieties for their household food security and nutrition. It also revealed and recognized the role of women farmers for on-farm conservation and sustainable use of these varieties. FIPAH used the findings to develop action plans to strengthen seed production and dissemination for these vulnerable bean varieties by engaging and empowering women farmers. At the same time, the findings from the SSAAP helped influence the municipal government of Yorito to implement a plan to promote local production of bean seeds and strengthen the seed security of the municipality.

A similar outcome also arose in Mali through the work of Cab Demeso, a national NGO and local partner of SeedChange. Cab Demeso supports the Dunka Fa Cooperative and is working with 14 villages in the area of Safo outside Bamako. In 2016, they conducted a comprehensive SSAAP to assess the seed security of farmers and found something surprising.

N'guéné, a variety of sorghum grown in the villages of Safo was widely believed to have gone out of cultivation and was lost by the community. The flour from n'guéné was not well suited for making a traditional pasta called tô. The variety gave exceptionally high yields which farmers perceived to be a bad omen. As a result, the variety had gradually fallen out of use.

However, during a community workshop organized for SSAAP, a 56-year-old woman farmer named Fanta Traoré from Sorokoro village of Safo surprised everybody with the news that she continued growing n'guéné on her farm and had been saving seed for many years. She liked the variety as it matured earlier than other varieties, gave high yield, provided good nutrition and was easier to use to prepare meals for her large family.

"When I showed the n'guéné seeds I had saved, there was a great sense of relief among women farmers who remembered the variety but believed it had completely disappeared from the community," says Fanta. Five women immediately borrowed n'guéné seeds from her to cultivate in their farm. Other farmers appreciated the methodology and commented that, "The SSAAP helped us to find the lost variety of sorghum safely conserved by one of our women farmer leaders."

The SSAAP is a gender-sensitive tool that can help communities understand the role women play in local food and seed security. The guide can also identify other differences, and thus provide a more accurate understanding of the seed security status of the entire community while highlight opportunities for action.

Fanta Traoré displays sorghum and corn seeds at the Safo gene bank in Mali.

1.3
Scope of the SSAAP Guide

Who should use this guide?

With the use of participatory approaches and methods engaging farmers in the SSAAP process, this Guide is designed for use by agricultural development worker and professionals, and others with good knowledge of local agricultural contexts and farming communities. Community workers who do not have much knowledge and experience with seeds may need additional support prior to conducting a SSAAP. With some external facilitation, community-based organizations (CBOs), Community Seed Banks (CSBs), and Farmers' Associations can also use the Guide. It is also possible to do a short and quick version of the SSAAP with necessary adaptation to suit the scope of and resources available for the assessment. The use of the SSAAP methodology may further be facilitated by using more participatory tools and translating them into local languages **(Fieldnote 3)**. For additional resources to support your SSAAP, please visit **weseedchange.org/ssaap** or contact us at **info@weseedchange.org**.

FIELDNOTE 3

SSAAP Guide translated into local Bambara language in Mali

Cab Demeso, a Malian NGO and partner of SeedChange, is working with smallholder farmers of 14 villages in the community of Safo to enhance their food security and livelihoods through biodiversity-based ecological agriculture. SeedChange provided training to a team of staff of Cab Demeso for the SSAAP in 2016. The team facilitated a SSAAP by organizing six community workshops involving representative farmers from 23 program communities in the same year.

The SSAAP methodology involved visiting farming communities and organizing community workshops to engage men, women and young farmers in the assessment process to understand and assess the seed security situation and issues of smallholder farmers. In addition to a good facilitation by the SSAAP team of Cab Demeso, the methodology required the active participation of farmers which meant understanding the assessment tools and questions to provide the relevant information. To ensure this, the SSAAP team translated the SSAAP tools and checklist of questions from French into Bambara, a local language commonly spoken by the farmers in the program communities. This helped the SSAAP team to better facilitate, and for the farmers to better participate in the assessment with ease and confidence.

Facilitators lead SSAAP discussions in Mali.

The Guide is equally useful for seed specialists working in agricultural research and development programs to develop participatory action plans to support the seed security of smallholder farmers and communities. By working with program managers and decision-makers, seed specialists can use the methodology to generate information useful for the development of strategies and policies necessary for strengthening the seed sector of a particular region or country.

The SSAAP can also be used by those who work primarily in communities where the emphasis is on homegarden production. Women often have primary responsibility for homestead gardening and for smaller plot crop production. While this is not always included in the definition of farming, it is equally and perhaps more important for household food security. A SSAAP can help understand seed security at many scales, including at the household level. In most instances, the SSAAP will include crops grown for both households and markets, by both men and women **(Fieldnote 4)**.

When should a SSAAP be conducted?

This Guide is designed to assess the seed security situation on a regular basis and at any time as necessary without waiting for a disaster situation. The aim is to assess the everyday seed security needs and issues and use this to strengthen local farmers' seed system resilience. The Guide can also be used in a disaster situation with necessary adaptations focused on disaster-related seed security information.

When the SSAAP is used within a larger program or project, it is best carried out in the first year. This is important for two reasons: first, it generates information for the timely design and planning of seed security strategies and action plans; and second, it helps to establish a baseline for monitoring progress and impacts due to improvements in seed security status. In terms of seasons, the SSAAP should be done before or at the beginning of the main crop season to help farmers recall cropping events and seed related activities.

What crops are included in the SSAAP?

The methodology is applicable for all kinds of agricultural crops. These crops include food grains (cereals, legumes and oilseeds), roots and tubers, vegetables, spices, and fruit. The methodology can be used both for specific as well as mixed crop groupings, for example cereal crops alone or a mix of cereals, legumes, vegetables and fruits. It can include crops grown for household use and for market.

The selection of crops will depend on the objective and scope of the SSAAP, and the availability of resources and time. The inclusion of a large number of crops will require more resources and time. If the SSAAP is intended to cover a large geographical area, the assessment should focus on a smaller number of key crops. For a smaller geographical area covering few specific communities, SSAAP can include a larger number of crops.

FIELDNOTE 4

A gender-based categorization of seeds in West Africa

The SSAAPs conducted in about 100 communities in Burkina Faso and Mali revealed that there is a gender-based categorization of seeds in several West African communities. Indeed, cereal seeds such as millet, white and red sorghum, maize and rice, when grown in large irrigated schemes, are said to be "male". Decision-making about these seeds and crops is therefore mainly done by men. Conversely, the so-called "female" seeds, which often consist of fonio, okra, sorrel and other condiment plants, are the responsibility of women. These crops often occupy small areas and do not generate income since they are mainly consumed within the family.

However, in addition to ensuring all the management of these so-called female seeds, women also contribute to activities related to male seeds, which include the selection and allocation of seeds for the next agricultural season, seed treatment and storage (cleaning, drying and other), exchanges (donation, loan, barter) and sale, seed planning for periods of shortage, selection and preparation of seeds for sowing and planting. Some careful and labor-intensive tasks such as cleaning, sorting and maintenance of seeds during storage are usually carried out by women.

As part of the action plan for these communities, efforts have been made to secure more land access for women. Communities are donating small parcels of land to women in order to ensure that they have ongoing access to land to grow 'female' crops. In addition, training on gender equality for both men and women, including efforts to increase the leadership of women in these communities have also taken place. This will help ensure that 'female' crops remain an important and valued part of farmers' seed system.

Sitan Diarra (left) and Sitan Coulibaly (right) display their seeds in Mali.

1.4
Structure of the Guide

The Guide is organized into seven chapters with fieldnotes that provide SSAAP highlights and experiences from the field.

Section 1
Laying the groundwork

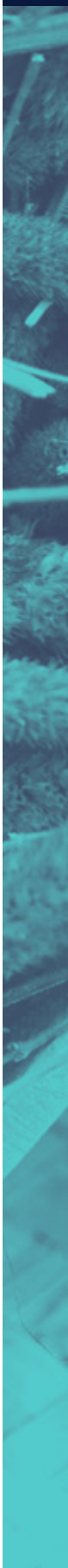
These two chapters provide the theoretical background to help you understand how seed systems and seed security function locally.

Chapter 1

Sets up the context and highlights the need and scope of the SSAAP Guide.

Chapter 2

The conceptual framework of the SSAAP is outlined in this chapter.



Section 2
Assessing and planning

These five chapters guide you through the implementation of the seed security assessment and participatory planning process.

Chapter 3

Outlines the approach, methods, and tools for data collection and planning for organizing the SSAAP in selected communities.

Chapter 4

Provides data collection instruments – checklists and questionnaires and data collection methods for different components of the SSAAP.

Chapter 5

Describes methods for data analysis and interpretation.

Chapter 6

Provides a framework for developing seed security action plans by using assessment results and revisiting the context of existing agricultural production and seed systems.

Chapter 7

Outlines ways to share the results and recommendations of the SSAAP to the farming communities and seed sector actors.

In addition, there are several annexes that can be consulted with materials that are used throughout the Guide. Visit **weseedchange.org/ssaap** for additional resources and tools to support your SSAAP experience.

Chapter 2
Background and history: conceptual framework for seed security assessment and action plan

Farmers harvesting in Ethiopia.

2.1
Farmers' and formal seed systems

All the seed related activities of farmers, which involve producing, saving, using, conserving, exchanging and selling seeds, constitute farmers' seed systems. These seed systems are also referred to as traditional, local, or informal seed systems. Farmers' seed systems are diverse and include many local or farmer varieties. Smallholder farmers also test new varieties developed through research programs or introduced through the market. The seeds of new crop varieties that are locally adapted and meet farmers' preferences are saved and used again. Keeping seeds in their hands and maintaining a high diversity of seeds are strategies farmers use to secure seed needs and build a resilient food production system in the face of climate change.

Smallholder farmers produce seed primarily for their own use. In most cases, they select and keep seeds from the same fields used for food production. Farmers have good knowledge about seed quality and apply various criteria and methods while selecting and saving seeds for the next planting season. The quality of farmers' seeds may vary greatly depending on the objectives and selection methods applied. Some farmers invest more time and resources in maintaining a very high quality, especially when they produce seeds for the market. Other farmers may maintain medium to low quality seeds for their own use as they know how to manage and use such seeds to maintain considerable level of production. They apply their knowledge and practices to maintain crop production from the use of such seeds; for example, cleaning and selecting seeds before planting or using high seed rates. There are no set standards for monitoring the quality of farmers' seeds. People rely mostly on trust and the history of the farmer offering seeds for exchange and sale to assess the quality. Farmers in the community usually know who maintains high quality seeds.

Saving their own seeds also requires farmers to process and store seeds in ways that maintain the quality of such seeds. Some farmers select and process seeds early after the harvest and store them separately, while others select seeds from the same lot stored for food just before the planting time. Through years of experience and knowledge, farmers have developed and used various seed processing and storage methods to save and maintain the quality of their seeds. Depending on the local ecological and cultural context, smallholder farmers all over the world have been using various seed treatment methods, such as sun drying and use of organic pesticides (e.g., ash and various plant preparations); and storage structures for the safe storage

of their seeds. The efficiency of these storage practices determines the quality and quantity of farmers' seeds.

Farmers' seed systems aim for self-reliance, both at the household and community levels. Farmers and farming communities exchange and market their seeds using traditional practices and networks, such as seed swaps, barter, and donations; social networks, including relatives and neighbours; local markets and fairs; community seed banks; and seed savers networks. They also continuously select and conserve seeds to suit their production conditions and meet their food preferences and cultural needs. All these are critical in ensuring seed security.

Smallholder farmers also access and use seeds from the formal seed system made available through development programs and various market channels. These seeds are often called improved, modern or commercial seeds. The formal seed system of a country involves development, registration and release of new varieties; production of different quality standard seeds, such as breeder, foundation, certified and other standard seeds; and marketing of these seeds to farmers through officially recognized market outlets. The seed policy guides the whole process while the seed law regulates the production and marketing of the quality certified seeds. The formal seed system makes a clear distinction between 'seed' and 'grain' or 'food parts', and is guided by the objective of producing high quality seeds to help boost agricultural production. It deals with a limited number of crops and varieties, and contributes less than 10 % of the total seed needs of smallholder farmers (Almekinders and Louwaars, 2002; FAO, 2018). So, despite being the major focus of public and private sectors, the formal seed system alone is not adequate to meet the seed needs of smallholder farmers.

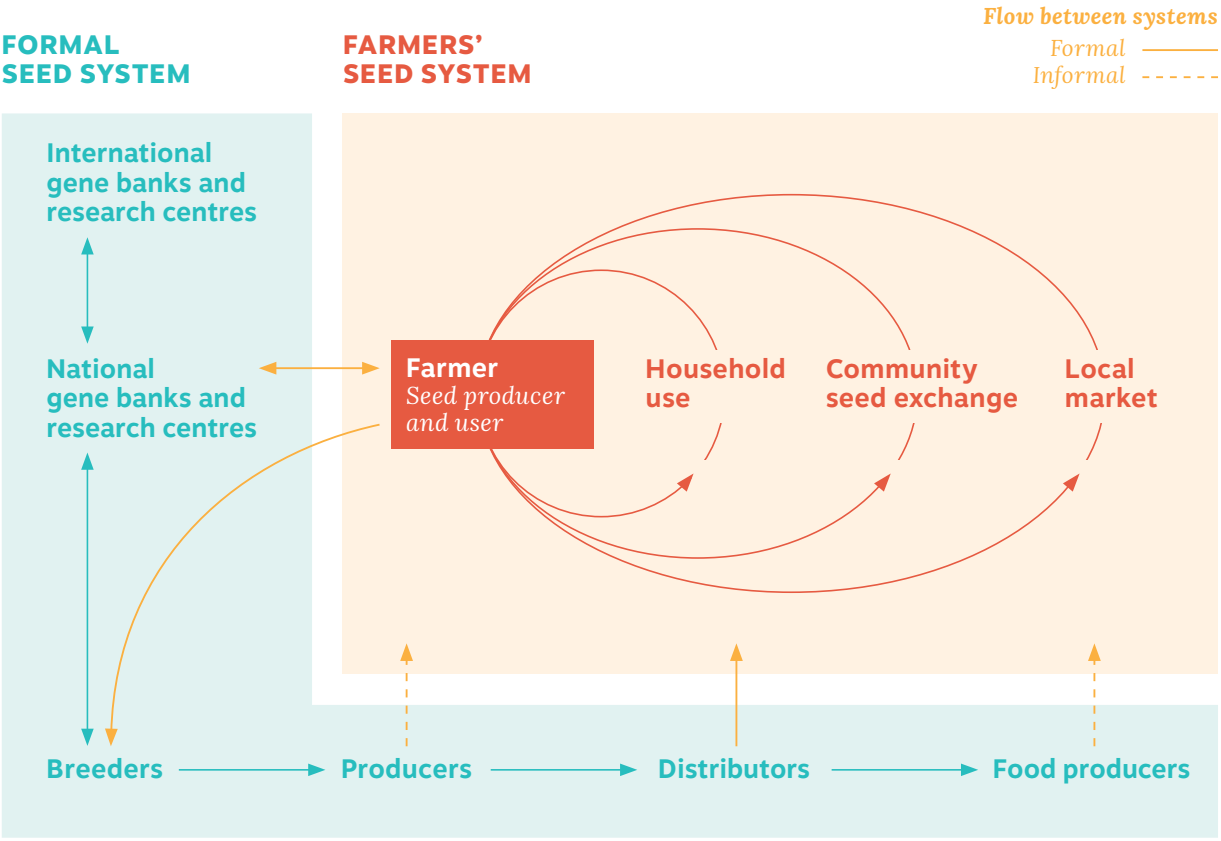
It is important that smallholder farmers are able to make full use of both farmers' and formal seed systems to strengthen their seed security. The two systems are inter-linked and inter-dependent as shown in **Diagram 1**. Public and private sector research programs use farmers' local crop varieties and knowledge to develop new or improved crop varieties. Similarly, smallholder farmers access and use certified or commercial seeds of formally released crop varieties from various sources and gradually integrate these seeds into their systems. They save, reproduce, use, exchange and sell these seeds within their social networks at the community level.

DIAGRAM 1

Linkage between farmers' and formal seed systems in the Global South

(Adapted from Almekinders and Louwaars, 1999)

National seed system



Despite the complementary roles of farmers' and formal seed systems, there is little or no policy and legal recognition or support for farmers' seeds and seed systems. Seed policy and laws in the majority of countries do not recognize farmers' varieties as eligible for registration for commercial production and sale of seeds. There is also a tendency to treat farmers' seeds as lower or sub-standard quality. As a result, there is often a one-way flow of seeds from formal to farmers' seed systems, which limits smallholder farmers' access to seeds and seed diversity. In countries such as Nepal and India, where seed policy and law recognizes farmers' seed systems and allows for the registration of farmers' varieties, the seed security situation of smallholder farmers is comparatively better.

Though farmers' seed systems play a critical role in meeting the seed security needs of smallholder farmers, the majority of public and private investments and policy supports are directed towards the formal seed system. In addition, the private sector is increasingly dominating and capturing a big share of the seed market globally. This is evident by the fact that the ten largest companies now control 73% of the commercial seed market (IPES-Food, 2017). Because of these factors, farmers are increasingly dependent on external and commercially controlled seeds, often not well adapted to the local environment, and are losing control over their seeds and associated knowledge, and thereby becoming more vulnerable to seed insecurity. It is therefore important that the SSAAP provides a good understanding of how different seed systems function and influence the seed security of smallholder farmers **(Fieldnote 5)**.

FIELDNOTE 5

Impacts of climate uncertainty on seed security in Nicaragua

The Federation of Cooperatives for Development (Federación de Cooperativas para el Desarrollo, FECODESA) is a local partner of SeedChange in Nicaragua and works with farming communities in the Dry Corridor to increase food security and income through participatory plant breeding, biodiversity-based ecological agriculture, and cooperative marketing. Using the methodology developed by SeedChange, FECODESA conducted a SSAAP to understand the seed security situation and needs of smallholder farmers associated with local cooperatives in five municipalities of the Madriz Department in the northern zone of Nicaragua in 2015. These farmers are facing a number of problems to sustain their food production due to recurrent droughts.

The findings of the SSAAP were quite revealing and showed that the main source of seeds for farmers in the area during years with "normal" climatic conditions (normal distribution of rainfall) were their own seeds (farm-produced and saved seeds), which contributed 85% of total seed used. However, in the "bad years" caused by uncertain rainfall and recurrent droughts, the contribution of own seeds was found to decrease to only 54% because of low production and crop failure. In these years, farmers increasingly depended on other sources of seeds, particularly commercial seed stores, community seed banks, government agencies and NGO programs in the area.

The study also revealed another problem – the problem of seed quality. The quality of seeds from external sources was perceived as lower than farmers' own seeds. About 78% of farmers considered that the quality of their own seeds was good to very good, whereas 81% of farmers consider that the quality of seeds from the seed banks of cooperatives and commercial seed stores was low to very low quality. Farmers had similar perceptions about the quality of seeds of maize, beans and sorghum provided by the government agencies and various NGO programs in the area.

The SSAAP findings helped FECODESA to understand the potential impacts of climate uncertainty on the seed security of smallholder farmers in the Dry Corridor municipalities. Farmers need support to save seeds in 'bad years' and need to know that better quality seed will be available when they cannot save enough for themselves and their community. FECODESA used the insights provided by the SSAAP to plan their five-year program with SeedChange. This included activities to strengthen the capacity of farmers and cooperatives to improve quality seeds produced individually as well as collectively by cooperatives and community seed banks.

Teresa Amelia Pérez Umanzor from the COMNEP (Cooperativa Multisectorials Nueva Esperanza de Palacaguina) analyses maize in Rio Arriba de Palacaguina, Nicaragua.

2.2

Concept and parameters of seed security

The concept of seed security originates from the definition of food security used by the US Agency for International Development (USAID) Food Security Framework (1995). It defined food security in terms of *availability*, *access* and *utilization*. Following that, a FAO workshop defined seed security as, "access of farming households – men and women – to adequate quantity of quality seeds and plant materials of adapted crop varieties at all times" (FAO, 1999, p.3). This definition includes four parameters of seed security: *access*, *availability*, *quality* and *adaptability*. All subsequent definitions of seed security and seed security assessment frameworks have used and further expanded on these parameters.

The first seed security assessment framework proposed by Remington et al. (2002) draws from the USAID food security framework and includes three parameters for seed security: *availability*, *access* and *utilization*. The utilization parameter includes aspects relating to quality such as physical (absence or presence of stone, sand, broken seeds, weed seeds) and physiological (germination rate, seedling vigour, absence or presence of disease); and varietal (genetic) qualities. ICRISA/INIA (2002) and Sperling (2008) have used three parameters to define and assess seed security, namely *availability*, *access* and *quality*. In addition to the physical and physiological qualities, the quality parameter in these definitions also includes absence or presence of farmer preferred traits and adaptability of the seeds in the local environment.

The 2016 FAO Seed Security Assessment Practitioners' Guide added two more parameters, namely *varietal suitability* and *resilience*. It has separated *varietal suitability* from *quality* since it measures how well the variety is adapted to the local conditions and meets farmers' preferences and needs. *Resilience* is defined as the degree to which the household's seed system can resist, adapt to, and recover from shocks and stresses which threaten its integrity.

When we piloted our first SSAAP in three municipalities in Cuba in collaboration with the Cuban National Institute for Agricultural Sciences (INCA) in 2014, we used only three parameters for seed security: *availability*, *access* and *quality* of seeds. However, we used a holistic and systematic approach to assess seed security issues.

Building on feedback received during the process, the SSAAP framework was further expanded to include six seed security parameters in 2016. The original three parameters of *availability*, *access*, and *quality* were retained, but the seed quality parameter was unpacked to generate three additional parameters. *Quality* encompasses the genetic, physical and physiological qualities of seed; *adaptability* examines the adaptation of seed to the local production and climatic conditions; and *choice of seeds* indicates whether farmers have the necessary choice of seed diversity to meet their food and other socio-cultural needs. *The capacity to produce and save their own seeds* was introduced as a completely new seed security parameter. The six seed security parameters are defined and explained in **Table 1**.

TABLE 1

Six parameters of seed security

PARAMETERS OF SEED SECURITY	DESCRIPTION
Availability	*Farmers have their own seeds or can obtain sufficient quantity of seeds of desired crops from their community or other sources within reasonable proximity, and at the right time of sowing periods. Good seed stock at household level and/or community level (seed producers and savers, community seed bank), a good public seed distribution system, and a well-developed seed market increase availability of seeds.*
Access	*Farmers have their own seeds or have adequate cash or other resources (financial credit, friends and relative or community institutions willing to help out) to buy and/or exchange or barter for appropriate seeds.*
Quality	*Seeds are of acceptable quality defined in terms of varietal (genetic) purity, physical purity (free from inert materials), health, vigour, moisture content and germination of seeds.*
Adaptability	*Seeds are well adapted to farmers' local management practices and climatic conditions and show stability in production performance in subsequent years.*
Choice of seeds (seed diversity)	*Farmers have choice for seeds with desired traits meeting their production needs (seeds suitable for short and long crop duration, for different cropping patterns and systems, for different fertility regime and management practices, for different water regime and management practices, etc.), food and cultural needs (shape, size, color, texture, aroma and taste, nutrition, food recipes, and cultural ceremonies), and market needs (traits meeting market demands, and processing, storage and transport needs).*
Capacity to produce and save their own seeds	*Farmers have technical (knowledge and skills), social-economic (resources, community institutions), and political (supportive policy and legal environments) capacities enabling them to produce and save their own seeds at household and community level.*

Source: Adapted and extended from Remington et al., 2002; Sperling, 2008.

There is often some confusion between the *availability* and *access* seed security parameters. *Availability* simply means whether seeds of desired crops are available to farmers while *access* means whether farmers have the capacity to obtain the available seeds. *Availability* does not automatically lead to access. For example, seeds may be available in the community or in the local market but farmers may not have *access* because they lack cash to purchase the seeds or other resources required to exchange or barter seeds.

The unpacking of the *quality* parameter is helpful in clearly separating and defining different aspects of seed quality. For example, the quality of seeds of a particular crop variety may be quite high in terms of varietal purity and physical and physiological qualities, but poor in adaptation to local conditions. This usually happens with some improved varieties which fail to perform well in new production environments because these varieties were not tested in wider farming communities for their adaptability. Similarly, the *quality* and *adaptability* of newly introduced seeds may be high but farmers still may not like or use the variety because it does not meet their preferences and needs. In such a situation, farmers' *choice of seeds* is limited which makes them vulnerable to seed insecurity. The framework recognizes that a high choice of seeds or high seed diversity also leads to high seed security.

The Cuban SSAAP provided a clear example of seed insecurity due to lack of *choice for seeds*. A white bean variety developed and promoted by the formal research and development institutions was fairly good in *quality* and *adaptability* parameters, but farmers were reluctant to use the seed because the taste of the bean was poor and it was not suitable for cooking with rice which is a popular traditional recipe in Cuba. Their local red bean variety was tastier in the traditional recipe. So, although the new seeds were easily available and accessible through government support programs, farmers still perceived themselves as insecure for bean seeds.

The majority of the conventional SSA frameworks implicitly put smallholder farmers at the receiving end since the focus or approach is more on 'providing' them with seed security and less on 'empowering' them to be seed secure. This has led many seed security programs to improve *availability* through the 'supply' of new and certified seeds through development programs and market mechanisms; strengthen *access* through credit facilities and seed aids; and ensure *quality* through commercially produced certified seeds. In these cases, the *adaptability* and *choice of seeds* as seed security parameters are not given adequate priority. The assumption is that farmers should change or adjust their management practices to allow adaptation to new seeds, and compromise their varietal preferences to increase production and meet food security targets. While such approaches may provide some sense of seed security in the short run, smallholder farmers are likely to become vulnerable to seed insecurity in the long run.

While such approaches may provide some sense of seed security in the short run, smallholder farmers are likely to become vulnerable to seed insecurity in the long run.

Finally, the addition of *capacity to produce and save their own seeds* as a new seed security parameter makes the SeedChange SSAAP framework quite unique. It brings smallholder farmers to the forefront and places them at the centre of the SSAAP. Producing and saving their own seeds is critical for the seed security of smallholder farmers. As long as the *availability* of seeds is dependent

on outside sources, *access* of seeds requires cash and other resources, and the *quality* of seeds is determined by the formal standards, the seed security of smallholder farmers will be at stake. When smallholder farmers are able to produce and save their own seeds, seeds of known and acceptable quality will be readily available and accessible for them. They produce seeds of a wide range of local and other varieties which are adapted to local conditions, and that provide farmers a good choice of seeds to meet their preferences and multiple needs. By empowering smallholder farmers to take control of their seed security, this seed security parameter also helps protect Farmers' Rights on seeds and to achieve seed sovereignty. In this sense, the SeedChange SSAAP framework is also unique in bringing Farmers' Rights and seed sovereignty perspectives into seed security assessment.

2.3
Components of seed security assessment and action plan

Now that we have provided our definition and parameters of seed security, we can examine the components of our SSAAP methodology. The seed security needs and issues of smallholder farmers are closely linked with their agricultural production and seed systems. These, in turn, are influenced by a number of external factors including agricultural research and development programs, prevailing seed policy and law, climatic conditions, and socio-cultural norms and practices. Our SSAAP methodology includes four interlinked components:

1. Agricultural systems analysis;
2. Seed systems analysis;
3. Seed security analysis;
4. Developing seed security action plans.

Firstly, **the agricultural system analysis** provides the context to the SSAAP by examining the agro-ecological, socio-cultural, and political economic conditions influencing agricultural production in the area. It examines characteristics of the farming communities, access to infrastructures, production resources, research and development resources, and farmers' and community institutions operating in the area. This analysis will provide background information about the agricultural system within which seed systems operate. The types and diversity of seeds found in a community depend on the prevailing agricultural production systems which are determined by topography, climatic conditions, socio-cultural norms and practices, access to technological innovations, and the availability of infrastructure and services. The analysis will help understand how changes in agricultural components and practices can impact seed systems.

Secondly, **the seed system analysis** goes one step deeper and examines how seeds of different crop varieties are produced, selected, saved, shared, exchanged and marketed. It considers how seeds of cultivated crops are produced, managed, and used by farmers and other seed sector agencies, including governmental, non-governmental, and private organizations following established norms and practices, policies, and legal provisions. The Seed System Analysis describes how farmers operate in both in farmers' and formal seed systems. These systems and practices have direct implications on community seed security.

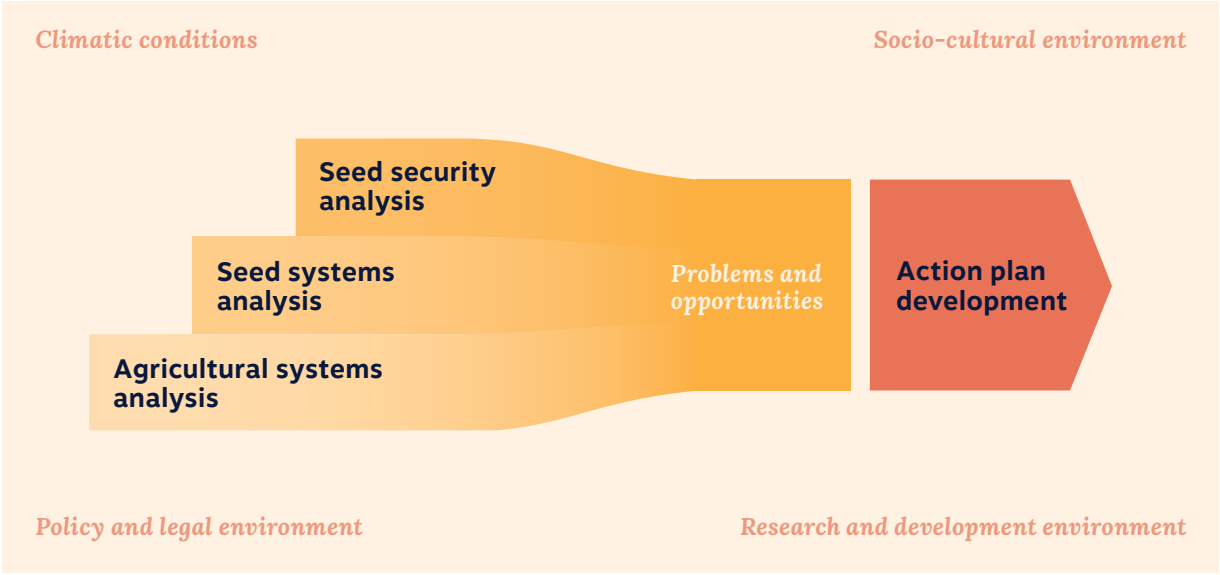
Thirdly, **the seed security analysis** uses the six seed security parameters to assess the seed security situation of different crops. It assesses farmers' seed security situation both in normal and bad years as affected by disruptions in the seed systems. These six parameters provide bases for achieving seed security as well as seed sovereignty for farmers. Problems and opportunities that smallholder farmers face with different seed security parameters will also be explored to help develop appropriate strategies.

The final component of the SSAAP framework draws upon the analysis of the first three components to **develop seed security action plans**. It uses the seed security assessment results

to determine underlying causes of seed security related problems, and applies the analysis to develop short- and long-term seed security action plans suitable for smallholder farmers of the area. The development of Seed Security Action Plans considers agricultural production and seed systems interactions and uses farmers' knowledge, practices, and resources to ensure relevance and feasibility of these action plans. It also considers external factors such as the research and development environment, policy and legal provisions, climatic conditions and the socio-cultural context. All these steps and processes included in the SSAAP framework are outlined in **Diagram 2.**

DIAGRAM 2

Framework of seed security assessment and action plan



The framework uses a participatory approach to actively engaging farmers, farming communities, and seed sector actors. The SSAAP results and the seed security action plans are shared with the farming communities to validate findings and get their feedback. Sharing SSAAP results with relevant actors is equally important to influence them, and to obtain policy and program supports necessary for the implementation of seed security action plans. This was evident in the case of the Cuban SSAAP **(see Fieldnote 6)**.

FIELDNOTE 6

SSAAP leading to local seed certification system in Cuba

The first SSAAP conducted in Cuba in 2014 by the National Institute of Agricultural Sciences (INCA) through the Program for Local Agricultural Innovation (PIAL), provided valuable insights into the seed security situation and needs of small farmers. The SSAAP results were shared at various workshops in which a wide range of actors participated, including the National Association of Small Farmers (ANAP), the Association of Agricultural and Forest Technicians, research institutions, universities and the Ministry of Agriculture (MINAG). The SSAAP methodology was recognized as a useful tool in developing and planning seed security action plans and was recommended for other PIAL municipalities. Encouraged with the results, PIAL used the methodology for assessing seed security in an additional six municipalities.

The SSAAPs identified a number of areas which were constraining the seed security of small farmers. The lack of quality seeds of preferred crop varieties and their timely availability were major constraints. The production of certified seeds is limited to a few key food and cash crops and a major proportion of these seeds go to state farms. The SSAAP results helped convince the Ministry of Agriculture and other actors to support the local production of quality seeds in order to address the problem.

Based on the experiences from Costa Rica and Nicaragua, PIAL developed a protocol for local production and certification of bean seeds, which provided guidelines and procedures for the production, quality control and local certification of the seeds. The seeds are produced by small farmers on their farms, and seed inspection and certification are provided by the local Seed Committee which consists of specialists from MINAG, universities and farmer representatives. By 2017, pilot Seed Committees had formed in eight municipalities, production of certified seed of beans was initiated in three municipalities, and seed protocols for rice were created in Bahía Honda.

Farmers from Cuba visit farmers in Honduras as part of a learning exchange to discuss seed certification committees.

2.4 Adapting the methodology for specific needs

The SSAAP methodology is designed for the detailed and full-scale implementation of an assessment and action plan in a particular community or region, particularly when there is very little information available to implement a seed security program. A shorter version of SSAAP can also be conducted when:

- There are **limitations** of time and resources;
- The objective is **to assess the seed security issues and needs** of a few specific and closely related crops, for example key cereal crops; or
- There is **a good understanding of the broader context** that helps with further analysis and interpretation of seed security issues and needs, for example agricultural production and seed systems, infrastructure and services, climatic conditions and socio-cultural context, and seed related policies and laws.

The approach is to focus on the minimum set of key information that is critical in understanding and reaching conclusions on the seed security situation of a community or region. Here are some tips for a shorter version of the SSA:

- **Eliminate the Agricultural System Analysis component** from the assessment or, at least, do not collect data from the farmers and the community for this aspect;
- Focus the assessment on **a few key crops**;
- Focus on information directly related to **the Seed Security Analysis** and developing seed security action plans;
- Focus on information that needs to be collected **directly from the farmers and the community**; and eliminate key informant survey;
- Focus primarily on **the participatory approaches and methodologies**, for example Community Workshops that use Focus Group Discussion (FGD) and other participatory methods and tools as appropriate; and
- Use information from **secondary sources** and published **reports** to complement information collected from farmers and the community.

Fieldnote 7 provides examples of how SSAAPs were adapted to the needs and resources of two different organizations. A separate checklist for a short version of the SSAAP has been included in **Annex 6**.

FIELDNOTE 7

Adapting the SSAAP to suit local needs in Guatemala and Honduras

ASOCUCH, SeedChange's partner organization in Guatemala, has been working with communities to conduct Climate Vulnerability Assessments for several years. As part of this process, they use watersheds to define their working area and the communities. ASOCUCH engages in communities to discuss the impacts of climate change at the watershed level. They consider the watershed as the unit of analysis and planning since it is useful for the collective management of common natural resources, such as forests, water, soil, and the conservation of seeds and animal diversity. In addition, communities understand that supporting action plans will benefit all of the inhabitants of the watershed. ASOCUSH also applied a watershed approach to conducting the SSAAP – with the whole watershed taken as a sample unit.

In order to use the watershed as a sample unit, ASOCUCH had to first define the boundaries of the watershed by using a combination of Geographic Information System (GIS), on field verification of the watershed map with participation from community leaders, and a compilation of the socio-economic, educational, and climate characteristics of the communities in the watershed. Using a watershed for sampling also allowed communities to identify important resources in the coverage area. Participatory processes also helped prioritize development actions within the watershed by using maps to allow participants to identify the location of important resources and highlight areas of risk. This can be helpful when discussing geographic features such as access to irrigation or soil conditions which can limit seed security in some areas.

In Honduras, a Canadian International NGO called SUCO also adapted the SSAAP to suit their needs. SUCO supports community organizations, including women's groups, to strengthen the food and nutrition security of smallholder farmers through sustainable agriculture and local entrepreneurship. Together with FIPAH, a local partner of SeedChange, the organizations have been organizing training programs on farmer-led research and agrobiodiversity in Honduras. In 2015-2016, SUCO participated in two training events on the SSAAP methodology and conducted a SSAAP in two communities in the Dry Corridor of the southern region Honduras. They used a rapid SSAAP methodology focusing on key information relevant for the establishment of community seed banks in this region.

Marvin Gómez, Latin America Regional Facilitator for SeedChange, supported a small team to conduct a follow-up SSAAP in 2018 to identify seed security issues and needs related to community seed banks. This SSAAP helped identify key varieties and crops important for the food and economic security of the communities, and understand the challenges they face in the context of climate change. It allowed communities to identify and prioritize the major actions necessary to strengthen seed security for maize, sorghum and sesame. The process of community consultation during the SSAAPs also helped identify major actions for the establishment and sustainability of the community seed banks. SUCO and RDS staff found the SSAAP methodology to be a useful tool to understand local, farmers' seed systems and the challenges and opportunities for seed security, and to motivate farming communities to start a community seed bank.

Farmers in Guatemala participate in a seed security assessment meeting as part of the Climate Vulnerability Assessment in 2016.

Marvin Gomez Cerna, SeedChange regional facilitator, has helped many organizations to facilitate SSAAP.

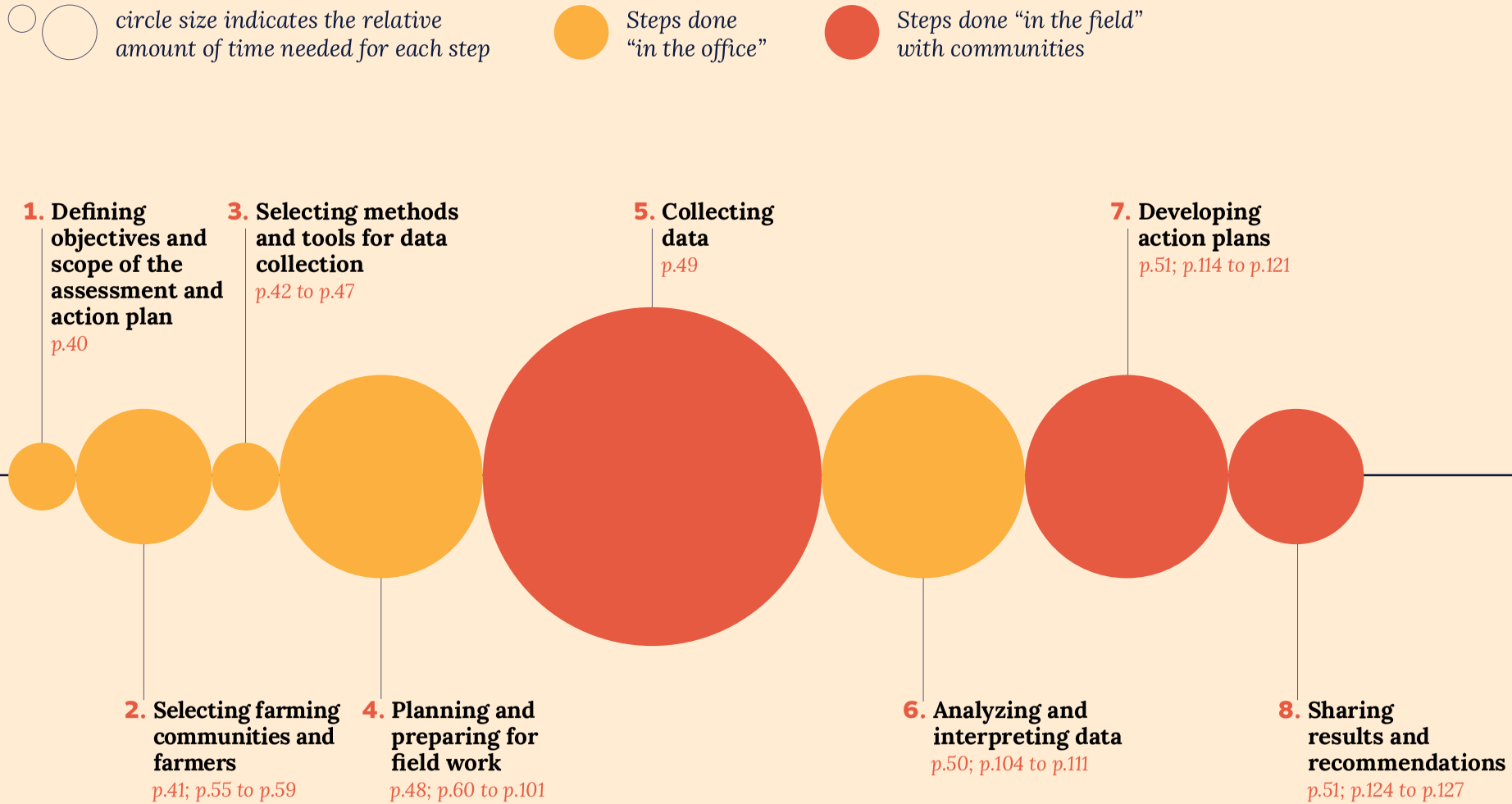
section 2

Peanut seeds in Mali

Assessing and planning

This section provides guidelines on the methodology for conducting a Seed Security Assessment and Action Plan.

The methodology consists of the following key steps:



Chapter 3
Getting started

Seedling planting in Honduras

3.1
Defining objectives and scope of the assessment and action plan

Setting objectives is the first step which provides the basis for the assessment and action plan and influences the choice of methods. While the main objectives of the SSAAP are to understand seed security needs and develop seed security action plans, specific objectives may vary depending on the nature of the program for which the SSAAP is done. For example, SSAAP may be conducted to assess the seed security for key cereal crops important for food security or for vegetable crops important for nutrition or marketing, or for a particular community starting a seed program or hit by a disaster. Therefore, the objectives of each SSAAP should be clearly stated as the first step in the process. The objective defines the scope of the SSAAP. There are two aspects to consider while defining the scope. First is the **demarcation of geographical area and the farming communities**, and the second is the **selection of crop species** to be included in the SSAAP.

Depending on the objective of the SSAAP, it can be done at any scale – country, region, district, municipality or a specific community. For a SSAAP done at the level of country, region, district or municipality without any prior identification of program areas, all farming communities fall within the scope of the assessment. When the SSAAP is done for a particular program, only those communities included in the program – both current and future – are included in the assessment.

The SSAAP methodology can include all crops contributing to the food and economic security of a farming community. However, the types and number of crop species to be included in the assessment should be decided based on the objectives of the SSAAP. The time and resources available for the assessment will influence this decision. Criteria to identify key crops can include crops grown in the geographical area included in the assessment, number of households growing such crops, contribution to household food and nutrition, importance for cash income, crops affected by disaster, etc.

The key crops may include staple food crops (cereals, legumes, oil crops, roots and tubers, etc.) as well as vegetables and fruits depending on the focus of the seed security program. It is important to use relevant information available from seed sector actors and farmers to determine these criteria. Since the seed needs and preferences vary for different individuals and households, it is important to consult with both men and women farmers in this process, as well as farmers of different ethnicities, wealth or social background, religions, (dis)abilities, ages, etc., when relevant, to determine key crops.

3.2 Selecting farming communities and farmers

When the SSAAP is conducted for a large geographical area with a large number of communities, it is necessary to select a more manageable number of farming communities to optimize resources. The same principle applies for selection of the farming households to be included in the assessment. The selection of the communities and households should be done systematically using standard sampling methods and procedures. The selection of a particular sampling method will depend again on the objectives, time and resources available for the SSAAP.

It is important that the sampling method applied takes care of the variation among the farming communities and the households to ensure their adequate representation in the assessment. Communities are heterogenous and factors such as gender, wealth, ethnicity, age, religious practices, (dis)ability, refugee status, etc. might make some people more seed insecure than others. For example, women-headed households may face different challenges from women in men-headed households. The gender, age, ethnicity, religion, (dis)ability, etc. should be considered as important criteria for the selection farming communities and farmers for the assessment. The detailed sampling plan and method for sampling of communities and farmers are outlined in **Chapter 4.** The SSAAP team may wish to consult with statistician for advice on sampling method as necessary.

3.3
Selecting methods and tools for data collection

To begin, the SSAAP team should identify the key elements of the first three components, namely Agricultural Systems Analysis, Seed Systems Analysis, and Seed Security Analysis, in which data should be collected for the assessment. This decision will be based on the objectives of the SSAAP team, as well as the time and resources available for the assessment. This will define the scope of activities and will determine methods and tools for data collection. **Chapter 4** of the Guide outlines details of these components of the SSAAP.

Methodological approach

This SSAAP methodology uses two distinct approaches to data collection: first, use of *multiple sources* of data; and second, use of *participatory methods* of data collection. The use of multiple sources increases reliability of the data, strengthens data analysis, and makes the study more cost effective.

The use of participatory methods of data collection is applied at two levels: first, at the level of the organization(s) conducting or facilitating the SSAAP; and second, at the level of farmers and farming communities who provide data for the assessment. A proper orientation and training on the SSAAP framework and methodology is provided to the SSAAP team so that they are able to participate and carry out the assessment by themselves. Direct participation helps the organization(s) and the SSAAP team to deepen their understanding of the seed security situation and to use the information to design a robust action plan and potential seed security program. It also helps them learn, experience, and internalize the methodology. The participation of the farmers and farming community throughout the assessment process is another key part of this SSAAP methodology. The active participation of women, men and young farmers in the assessment is ensured through the use of participatory methods and tools. As a result of their direct participation, farmers and farming communities gain increased awareness of their seed security situation, take ownership of the process and outcomes of the assessment, and participate actively in the implementation of seed security action plans.

Methods and tools for the collection of data from secondary sources

This SSAAP methodology encourages the use of relevant data and information from secondary sources as much as possible. The secondary sources of data collection involve using data and information collected by other researchers or organizations. This information is available either in raw form (unanalyzed data sets) or analyzed form presented in various reports. The Component 1: *Agricultural System Analysis* and Component 2: *Seed System Analysis* can make high use of secondary data. Using secondary sources reduces the time and resources involved in collecting data. However, it is important to remember that this data may have been collected for a particular geographical area with different purpose than the current SSAAP. The SSAAP team should do background research to determine the relevance and usefulness of the data for the assessment. For these reasons, secondary sources are best suited to collecting general information to describe the overall situation and compliment primary data collected for a specific topic.

Procedure for collecting data from secondary sources

The following processes are suggested to collect data and information relevant to SSAAP from various secondary sources:

- Identify relevant data and information to be collected for the SSAAP from secondary sources for each component of the SSAAP. **Chapter 4** contains specific instructions for the different components of the SSAAP;
- Find possible sources for the data and information. For example, reports from other organizations or from government departments. Seek out sources for raw data whenever possible. Usually raw data is available from entities involved in collecting data on a regular basis, for example: National Statistics Bureau, Meteorological Stations, Ministry of Agriculture, etc.;
- Collect data from the secondary sources and present them in the form required for the SSAAP;
- Provide reference to the sources and dates for the secondary data used in the SSAAP.

SSAAP training workshop in Ethiopia

Methods and tools for the collection of data from primary sources

The collection of data from primary sources involves collecting new data directly from the concerned sources. Examples are: conducting household surveys or interviews with farmers and relevant actors. Primary sources are used when data necessary for the SSAAP is either completely unavailable or unavailable in the required form from the secondary sources. The following three methods for collecting primary data for the SSAAP are recommended in this Guide:

A. Key informant survey (KIS);

B. Focus group discussion (FGD); and

C. Household survey

The purpose and procedures for the use of these primary data collection methods are described in the following sections.

A. Key informant survey (KIS)

The Key informant survey (KIS) involves interviewing people who have expertise and experience on the topic of enquiry. These people are also called as key informants.

Purpose of key informant survey

KIS is used to collect both general as well as specific information about the topics from key informants. It is used to get information that is otherwise not available in any report and to get detailed insights on particular topics, including context and historical background. It can also help find additional sources of information. Examples are: interviews with government officials, interview with meteorologists, interview with mayor or village chief and so on.

Process of key informant survey

Undertaking KIS involves, at least, following three steps:

1. **Identification of key informants:** Identify and prepare a list of people with the right expertise and working experience. Contact them, share the objective of the interview, and ask for an appointment to conduct the interview.
2. **Checklist and preparation for the meeting/interview:** Identify relevant data and information to be collected using KIS and prepare a checklist for the interview in advance. Prepare for the interview by doing a background of the available information on the topic to ensure that all the necessary questions are asked during the interview. See **Chapter 4** of this Guide to confirm the data that can be collected using KIS.
3. **Organize meeting/interview with the key informants:** Arrive at the meeting venue on time, introduce yourself, provide some background and share purpose of the meeting. If the key informant wants his/her colleagues to join the meeting, welcome them. Take note of the identity of those interviewed during the KIS and obtain their consent for referring them in the report. The information collected using KIS is not treated as confidential and a reference of the source is made for the authenticity of the data. If desired, and if permission is granted, take an audio recording during the interview, otherwise take written notes of responses.

B. Focus group discussion (FGD)

The focus group discussion (FGD) is a participatory method of data collection which involves a focused discussion on a particular topic with a group of community members purposely selected to represent and speak for their community. The Guide extensively uses FGD for all the components of the SSAAP. Community Workshops are organized to facilitate FGD sessions and allow participatory data collection.

Purpose of organizing focus group discussion

The purpose of FGD is to collect primary data to describe the general situation and trends. It also helps to understand opportunities and challenges related to the different components of the SSAAP. The data is generally qualitative in nature and related to issues that are well known within the community. However, it is also possible to collect quantitative data by using specific methods and tools provided this information is also widely known within the community. Working with farmers during the FGD sessions helps build rapport and trust with farming communities and secure community action and participation in program activities.

Process of organizing focus group discussion

The FGD sessions are organized in farming communities selected for the SSAAP by organizing community workshops. Women and men farmers selected to participate in the FGD are invited to the community workshop. The SSAAP team facilitates the community workshops and farmers participate in the FGD sessions and provide information for the SSAAP. In organizing FGD sessions with farming communities, the following procedures and considerations are suggested:

1. **Sampling of farming communities for FGD sessions:** It may not be practical or feasible to organize FGD in all communities, especially in a larger geographic area. A systematic sampling strategy to select a small number of representative communities is outlined in **Chapter 4.**
2. **Selection of representative farmers to participate in FGD sessions:** Select about 20 farmers from the sample communities to participate in the FGD sessions. The selection of farmers is done purposively to represent the community making sure that there is a good representation of men and women (gender representation, including women-headed households, where relevant), adult and young (different age categories), different socio-economic groups, different ethnic groups and so on. However, if the purpose is to get information from a particular section or group of farmers of the community, then farmers are selected only from that group, for example, women, women-headed households, or youth groups. It is important to select farmers who are knowledgeable about their communities and able to articulate and share information.
3. **Organizing community workshops to facilitate FGD sessions:** Community workshops are organized in communities selected for the SSAAP. A SSAAP team should be trained to facilitate the community workshop and FGD sessions. Multiple teams can organize the community workshops simultaneously in different communities when the SSAAP covers a large geographical area in order to finish within a reasonable timeframe. Each SSAAP team should consist of at least two people – one to facilitate the discussion and another to take notes and document the outcomes of the discussion. If parallel FGD sessions with small groups of farmers are organized during the community workshop, then the SSAAP team should consist of more than four members.

Special consideration and consultation for appropriate scheduling is important to ensure that women are able to participate due to various types of barriers to participation (e.g., related to household chores, child care, distance to travel, etc.). The community workshop should be organized in a location that is accessible to women and men coming from different communities selected for the SSAAP. Farming communities should be informed as early as possible about the date, timing, and venue of the community workshop. Invitations can be sent to the selected farmers through the staff of the organization and the local community leaders.

After the introduction of the participants and sharing of workshop objectives, FGD sessions begin and these could be conducted in parallel sessions – two to three group discussions taking place simultaneously to reduce time. It is recommended that those representing marginal groups be given the opportunity to share in smaller groups, since it may be more difficult for them to articulate their opinions well in the overall session. Make note of whether everyone at the meeting speaks the same language and provide translators, if necessary. Depending on the efficiency and skills of the SSAAP team and the time availability of participants, it may take two to four days to complete a full scale SSAAP in each community. For a more specific and shorter version of the SSAAP, the community workshop can be completed in less than two days per community. If necessary, allow extra time to provide translated materials ahead of time and for simultaneous translation during the workshop.

A number of participatory methods and tools, such as diagrams, mapping and matrix scoring, are used during the FGD sessions to collect information from the farmers. The SSAAP team should be comfortable using these methods and tools. **Annex 2** has instructions for the matrix scoring method and **Annex 3** contains details on conducting the four-cell analysis. The facilitation team should prepare for the FDG by planning sessions and preparing checklists, dummy tables, diagrams and other visual materials. **Chapter 4** includes checklist of questions suggested for use in the FGD sessions which could be adapted during the FGD to ensure that all necessary data are collected.

C. Household survey

A household survey involves interviewing individual households to get data specific to those households. The interview is done with the help of a standard questionnaire called household survey questionnaire. Data from individual households are compiled and analyzed to describe the key features of these households. When a proper sampling is applied, the data from the household survey is used to extrapolate for the whole community.

Purpose of household survey

The purpose of the household survey is to collect precise data from households in order to describe the key features of the farming communities to which they belong. Household surveys are used when:

- information to be collected varies greatly from household to household;
- information is confidential to each household, i.e. not known openly to others in the community;
- there is need for more quantitative data; and
- statistical analysis of the data is required.

Process of conducting household survey:
Conducting a household survey involves the following steps:

1. **Sampling of households for household survey:** The strategy for sampling of households for household survey is outlined in **Chapter 4.**
2. **Preparing household survey questionnaire:** A household survey questionnaire is prepared and pre-tested with a few farmers before conducting the survey. Questions suitable for the household survey have been marked in the checklist prepared in **Chapter 4.** An example household survey questionnaire has also been included in **Annex 1** which should be reviewed to ensure that all relevant questions are included. The questions to include in the household survey will depend on whether the household survey is done alone or in combination with FGD.
3. **Interviewing sample households:** The members of the SSAAP team contact each sample household, brief about the assessment and request for the interview. The interview is done with both spouses present, if their time permits. If that cannot be done, then the interview is done with a knowledgeable member of the family. If only one person is present during the survey and they do not know the answer about work done by another family member, they should be encouraged to consult other family members present, but not to guess. An effort should be made to include women-headed households and to take note when this is done so that these responses can be analyzed separately, where relevant. The farmer interviewee should be informed that the data recorded will be kept confidential and stored safely with the organization conducting the SSAAP (see section **3.6** for details).

Choice of methods for the collection of primary data
Of the three methods for the collection of primary data, the key informant survey is used in combination of both the FGD and household survey. Between FGD and household survey, the organization and the SSAAP team can decide which method to use for data collection. There is general perception that data collected from FGD is less reliable and do not adequately represent household differences as compared to data collected from household survey. As a result, there is higher preference for household survey. However, both methods have strengths and weaknesses.

The choice between the two methods depends on the objectives of the SSAAP and the availability of time and resources. If the objective is to generate household specific data, particularly when inter-household variation is quite high and there is interest to apply statistical analysis, then the household survey should be used. However, the household survey is relatively costly and requires more time and resources than FGD unless there are only a few households to interview. It is preferable to use a combination of FGD and household survey methods to optimize resources and utilize the strengths of the two methods.

See **Chapter 4** of the Guide for the questions associated with each of the key elements of the first three components of the SSAAP. This chapter also contains tips on choosing methods and will allow users to plan their fieldwork and data collection.

3.4
Planning and preparing for field work

Organizing fieldwork to collect data for the SSAAP requires careful planning and preparation to complete it successfully and on time. The planning and preparing for fieldwork should include the following:

Forming and preparing SSAAP team:

- Form SSAAP team(s) consisting of men and women members, preferably with some knowledge about seeds and experience of working with the farming communities.
- Organize SSAAP training for team members to provide them theoretical knowledge and practical experience in conducting the assessment. The training should include sessions on getting practical experience of using the tools of either or both the FGD and Household Survey depending on the choice of these methods for SSAAP.

Planning for conducting fieldwork:

- Prepare a plan for the FGD and household survey defining roles and responsibilities of SSAAP team members.
- Prepare an implementation schedule for FGD and household survey, specifying days for community workshops and surveys, and for travel.
- Plan for timely communication with farming community for their active participation in the community workshop and household survey. Inform farming communities selected for the SSAAP about the community workshops and household survey and request their participation and support.
- Prepare materials necessary to conduct and facilitate FGD sessions: checklist of questions for FGD, projector, flip chart, papers, markers, pens, highlighters, masking tapes, seeds for scoring exercise, etc.
- Arrange for translation of survey checklists and questionnaire in local language as necessary. Print adequate copies of the household survey questionnaire if household survey is used.
- Arrange necessary logistics: workshop venue, transport, accommodation and food for the SSAAP team(s), food and refreshment for workshop participants, etc.

Chapter 4 will support users in planning and preparing for their field work by listing all of the questions and providing tips on selecting methods.

3.5
Collecting data

The collection of data and information from secondary sources and the KIS is relatively straightforward and does not require much analysis. Relevant data and information should be extracted from sources and recorded for use in the SSAAP.

However, the collection of primary data necessary for the SSAAP requires more attention. Data from both the FGD sessions and Household Survey questionnaires should be reviewed carefully while in the field. The team(s) should specifically check for:

- Completeness of the data collection – check for unanswered questions in the FGD checklist and the household survey questionnaire;
- Consistency of the data – check whether data are being recorded correctly;
- Measurement units correctly entered; and
- Outliers with extreme figures and outside the expected limits.

See **Chapter 4** for more details on selecting questions and methods.

SSAAP focus group discussion in Mali

3.6
Analysing and interpreting data

The data from the household survey are mostly quantitative and could be stored electronically by entering data into SPSS or Excel. The data from the household survey from all sample communities can be entered into a single file to help ensure that data storage and analysis is easy and efficient. A record of the data code used for data entry should be maintained for reference during data analysis. The analysis of the quantitative data from both the FGD (including numbers, scores, and 'yes-no' questions) could also be done using SPSS or Excel to get required descriptive statistics (total, mean, percentage, etc.). It is helpful to prepare a data analysis plan in advance in order to meet the assessment and reporting needs.

The qualitative data collected from FGD may have to be analyzed manually and presented in tables and diagrams and supported with notes taken during the fieldwork. However, if there are several communities included in the sample and a combined SSAAP report is planned, then information from all the FGDs should be compiled for each question to enable a comparison. When the SSAAP report is prepared for each community, descriptive statistics are calculated for individual community and included in the report. While for a combined SSAAP report for multiple communities, the descriptive statistics of the aggregated data are produced for the report.

Information should be stored on a password protected computer and/or in files or folders that are password protected. Identifying information from interviewees and focus group participants should be kept separate from the interviews themselves in order to keep the information confidential. See **Chapter 5** for more details on these practices.

3.7
Developing action plans

The information from the analysis of the data collected from the farming communities, key informants and the secondary sources are used to identify actions necessary for the improvement of the seed security of smallholder farmers. A causal analysis is done to determine the reasons for the problems, challenges and practices related to seed production, saving, exchange and marketing. It is important to note cases where problems are only affecting certain community members because of gender, ethnicity, income, social background, religion, (dis)ability etc. and to consider solutions to these specific challenges. An action plan should also be prepared in order to ensure a timely and systematic implementation of these actions aimed at increasing farmers' seed security. See **Chapter 6** for more details.

3.8
Sharing results and recommendations

It is important to share the results of SSAAP with farming communities and seed sector actors to help validate and appreciate the findings and raise awareness about the prevailing seed security issues and challenges. Results and recommendations should be shared firstly with the same farming communities where seed security assessments were organized; and second, with seed sector actors at regional and/or national levels depending on the availability of resources to organize such workshops. In Cuba, the national workshop organized to share the SSAAP results helped secure support from government authorities and municipalities for the implementation of the proposed seed security action plans. See Chapter 7 for more details.

Please visit **weseedchange.org/ssaap** for more resources on completing a SSAAP. Or contact us with your questions: **info@weseedchange.org.**

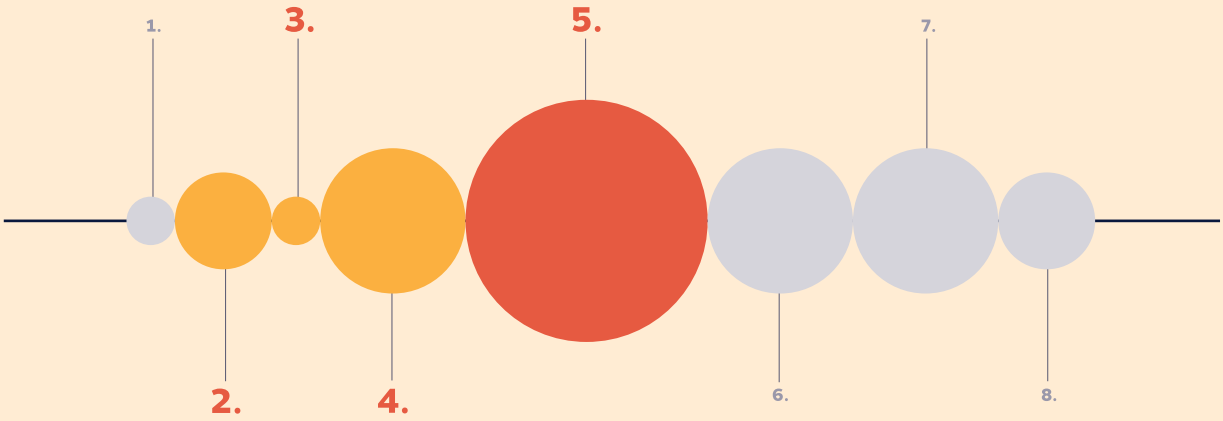
Chapter 4
Conducting the assessment

Alma Iris Domínguez and other CIAL farmers farm taro in Campanario 2, Honduras.

THIS CHAPTER WILL GUIDE THE READER THROUGH STEPS 2-5 IN THE TIMELINE ON PAGE 37.

It begins with a brief overview of how to select the number of communities and farmers to sample. This chapter also contains a list of all the information that you may wish to collect as part of your fieldwork as organized by the components of the SSAAP: Agricultural Systems Analysis, Seed Systems Analysis, and Seed Security Analysis. We have made notes throughout to help you determine how best to collect this data, for example through secondary sources, key informant interviews, household surveys, or focus group discussions.

It is important to remember that this guide is flexible and questions can be modified or removed if deemed less important and would not help them meet the objectives of the SSAAP. In order to do this, an editable version of this chapter can be downloaded here which will allow you to customize interview questions, household survey questionnaires, and questions for facilitating focus group discussion to suit your needs and context.



See full timeline on page 37.

4.1
Selecting farming communities and farmers

Sampling of farming communities for FGD

Determining sample size

Sampling is only necessary when the area selected for the SSAAP consists of more farming communities than can be directly evaluated. In such a situation, sampling of a small number of representative farming communities is done to reduce effort, time, and cost. The number of farming communities to be sampled will depend on the variation among these communities in terms of parameters such as agro-climatic conditions, farming systems and practices, socio-cultural contexts, access to services and infrastructures (agricultural services, markets, roads, irrigation, etc.), and development interventions. If variation is high, the number of communities to be included in the sample should also be high in order to adequately represent these variations. However, a larger sample size also requires greater investment of time, and higher costs, and management capacity. The use of stratified sampling method forms cluster of similar communities and helps reduce the sample size. Based on previous experiences with the SSAAP, it is suggested to select four to six communities for the FGD if variation is moderate. If variation is high, additional communities could be added.

Discussion of sampling methods during SSAAP training workshop in Somaliland.

Sampling procedures for selecting farming communities

A multi-stage stratified sampling is suggested to select the required number of farming communities for the community workshop. This involves stage by stage sampling starting from higher to lower level political divisions of the area selected for the SSAAP. For example, the area selected for the SSAAP may consist of: different regions; regions consisting of different zones; zones consisting of different districts or municipalities; and each district or municipality consisting of several communities. Stratified sampling involves stratifying or clustering similar divisions, usually based on political boundaries (for example: regions, zones, districts or municipalities and communities), into strata or clusters with similar characteristic features or parameters. It is also possible to conduct sampling by creating boundaries based on geographical features like watersheds, protected areas, or mountain ranges. Both multi-stage and stratified sampling helps reduce the number of sample communities yet captures the variations among these communities.

The following steps are suggested as sampling procedures for selecting program communities:

1. Identify the political divisions of the area included in the SSAAP, starting from the higher levels to the community level, and organize these divisions and communities as outlined in the **Table 1** example. Columns in **Table 1** represent stages; for example, 'region' is the first stage, 'zone' is the second stage, and so on. Each row represents a cluster or potential stratum. Start sampling from stage which consists of more than one political division. For example, if communities in the areas lie in more than two 'regions', then the first sampling stage would be 'region'. If all communities lie within one 'region' but in more than two 'zone', then the first sampling stage would be 'zone' and so on.
2. Describe characteristic features of the political divisions identified for each stage, using parameter such as: agro-climatic conditions, farming systems and practices, socio-cultural contexts (including ethnicity, religion, wealth, refugee status, etc.), access to services and infrastructures (agricultural services, market, road, irrigation, etc.), and level of development interventions. The political divisions which have distinctly different characteristic feature will form different strata (**see Table 1**).
3. Use multi-stage sampling method to sample political divisions for each stage until the one before 'community', which is 'district' or 'municipality' in the **Table 1** example.
4. Once the districts or municipalities are sampled, list all the communities in each stratum and describe the distinctive characteristic features as outlined in **Table 2**.
5. Select at least one community for each stratum either randomly or purposely. Purposeful selection is suggested since it allows for better representation of the farming communities and keeps the sample size at minimum. Record details of the sampled communities including assigned strata number, description of the strata, and number of households in each sampled community as outlined in **Table 3**.
6. If using computer data analysis, prepare all the tables and enter data in the computer for easy sorting and calculation.

TABLE 1

Plan for multi-stage sampling of sampling units higher than community level (with example from Ethiopia)

FIRST STAGE: REGION			SECOND STAGE: ZONE			THIRD STAGE: WOREDA (District)		
Regions	Characteristic features	Sampling decision*	Zone	Characteristic features	Sampling decision*	District	Characteristic features	Sampling decision*
Amhara		Yes/No	*South Wollo*		Yes/No	*Kalu*		Yes/No
						Woreilu		Yes/No
Oromia		Yes/No	*Arsi*		Yes/No	*Eteya*		Yes/No
						Bekoji		Yes/No

* If the characteristic features of different political divisions in the first to third stages are distinctly different, all divisions are selected. If two or more political divisions in each stage have similar characteristic features, then only one of them is selected purposely.

TABLE 2

Stratified sampling of farming communities using parameters differentiating the communities into different strata

DISTRICT NAME	COMMUNITY NAME	N° OF HHS	PARAMETERS OR CHARACTERISTIC FEATURES USED FOR STRATIFICATION*			STRATUM ASSIGNED‡	SAMPLING DECISION (Yes/No)
			Farming activities	Market access	Socio-Cultural		

* Identify the most striking characteristic features that distinctly differentiate communities from each other. For example: farming activities (crop-based or livestock-based; rice-based, maize-based or sorghum-based etc.); socio-cultural (ethnicity, wealth status etc.) and market access (high and low).

‡ Use a combination of these characteristics to identify two of more strata or clusters and assign a particular stratum for each community in the respective column.

Example for different strata could be:
Stratum 1: Maize-based cropping and high market access
Stratum 2: Maize-based cropping and low market access
Stratum 3: Sorghum-based cropping and high market access
Stratum 4: Sorghum-based cropping and low market access

TABLE 3

Details of the sample communities by strata

SAMPLING STRATA	DESCRIPTION OF THE STRATA	DETAILS OF SAMPLED COMMUNITIES	
		Name	# of HHs
Stratum 1			
Stratum 2			
Stratum 3			
Stratum 4			

Sampling of households for household survey

As mentioned earlier, the SSAAP use FGD or household survey or both. If the SSAAP involves both, the household survey should be conducted in the same farming communities sampled for the FGD. If the SSAAP is based on household survey alone, the communities should be sampled using the same sampling method described in the preceding section.

The sample size (number of the households) for the household survey depends on the variability between the households, particularly related to the parameters for which data is being collected – the higher the variation, the larger the recommended sample size. Depending on the time and resources available for the SSAAP, different sampling methods could be used to sample households for the household survey.

If a smaller sample size is being used in order to reduce time and costs, then a 'rule of thumb' is used to sample 30 households as minimum from each sample farming community. Though the use of this 'rule of thumb' for sampling is not ideal, it is commonly recommended for a smaller sample size[123], especially when information about the population necessary to determine sample size through standard sampling technique is not readily available.

1 https://stats.stackexchange.com/questions/541/what-references-should-be-cited-to-support-using-30-as-a-large-enough-sample-size
2 https://www.isixsigma.com/topic/sample-size-why-30/
3 http://http://www.statisticalengineering.com/central_limit_theorem.htm

Sampling procedures for selecting households

The following steps are suggested as sampling procedures to select sample households using 'rule of thumb' method:

1. Prepare a list of all households in each of the selected communities. If simple random sampling is used, draw names at random of 30 or more households. It is best to draw more than 30 names since not all households will be available or willing to participate in the survey.
2. If a stratified random sampling is used, first stratify all the households in the selected community using the most prominent criterion which provides good representation of the variation in the population and is of interest for the analysis. For example, if wealth of farmers is used as a criterion for stratification, then there could be three strata representing three wealth categories. Similarly, it can also use gender or ethnicity criteria based on the interest of the assessment. Once the strata are defined, prepare a list of households to be included in each category and draw the proportionate sample randomly from the list. Table 4 demonstrates how to select the sample according to wealth. It includes the name and description of the strata (by wealth), the total number households in each stratum, the number of households in that stratum, and the number of households to be sampled.

TABLE 4

Determining proportionate household sample size for each stratum or cluster for a sampled program community (assuming three strata)

STRATA OR CLUSTERS	DESCRIPTION OF STRATA	# OF HHS (Population)	PROPORTIONATE SAMPLE SIZE*
Name of sample community:			
Stratum 1	*High wealth households*	45	45/165*30 = 8
Stratum 2	*Medium wealth households*	65	65/165*30 = 12
Stratum 3	*Low wealth households*	55	55/165*30 = 10
Total		165	30

* Proportionate sample size = Stratum population/ Total population*Total sample from the community

Based on the objective and the availability of time and resources, the SSAAP team can also use other standard sampling techniques (see Parel et al., 1973). It is important for the SSAAP team to consult with a statistician or other sampling expert to ensure that the sampling is done correctly. Please contact us for more information on sampling methods: info@weseedchange.org.

4.2
Agricultural systems analysis

The objective of the Agricultural Systems Analysis is to understand the agricultural production systems practiced by farmers in a particular community, i.e. the ways in which farmers manage local resources and knowledge to produce food and other agricultural products necessary to secure their livelihoods.

Elements of agricultural system analysis

1. **Topography and agro-climatic conditions**
    - 1.1. Topography, altitude, and other features of agricultural land
    - 1.2. Climatic conditions (rainfall, temperature, wind, etc.)
    - 1.3. History of climate-induced disasters
2. **Demographic features of the farming population**
    - 2.1. Population composition by sex, age and average family size
    - 2.2. Number of households and proportion of women-headed households
    - 2.3. Languages spoken and ethnic groups and tribal relationships
3. **Access to infrastructures and services**
    - 3.1. Access to irrigation
    - 3.2. Access to road and transport facilities
    - 3.3. Access to markets for buying agri-inputs and selling agri-products
    - 3.4. Access to agro-industrial enterprises
4. **Access to production resources**
    - 4.1. Land tenure system and use of cultivated land
    - 4.2. Labour use systems, and sources and availability of farm labour
5. **Agricultural production systems**
    - 5.1. Types and key features of agricultural production systems
    - 5.2. Participation of women in different agricultural production systems

6. Access to agricultural research and agricultural technologies

- 6.1. Types and function of government research centres serving the communities if any
- 6.2. Participation of farmers in the research process
- 6.3. Access to new technologies

7. Access to agricultural extension and development services

- 7.1. Mechanisms for the provision of agri-extension and development services by the government organizations GOs and non-government organizations (NGOs)
- 7.2. Kinds of agri-extension and development services available, its reach/ coverage and effectiveness, including services related to seeds

8. Farmers' organizations (FOs)

- 8.1. Types and number of FOs (groups, associations, cooperatives and others), and number of households covered by these FOs

9. Major problems associated to agricultural production

- 9.1. Major problems associated with agricultural production specifying their importance

For an editable version of these questions go to weseedchange.org/ssaap or contact us with your questions at info@weseedchange.org.

Checklist, data collection formats and sources of data

The data for the Agricultural System Analysis should be collected to represent all the communities included in the assessment. If data representing all the communities is not available, then data specific to sample communities should be collected. Follow the guidelines below for the selection of sources and methods of data collection:

- Use **secondary sources** of data and information as much as possible and available
- Next, use **Key Informant Survey (KIS)** to fill gaps from the secondary sources
- Use **Focus Group Discussion (FGD)** ONLY when information from the secondary sources is not available and **KIS** is difficult to organize or when there is the need to validate data collected from other sources
- Include questions that are specific to individual households into the household survey questionnaire, making special note of women-headed households and differences between female and male household members in the households, when possible
- Check for questions in the checklist that are marked for **KIS**, **FGD** and Household Survey.

Checklist of questions and suggested data collection formats:

1. Topography and agro-climatic conditions

1.1. Topography, altitude and other features of agricultural land area in the communities of the stratum.

If data from secondary sources is not available for the stratum, use FGDs to collect data for the sample communities.

a. Describe land features, for example flat or hilly or combination, presence of water bodies and rivers, and the maximum and minimum altitudes of agricultural lands.

b. Collect information about the agroecological zones and key features of these zones as presented in **Table 1**. Use standard agroecological zones as defined by the national authority for the country. If standard agroecological zones is not defined or not known, use zones as defined by the community.

TABLE 1

Agroecological zones of agricultural land and their key features

AGROECOLOGICAL ZONES	% HHS*	% AREA*	MAJOR AGRICULTURAL ACTIVITIES

* Use matrix scoring method described in **Annex 2** to find estimated % of households (HHs) and area when FGD is used.

SSAAP matrix ranking using seeds and stones in Ethiopia

1.2. Information on climatic conditions (rainfall, temperature, wind, etc.).

Collect information on the monthly average temperature (maximum and minimum), rainfall (maximum and minimum), hail incidence, and wind and storm pattern for last five years as presented in **Table 2**.

TABLE 2

Information on climate parameters for the communities for the last five years

DESCRIPTION	MONTHS											
	1	2	3	4	5	6	7	8	9	10	11	12
Rainfall Average (mm)												
Minimum (mm)												
Maximum (mm)												
Temperature Average (°C)												
Minimum (°C)												
Maximum (°C)												
Hail incidence (#)												
Wind damage (#)												
Storm incidence (#)												

Note: If data/information on hail incidence, wind patterns (causing damage to crops) and storm incidence is not available from the Meteorology Department, use experience of key informants to mark months of incidence of these events and score for magnitude.

1.3. History of climate-induced disasters

List all weather-related disasters (storms, flooding, drought, etc.) that have occurred in the last 10 years, and describe magnitude of damage to the farming communities and agricultural production **(Table 3)**.

If data from secondary sources is not available for the stratum, use FGD to collect data for the sample communities.

TABLE 3

Historical timeline of major climate-induced disasters in the last 10 years and their impacts in the communities

YEAR OF DISASTER	NAME/NATURE OF DISASTER*	NATURE OF DAMAGE TO COMMUNITIES AND AGRICULTURAL PRODUCTION

* Mention name of the disaster (if any) and nature of disaster, for example storm, flood, drought, etc., and also severity of impact on agricultural production. Use local terms used to describe these disaster events.

2. Demographic features of the farming population in the communities of the stratum.

Use census data. If census data specific to the communities of the stratum is not available, include these questions in the Household Survey.

2.1. Provide population composition by sex, age, and average family size (Table 4)

TABLE 4

Information on population composition in the communities

AGE CATEGORIES (years)*	Nº OF HOUSEHOLD MEMBERS		TOTAL
	Male	Female	
Young member (less than X years)			
Youth members (X-Y years)			
Adult members (Y-Z years)			
Total			

* Include age limits (range) for different age categories based on definition officially adopted in the country or as appropriate for the program.

2.2. Find total number of households and proportion of women-headed households

2.3. List all spoken languages and ethnic groups in the stratum and describe inter-ethnic relations (peaceful relationships, inter-marriages, conflict, etc.)

3. Access to infrastructure and services

3.1. Access to irrigation

a. Provide information on source, coverage and performance of irrigation available to farmers of the communities of the stratum **(Table 5)**.

If data from secondary sources is not available for the stratum, use FGDs to collect data for the sample communities.

TABLE 5

Source of irrigation, and their coverage and supply performance

SOURCE OF IRRIGATION*	% HHS‡	% AREA‡	SUPPLY PERFORMANCE†

* List various sources of irrigation used in the community, such as canal, pipe, well, deep boring etc.

‡ Use matrix scoring method to find estimated proportion of households (HHs) and area for each source of irrigation.

† Specify supply performance as: 1. Good; 2. Medium; 3. Poor.

b. Provide information on the differences between women's and men's access to irrigation, including for women-headed households.

3.2. Road access and transport facilities

a. Are all communities of the stratum connected to road? What are road conditions? Are these roads open in all seasons?

b. Are there public and private transportation for the movement of agricultural inputs and produce? How reliable and efficient are these sources of transportation?

3.3. Access to markets for buying agri-inputs and selling agri-products

Provide information on major market centers serving the communities **(Table 6)**.

TABLE 6

Major market centres, and their coverage and performance

Name of major market centres for the sample communities in the stratum	Which communities access these market centres?	Agri-inputs commonly *purchased* here by farmers*	Agri-products commonly *sold* here by farmers*

* Where relevant, distinguish for inclusivity, e.g. for women and men of different ages, incomes, ethnicities, religions, etc. This may be especially important in regions with diverse ethnicities, religions, places of origin etc.

4. Access to production resources

4.1. Land tenure systems and use of cultivated land

a. Provide information about land tenure (ownership and use) systems in the communities. For example, are agricultural lands privately owned by farmers or do they have user rights to communal land? If it is a mixed system, what proportion is under private ownership, leased, or communal?

b. Do women have ownership or user right to land? If yes, what proportion of women in the program communities have such rights? Describe kinds or types of such land, including types of crops grown on these lands. Distinguish women-headed households from women in men headed households.

c. Information on household land ownership.

Find land holding range (minimum and maximum) and average holding per households from secondary sources or FGD. If a more detailed information is required, get this information from Household Survey by including relevant questions.

4.2. Labour use systems, and sources and availability of farm labour in the farming communities.

If data from secondary sources is not available for the sample stratum, use FGDs to collect data for the sample communities.

a. What are the labour use systems and sources of farm labour **(Table 7)**.

TABLE 7

Labour use systems, and sources of labour and their availability

TYPES/SOURCES OF LABOUR	% CONTRIBUTION*	AVAILABILITY‡
Family labour		
Hired labour		
Exchanged labour		
Others (specify)...		

* Use matrix scoring method to find % contribution of different types/ source of labour.

‡ Specify availability as: 1. High; 2. Medium. 3. Low.

b. When are the labour scarcity periods and what are the coping strategies (Table 8)?

TABLE 8

Labour scarcity periods, farming activities affected and coping mechanisms used

LABOUR SCARCITY MONTHS	FARMING ACTIVITIES AFFECTED	COPING MECHANISMS USED

5. Agricultural production systems

5.1. Type and key features of agricultural production systems

Provide information about types, proportion of household engaged in and key features of different agricultural production systems in the community (Table 9). The agricultural production systems may be mainly agricultural or mainly pastoral in some communities. In other these may be mainly subsistence or mainly commercial or combinations of both.

TABLE 9

Information about key agricultural production systems in the community

KEY PRODUCTION SYSTEMS	% HHS	KEY FEATURES OF THE PRODUCTION SYSTEM*

* Describe key components, elements or activities of the production system.

5.2. Engagement of women in different agricultural production systems

Describe if engagement of women is high or low in different agricultural production systems. If their engagement varies, describe the reasons and list key components or activities they are most engaged in.

6. Access to agricultural research and technologies

6.1. Types and function of government research centres serving the communities, if any

a. Are there government research centres/stations or research activities in the communities? If yes, what kind of research station or research activities exist?

b. Are there research activities related to seeds being implemented in the communities? If yes, list these activities.

6.2. Participation of farmers in the research process in the communities

a. Are there mechanisms for farmers or their groups/organizations to participate in the research activities? If yes, describe.

b. Are there mechanisms for assessing farmers' research needs, including those related to seeds, and including them in the research process? If yes, describe.

c. Are women farmers involved in these activities?

6.3. Access to new seed technologies

a. What are the mechanisms for farmers to access seed related technologies (seeds and seed production methods)?

b. Are government research centers able to meet the technological needs of the farmers, particularly related to seed production technologies?

c. Are seed related technologies available for all seeds used by communities? Does it include subsistence and commercial seeds and seeds grown by women?

7. Access to agricultural extension and development services

7.1. Mechanisms for delivery of agricultural extension and development services by government and non-government organizations in the communities

a. What are the government extension system mechanisms to deliver extension and development services to the farmers in the communities?

b. Are NGOs providing agricultural extension and development services in the communities? If yes, how are such services being delivered?

7.2. Types of agricultural extension and development services available, including services related to seeds, and the availability and effectiveness in the communities

a. What kinds of agricultural extension and development services, for example agricultural inputs, technical advices, training, exchange visits, etc., are provided to famers?

b. Which kinds of farmers received these services most? Do women farmers receive these services equally?

8. Farmers' organizations

8.1. Types and number of farmers' organizations (FOs)

a. What are the types, number and coverage of farmers' organizations (groups, associations, cooperatives and others) operating in the communities **(Table 10)**?

If data from secondary sources is not available for the stratum, use FGDs to collect data for the sample communities.

TABLE 10

Types of farmers' organizations operating in the communities of the stratum

NAME OF FARMERS' ORGANIZATION		NUMBER OF MEMBERS		N° OF HHS ASSOCIATED
		Men	Women	
Farmers' groups				
Farmers' cooperatives				
Farmers' organizations /associations				
Others (specify)				

b. What is the relationship between these organizations (co-operation, tension, no relationship, etc.)?

9. Major problems associated to agricultural production

a. List major problems constraining agricultural production experienced by farmers in the communities and assign relative importance **(Table 11).**

Use FGD to collect data from the sample communities.

TABLE 11

Major problems related to agricultural production in the communities of the stratum

LIST OF MAJOR PROBLEMS	IMPORTANCE*

* Use matrix scoring method to find out importance of the listed problems.

b. Discuss whether these problems vary due to gender, age, income, ethnicity, etc., if relevant.

4.3
Seed system analysis

The objective of the Seed Systems Analysis is to understand aspects of seed systems, both farmers' and formal seed systems, including how seeds are conserved, developed, produced, managed (processed and stored), saved, exchanged and marketed for the production of food in the farming communities, and the role of socio-political and climatic conditions in shaping these systems.

Elements of seed system analysis

1. Seed diversity and conservation

- 1.1. Types of cultivated crops
- 1.2. Key crops and their cultivation status
- 1.3. Cropping calendar of key crops
- 1.4. Diversity status of key crops

2. Features of formal seed system

- 2.1. Types of seeds and crop varieties maintained by formal seed system
- 2.2. Production and distribution of seeds in the formal seed system
- 2.3. Export and import of seeds in the formal seed system

3. Features of the farmers' (or informal) seed system

- 3.1. Farmers' sources of 'source seed' used for seed production of key food crops
- 3.2. Farmers' seed production and selection methods for key food crops
- 3.3. Farmers' seed processing and storage methods for key food crops
- 3.4. Farmers' practices and community norms for managing the quality of farmers' seeds

4. Policy and legal provision for seed production and distribution

- 4.1. Government policy and legal provisions for promoting or constraining biodiversity-based sustainable seed systems
- 4.2. Institutional mechanisms and support systems for effective implementation of policy and legal provisions

5. Gender roles and decision making in seed related activities

5.1. Gender roles in seed related activities

5.2. Gender decision making practices in seed related activities

6. Major problems associated with system

6.1. List problems associated with the production, storage and distribution/ marketing of seeds of key crops

Examining seed marketing is part of the seed system analysis and various aspects of seed marketing have been included in the FGD checklists in this and other components of the SSAAP as well as in the household survey questionnaire. A detailed study of seed marketing systems will require more time and resources and is therefore not included in the Guide. If desired, a separate study should be designed and conducted to examine market value chain for seeds of key crops.

For an editable version of these questions go to weseedchange.org/ssaap or contact us with your questions at info@weseedchange.org.

Checklist, data collection formats and sources of data

The checklist and questions for the collection of data for the Seed System Analysis component of the SSAAP are outlined in this section. Use FGDs to collect data specific to the sample communities. If other sources of data are applicable, then these are specified under each checklist or question.

Checklist of questions and suggested data collection formats:

1. Seed diversity and conservation

1.1. Types of crops cultivated in the communities

List different types of cultivated crops – cereals, root/tubers, legumes, vegetables, fruits, oil and spices cultivated in the sample communities **(Table 1).**

TABLE 1

Types of crops grown by the men and women farmers in the sample communities

CROP TYPES	NAMES OF ALL CROPS/ FRUIT TREES GROWN IN THE LAST TWO YEARS	NAME OF NEW CROPS/ FRUIT TREES INTRODUCED IN LAST FIVE YEARS
Cereal crops		
Root/tuber crops		
Legumes crops		
Vegetable crops		
Fruit crops		
Oil crops		
Spice crops		

1.2. Key crops and their cultivation status

a. List key crops as identified by the farmers of the sample communities. Identify these crops in consultation with farmers using criteria, such as area coverage, number of households growing these crops, importance for household food and nutrition, importance for cash income, crops affected by the disaster, etc. Continue to use the same key crops for both the Seed System and Seed Security Analysis.

b. Find information on key crops as outlined in **Table 2**. Note whether key crops are grown with the involvement of women, men, or both and determine whether differences exist for women-headed households.

Include this question in the Household Survey questionnaire if quantitative information is desired.

TABLE 2

Information on key crops cultivated last year in the sample communities

KEY CROPS	% HHS GROWING THE CROP*	WHO IS INVOLVED? M/W/Both	% LAND AREA UNDER THE CROP*	CROP YIELD (Kg per hectare)‡	NAME AND TYPE OF VARIETIES §

* Use matrix scoring method to find % of households (HHs) and % land area for each crop.

‡ Specify local unit used to measure production amount and land area, and later convert to kilogram/hectare

§ Put 'L' for local and 'I' for improved variety in parentheses after the name of the variety

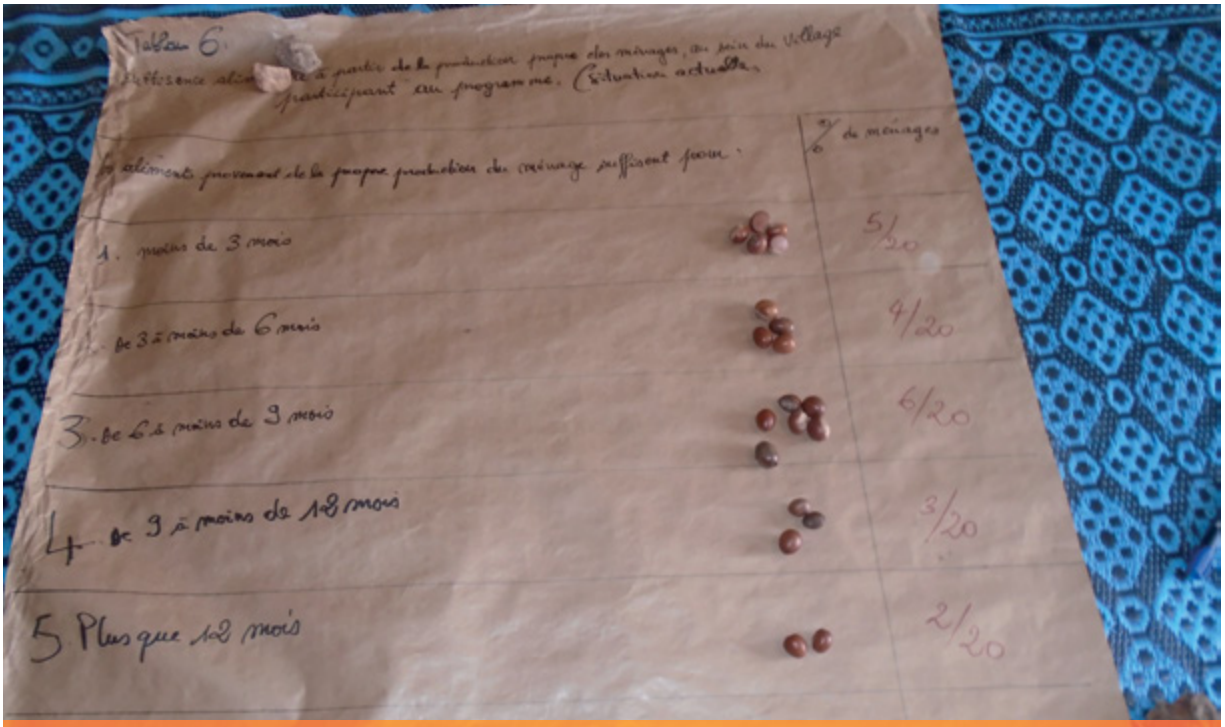
c. Find information on the use of improved or commercial seeds of key crops in the community **(Table 3).**

TABLE 3

Information on the use of improved or commercial seeds of the key crops

KEY CROPS	% OF IMPROVED OR COMMERCIAL SEEDS OF THE TOTAL SEEDS USED*	% HHS USING IMPROVED OR COMMERCIAL SEEDS*

* Use matrix scoring method to find % of improved or commercial seeds (out of total seed used) and % of households (HHs) using these seeds



SSAAP matrix scoring method example from Burkina Faso

1.3. Cropping calendar of key crops

Prepare cropping calendar of key crop cultivated in the community **(Table 4).**

The cropping calendar can also be prepared using a diagram instead of a Table as convenient.

TABLE 4

Cropping calendar of key crops cultivated in the community

KEY CROPS	LAND PREPARATION (Month and week)	SOWING/ PLANTING (Month and week)	HARVESTING (Month and week)

1.4. Diversity status of key crops

a. Determine the cultivation and conservation status of key crops using the four-cell matrix shown in **Diagram 1.**

Refer to the four-cell analysis method described in ***Annex 3****.*

- After the crops are put in different cells, ask farmers the reasons why different crops are placed in each cell and record these reasons separately.
- After the exercise is over, write down the name of the crops in each cell and take a photo. There should be only one diagram of four cell analysis that includes all key staple food crops.

DIAGRAM 1

Four-cell analysis of diversity of key crops

LAND AREA	FARMING HOUSEHOLDS: Many	FARMING HOUSEHOLDS: Few
Large	A (List name of crops)	B (List name of crops)
Small	C (List name of crops)	D (List name of crops)

b. Determine cultivation and conservation status of crop varieties of key crops using the four-cell matrix shown in **Diagram 2**.

- After the crop varieties are put in the different cells, ask farmers the reasons why different crops are placed in each cell.
- After the exercise is over, write down the name of the crop varieties in each cell and take a photo. Repeat the above steps for each of the key crops included in the assessment. There will be as many diagrams of four cell analysis as the number of key crops.

DIAGRAM 2

Four-cell analysis of crop varieties of key crops

		FARMING HOUSEHOLDS: Many	FARMING HOUSEHOLDS: Few
LAND AREA	Large	A (List name of crop varieties)	B (List name of crop varieties)
	Small	C (List name of crop varieties)	D (List name of crop varieties)

SSAAP training workshop participants use four-cell analysis in Somaliland.

c. List crops and varieties lost from the sample communities, if any. What were the reasons for these losses and how did it impact agricultural production as well as men and women farmers?

2. Features of formal seed system

2.1. Types of seeds and crop varieties maintained by the formal seed system.

Find this information from secondary sources (Ministry of Agriculture and relevant institutions).

a. List seed classes (for example, breeder seeds, foundation seeds, certified seeds, etc.) used by the formal seed system in the country.

b. List key crops and varieties formally registered for commercial seed production in the country **(Table 5).**

TABLE 5

Crop varieties registered for commercial seed production in the country

KEY CROPS	N° OF VARIETIES REGISTERED

2.2. Production and distribution of seeds in the formal seed system.

Get this information from secondary sources (Ministry of Agriculture, seed companies and other relevant institutions).

a. Record information on how production of certified/commercial seeds is organized: who is involved (government farms and/or contract farmers); how is seed quality monitored and regulated; how is seed certification done?

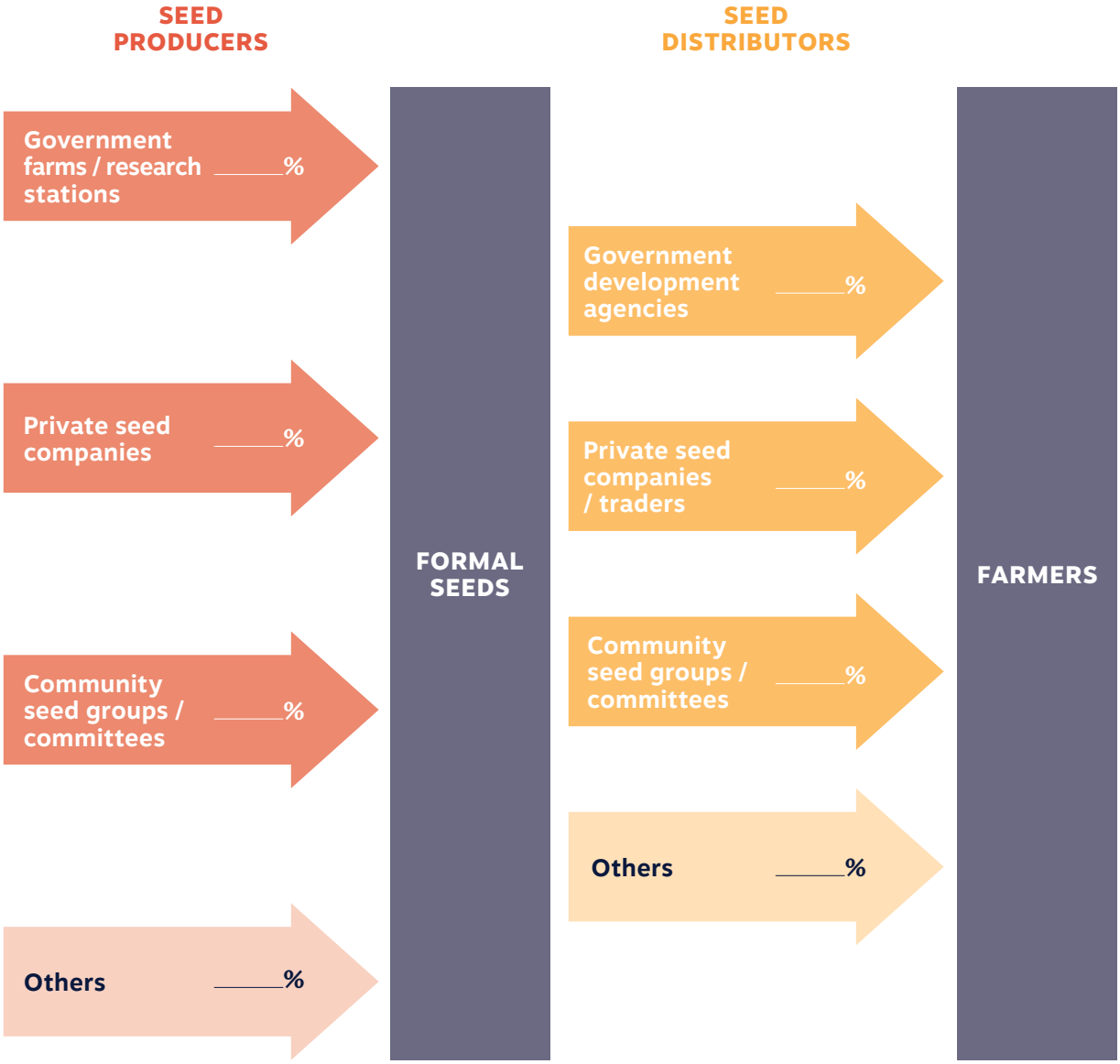
b. Record information on how distribution/marketing of certified/commercial seeds is done from the source of production to distribution and then farmers, and document the names and roles of different actors involved in seed distribution.

c. Draw a diagram showing flow of seed from production to distribution and then farmers **(Diagram 3)**. Find percentage of formal seeds produced by different seed production agencies. Likewise, of the total formal seeds that go to farmers, find the percentage of seeds distributed to farmers by different seed distribution agencies.

DIAGRAM 3

Seed map of formal seed system showing flow of seeds with estimated percentage from production to distribution and then farmers

Note: Add other modes of production and distribution, if any.



2.3. Production, import and export of seeds in the formal seed system

Record information on the production, import, and export of certified or commercial seeds of the key crops in the country over the last three years **(Table 6).**

Find this information from secondary sources (reports/ records from relevant Ministries and Departments).

TABLE 6

Average amount of certified or commercial seeds imported and exported per year

KEY CROPS	SEED PRODUCTION (amount/year)	SEED IMPORT (amount/year)	SEED EXPORT (amount/year)

Note: Specify unit for the seed amounts

3. Features of farmers' (informal) seed system

3.1. Farmers' sources of 'source seed' used for organized production of seeds of key crops

a. Are farmers in the communities involved in organized seed production for their own use and/or for market?

b. If yes, find information on the crops included, and the sources and proportion of 'source seed' used, as presented in **Table 7.** 'Source seed' refers to seeds used specifically for the production of next generation seeds.

Include this question in the Household Survey questionnaire if quantitative information on the amount of seeds from various sources is to be collected.

TABLE 7

Sources of 'source seed' used for seed production of key crops

KEY CROPS	% OF SEED FROM VARIOUS SOURCES*						
	Own seed	Farmers of same community	Farmers of other community	Community seed bank	Market	GO support	NGO support

* Use matrix scoring method to find out estimated percentage of source seeds used from various sources.

3.2. Farmers' seed production and selection methods for key crops

a. Record information about whether farmers in the sample communities produce seed separately or select from the same field or harvest used for grain **(Table 8).**

TABLE 8

Information on farmers' seed production methods used for key crops

METHOD OF SEED PRODUCTION	LIST KEY CROPS INCLUDED IN EACH METHOD	% HHS USING THE METHOD*
Separately produced as seed		
Seed selected from the same field or harvest used for grain		

* Use matrix scoring method to find out estimated percentage of households (HHs).

b. Record information on seed selection practices used by farmers for the production of quality seeds of key crops **(Table 9)**.

TABLE 9

Information on farmers' seed selection practices used for key crops

SEED SELECTION METHODS	LIST KEY CROPS INCLUDED IN EACH METHOD	% HHS USING THE METHOD*	SELECTION CRITERIA AND METHODS USED
Selection in field			
Selection after harvest			
Selection from store just before planting			
Other (specify)			

* Use matrix scoring method to find out estimated percentage of households (HHs).

3.3. Farmers' seed processing and storage methods for key food crops

a. Record information on seed processing and treatment practices used by farmers of the sample communities for key crops **(Table 10).**

TABLE 10

Information on farmers' seed processing and treatment methods used during seed storage of key food cops

SEED PROCESSING/ TREATMENT METHODS	LIST KEY CROPS INCLUDED IN EACH METHOD	% HHS USING THE METHOD*
Sun drying		
Treatment with traditional bio-pesticides		
Treatment with commercial bio-pesticides		
Treatment with chemical pesticides		
Other methods (specify)		

* Use matrix scoring method to find out estimated percentage of households (HHs).

b. Record information on seed storage methods used locally for the seeds of key crops (Table 11). These methods may include use of sacks/bags, metal bins, wooden boxes/ pots, bamboo baskets/bins and so on. Document local name and details of these storage methods.

TABLE 11

Information on farmers' seed storage methods for key crops

SEED STORAGE METHODS	LIST KEY CROPS INCLUDED IN EACH METHOD	% HHS USING THE METHOD*	PERFORMANCE OF STORAGE METHODS‡

* Use matrix scoring method to find out estimated percentages of households (HHs) and land areas.

‡ Good (Seed loss is low); Medium (Seed loss is medium); Poor (Seed loss is high).

c. Record annual loss of seeds and grains (when used as seeds) of key crops from the household seed storage and reasons for such losses **(Table 12).**

TABLE 12

Information on the annual loss of seeds and grains of key crops and reasons of losses

KEY CROPS	% LOSS OF SEEDS/ GRAINS	MAJOR REASONS FOR LOSSES

3.4. Community norms and mechanisms for managing the quality of farmers' seeds

a. Are there any community norms and regulations, and mechanisms traditionally practiced to ensure quality of farmer produced seeds? If yes, describe them.

b. Are these community norms and regulations, and mechanisms effective? If not, what are the challenges?

4. Policy and legal provisions for seed production and distribution

4.1. Government policy and legal provisions for promoting or constraining biodiversity-based sustainable seed systems.

Use secondary sources (Ministry of Agriculture and relevant institutions) and KIS as necessary to find information for this section.

a. What are the relevant seed policies, laws, and regulations in the country?

b. Are farmers or farmers' organizations eligible to produce Foundation and Certified/ Commercial seeds?

c. Can farmers save, re-use, and sell registered or company seeds under the existing policy and laws?

d. Can farmers sell their local seeds to other farmers and seed traders?

e. Are there any provisions for registration of farmers' local seeds?

f. Are there mechanisms that permit farmers to produce seeds of both local and commercial crop varieties under alternative certification processes?

4.2. Institutional mechanisms and support systems for effective implementation of policy and legal provisions.

Use secondary sources (Ministry of Agriculture and relevant institutions) and KIS as necessary to find information for this section.

a. What are the institutional mechanisms in place at different levels for effective implementation of seed policy and laws? For example, which government bodies and authorities are involved in the registration of crop varieties, seed certification, issue seed production and marketing permits, and seed testing labs, etc. at the central and local level.

b. How effective are these institutional mechanisms in the production and distribution and/or marketing of the certified or commercial seeds to farmers?

5. Gender roles and decision making in seed related activities

5.1. Gender roles in seed related activities

Find information on the involvement of women, men and children (boys and girls) in seed related activities for key crops **(Table 13)**. Check the list of activities with participating farmers and rephrase, delete or add more activities as necessary. Describe if gender roles of women men or children are significantly high for certain crops.

TABLE 13

Percentage time spent by women, men and children in seed related activities for key crops

SEED RELATED ACTIVITIES	WOMEN	MEN	GIRLS	BOYS
Selection of seeds for next season				
Processing of seed (cleaning)				
Treatment of seed (drying + other treatments)				
Management of seed storage				
Allocation of seeds for next season				
Seed exchange (gift, loan, barter)				
Seed sale				
Finding and obtaining seed at the time of shortage				
Selection of seed for planting				
Preparing seeds for sowing/ planting				

Note: Use matrix scoring method to indicate who does and how much time is spent on each activity by each group. Pictures of men, women and children can be used to draw attention and interest of participants, if desired.

5.2. Gender decision making practices in seed related activities

Who makes decisions regarding seed related activities for each key crop (Table 14)? Check the list of activities with participating farmers and rephrase, delete or add more activities as necessary. Describe if decision making by women men or children are significantly different for certain crops.

TABLE 14

Decision making between women and men regarding seed related activities for key crops

SEED RELATED ACTIVITIES	WOMEN	MEN
Use of particular seed selection method/practice		
Use of particular methods of seed processing (cleaning)		
Use of particular methods of seed treatments (drying + other treatments)		
Use of particular methods of seed storage		
Selection of seeds of particular crop and variety for next season planting		
Amount of seeds to keep for next season		
Giving seeds to other farmers		
Selling/ exchanging seeds		
Decision on changing continuously used seeds of a crop variety		
Type and quantity of seeds of new variety to be planted		

Note: Use Matrix scoring method to indicate level of decision-making for particular activities. Pictures of men, women and children can be used to draw attention and interest of participants, if desired.

6. Major problems associated with seed system

a. List major problems associated with production, storage, and distribution of the seeds of key crops and assign their relative importance **(Table 15)**.

TABLE 15

Major problems associated with the production, storage, and distribution of seeds of key crops

MAJOR PROBLEMS	IMPORTANCE*

* Use matrix scoring method to indicate importance of the problem.

b. Discuss whether these problems vary due to gender, age, income, ethnicity, etc., if relevant.

4.4
Seed security analysis

The objective of the Seed Security Analysis is to assess farmers' seed security situation, in terms of availability, access, quality, adaptability, choice of seeds, and capacity to produce and save own seeds both during the normal agricultural years as well as in the year of major disruption in the seed supply systems.

Elements of seed security analysis

1. **General seed security situation of the key crops**
   - 1.1. Assess seed security situation of key crops using six parameters of seed security
   - 1.2. Crops and varieties with seeds in high demand but low in supply
2. **Seed availability to farmers**
   - 2.1. Farmers' sources of seed of key crops at the time of 'normal' and 'bad' years
   - 2.2. Causes of seed shortage of key crops and strategies used to cope with shortage both in normal years and in bad years
   - 2.3. Seed supply networks used by farmers to meet their seed needs
3. **Farmers' access to seeds**
   - 3.1. Accessing seeds of key crops from outside sources
   - 3.2. Seed purchase and pricing mechanisms
   - 3.3. Supports provided to facilitate farmers' access to seeds of key crops
4. **Quality of seeds**
   - 4.1. Quality of seed of key crops available to and accessed by farmers
   - 4.2. Farmers' knowledge and practices in identifying quality of seeds of key crops

5. Adaptability of seeds accessed from outside sources

- 5.1. Methods of introducing seeds of new varieties of key crops
- 5.2. Incidences of crop failure due to seeds of new varieties of key crops
- 5.3. Issues/ challenges related to adaptability of seeds of new varieties of key crops

6. Choice of seeds meeting farmers' preferences

- 6.1. Availability of seeds of key crops with farmers' preferred traits
- 6.2. Issues/challenges associated with choice of seeds preferred by farmers

7. Capacity of farmers to produce and save own seeds

- 7.1. Technical capacity of farmers to produce seeds of key crops
- 7.2. Socio-economic capacity of farmers to produce seeds of key crops
- 7.3. Political capacity of farmers to produce seeds of key crops

8. Major problems constraining seed security

- 8.1. List problems associated with seed security of key crops specifying their importance

For an editable version of these questions go to weseedchange.org/ssaap or contact us with your questions at info@weseedchange.org.

Checklist, data collection formats and sources of data

The checklist and the questions for the collection of data/ information for the Seed Security Analysis component of the SSAAP are outlined in this section.

Use FGDs to collect data specific to the sample communities. If other sources of data/ information are applicable, then these are specified under each checklist or question.

Checklist of questions and suggested data collection formats:

1. General seed security situation of key crops in the sample communities

1.1. Assess seed security situation of key crops using the six parameters of seed security

a. Determine the seed security status of key crops based on availability, access and quality, adaptability and choice of seeds, and capacity to produce their own seeds using **Table 1.**

Use the data from **Table 1** to draw seed security wheel **(Diagram 1)**. Either produce a separate wheel for each key crop or a single wheel with different lines representing different key crops. The wheel can also be drawn directly by scoring for the seed security parameters for each key crop and putting the score along the spoke for each parameter as shown in **Diagram 1**.

TABLE 1

Seed security situation of key crops in the sample communities

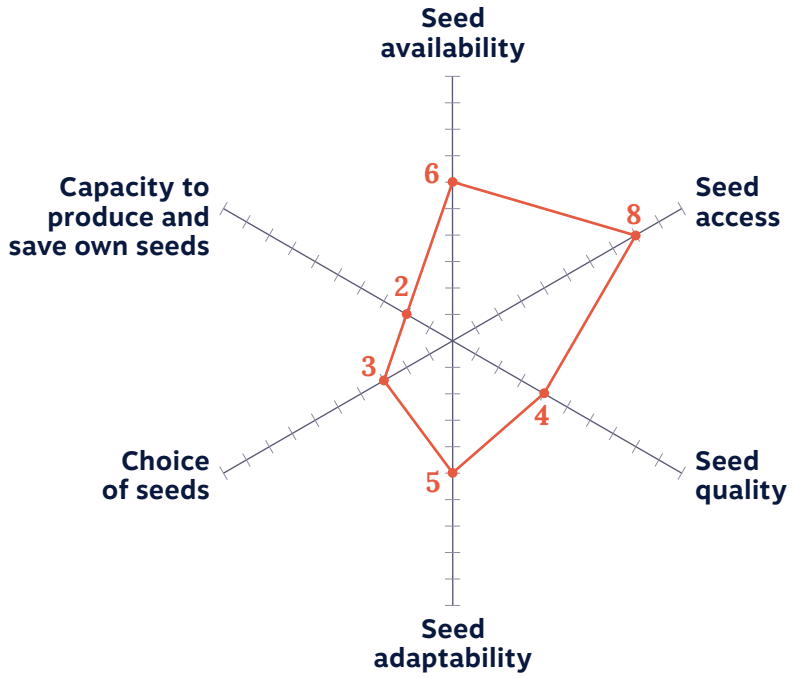
KEY CROPS	SEED SECURITY SITUATION*					
	Seed availability	Seed access	Seed quality	Adaptability of seeds	Choice of seeds	Capacity to produce seeds

* Use matrix scoring method to find out scores for six parameters of seed security. Take one crop at a time and complete scoring for six seed security parameters by moving along the rows.

DIAGRAM 1

Seed security wheel mapping seed security parameters for key crops

(sample)



SSAAP training workshop in Ethiopia

b. Do the seeds used by women face different seed security situations than those grown by men? Do the seeds used by women-headed households face different seed security situations than those used by women from men-headed households?

1.2. Crops and varieties with seeds in high demand but low in supply

List crops and varieties with high seed demand but low in supply both from the community production as well as from the market. Collect reasons for this situation.

2. Seed availability to farmers

2.1. Farmers' sources of seed of key crops at the time of 'normal' and 'bad' years

Record information on sources and proportions of seeds for key crops in 'normal' **(Table 2)** and 'bad' years **(Table 3)**

Include this question in the Household Survey questionnaire if quantitative information on the amount of seeds from various sources is to be collected.

TABLE 2

Sources and proportions of seed used for the production of key crops in 'normal' years

KEY CROPS	% OF SEED FROM VARIOUS SOURCES*						
	Own seed	Farmers of same community	Farmers of other community	Market	Community seed bank	GO support	NGO support

* Use matrix scoring method to find out estimated percentage of seeds from various sources.

TABLE 3

Sources and proportions of seed used for the production of key crops in 'bad' years

KEY CROPS	% OF SEED FROM VARIOUS SOURCES*						
	Own seed	Farmers of same community	Farmers of other community	Market	Community seed bank	GO support	NGO support

* Use matrix scoring method to find out estimated percentage of seeds from various sources.

2.2. Causes of seed shortage of key crops and strategies used to cope with shortages both in normal years and in bad years

a. Document history and causes of seed shortages in communities

b. List strategies used by men and women farmers to address the problem of seed shortages.

Organize separate FGDs with men and women farmers.

2.3. Seed supply networks used by farmers to meet their seed needs

Record seed supply networks consisting of producers, distributing or marketing agencies and users if any, for example government, private, and farmers' seed networks operating in the communities. Describe the network, their coverage (seed types and number of households) and effectiveness in meeting farmers' needs **(Table 4)**.

TABLE 4

Information on seed supply network used by the farmers to meet their seed needs

SEED SUPPLY NETWORKS	DESCRIPTION OF THE NETWORK (what does the network consist of?)	COVERAGE		EFFECTIVE OF THE NETWORKS
		Crops	% HHs*	
Government				
Private				
Farmer				
Other (specify)				

* Use matrix scoring method to find out estimated percentage of households (HHs) using specific seed network.

3. Farmers' access to seeds

3.1. Accessing seeds of key crops from outside sources

a. Record modes of seed access used by farmers for the key crops **(Table 5 and 6)**.

Include this question in the Household Survey questionnaire if quantitative information on the amount of seeds from various sources is to be collected.

TABLE 5

Percentage of seeds for key crops accessed from outside sources

KEY CROPS	% OF SEED ACCESSED FROM VARIOUS SOURCES*					
	Exchange/ barter	Gift	Seed loan	Seed purchase	GO support	NGO support

* Use matrix scoring method to find out estimated percentage of seeds from various sources.

TABLE 6

Percentage of households accessing seeds from outside sources

KEY CROPS	% OF HHS ACCESSING SEEDS FROM VARIOUS SOURCES*					
	Exchange/ barter	Gift	Seed loan	Seed purchase	GO support	NGO support

* Use matrix scoring method to find out estimated percentage of seeds from various sources.

b. What types of seeds of key crops are used when accessed from outside sources (Table 7)? It may be seeds which were produced and sold/ exchanged as seeds or grains used as seeds.

TABLE 7

Types of seeds of key crops used by farmers when accessed from outside sources

KEY CROPS	TYPES OF SEED WHEN ACCESSED FROM OUTSIDE SOURCES		
	Use of seeds produced as seeds (Y/N)	Use of grain as seeds (Y/N)	Both

3.2. Seed purchase and pricing mechanisms

Record household seed purchasing and price difference between seed and grain (Table 8).

TABLE 8

Information on farmers purchasing seeds and price difference between seed and grain

KEY CROPS	% HHS PURCHASING SEEDS*	PRICE DIFFERENCE (Price/kg)‡

* Use matrix scoring method to find out estimated percentage of households (HHs) purchasing seeds.

‡ Record price difference between per kilogram of seed and grain in local currency.

3.3. Supports provided to facilitate farmers' access to seed

a. What kinds of support have been provided by various service providers (e.g., governments, NGOs and private organizations) to increase farmers' access to seeds in the sample communities? **(Table 9)**

TABLE 9

Information on supports provided to increase farmers' access to seeds

LIST OF SUPPORTS PROVIDED TO FARMERS	WHO PROVIDED SUPPORT?*	KEY CROPS COVERED FOR SUCH SUPPORTS	EFFECTIVENESS OF SUCH SUPPORTS‡

* Support providers: list name of the organizations providing support.

‡ Effectiveness: 1. Good; 2. Medium; 3. Poor.

b. Are there any supports specifically provided to women and/or women-headed households? If yes, list and describe these supports.

4. Quality of seeds

4.1. Quality of seeds of key crops available to and accessed by farmers

Record information on quality of seeds (physical purity, germination and vigour, disease/insect infestation, adaptability) of seeds of all key crops obtained from different sources **(Table 10).**

TABLE 10

Specific quality of seeds of all key crops combined accessed from various sources

SOURCES OF SEED OF ALL KEY CROPS COMBINED	SCORES FOR QUALITY OF SEEDS FROM VARIOUS SOURCES*				
	Physical purity	Germination/ vigor	Disease/ insect free	Locally adapted	Overall quality
Farmers' own seeds					
Other farmers' (community) seeds					
Community bank seeds					
Market seeds					
GO seeds					
NGO seeds					

* Use matrix scoring method to indicate the specific quality levels of the seeds – higher score for higher quality.

4.2. Farmers' knowledge and practices of identifying quality of seeds

Describe farmers' knowledge and practices used to identify quality of the seeds of key crops in the community. Who among men and women holds most of this knowledge and practice?

5. Adaptability of seeds accessed from outside sources

5.1. Methods of introducing seeds of new varieties of key crops

Are adaptation tests done before the introduction of seeds of new varieties of key crops? If yes, name the crops and frequency of adaptation tests.

5.2. Incidences of crop failure due to seeds of new varieties of key crops

Were there incidences of crop failure due to the introduction of seeds of new varieties of key crops? If yes, record details of these failures, for example, names of crops and crop varieties, reasons of crop failures, and extent of losses.

5.3. Issues/ challenges related to adaptability of seeds of new varieties of key crops

List issues/ challenges related to adaptability of new seeds of key crops faced by farmers. Distinguish any difference between men and women farmers and women-headed households.

6. Choice of seeds meeting farmers' preferences

6.1. Availability of seeds of key crops with farmers' preferred traits

Find information on preference of men and women farmers to seeds of new varieties of key crops introduced in the communities in the last three years **(Table 11)**

TABLE 11

Information on farmers' preference to seeds of new varieties of key crops introduced in the sample communities in last three years

KEY CROPS	Nº OF NEW VARIETIES INTRODUCED IN THE SAMPLE COMMUNITIES	Nº OF NEW VARIETIES MEETING PREFERENCES OF	
		Men farmers	Women farmers

6.2. Issues/ challenges associated with choice of seeds preferred by farmers

List issues/ challenges related to availability of choices of seeds of key crops that meet farmers' preferences. Distinguish any difference between men and women farmers and women-headed households.

7. Capacity of farmers to produce and save own seeds

7.1. Technical capacity of farmers to produce seeds of key crops

a. Have farmers in the community faced problem due to lack of technical knowledge for the production of seed of any new crop variety? If yes, record information about the crop variety and the details or the problem.

b. Have farmers received training on production and management of quality seeds of key crops in the last three years? If yes, find detailed information on such training **(Table 12).**

TABLE 12

Information about farmers training on production and management of seeds of key crops in the last three years

TOPICS OF TRAINING	N° OF HOUSEHOLD RECEIVING TRAINING	N° OF FARMERS RECEIVING TRAINING	
		Men farmers	Women farmers

c. Have farmers participated in exchange visits to learn about production and management (processing and storage) of quality seeds in the last three years? If yes, find detailed information about these exchange visits, including number of households and gender composition of participating farmers.

7.2. Socio-economic capacity of farmers to produce own seeds

a. Are there farmers' organizations (groups, association, cooperative or others) engaged specifically in the production and marketing of seeds in the community? If yes, record details of these organizations, including number and gender composition of members, crops included in seed production, volume of seeds produced and marketed annually, group fund managed, membership fee, etc.

b. Have farmers received training on seed marketing in the last three years? If yes, find detailed information of this training, including topics, number of households and gender composition of the participants etc.

7.3. Political capacity of farmers to produce own seeds

a. Are farmers aware of the policies and laws related to seed production and marketing, and do they understand the implication on their seed production and exchange?

b. How are the existing seed policies and laws facilitating or constraining men and women farmers' seed production and marketing activities?

8. Major problems constraining seed security

a. List major problems associated with seed security reported by farmers in the sample communities and assign their relative importance **(Table 13)**

TABLE 13

Major problems associated with the different components of seed security

LIST OF MAJOR PROBLEMS IN THE FOLLOWING CATEGORIES	IMPORTANCE*

* Use matrix scoring method to indicate importance of the problem.

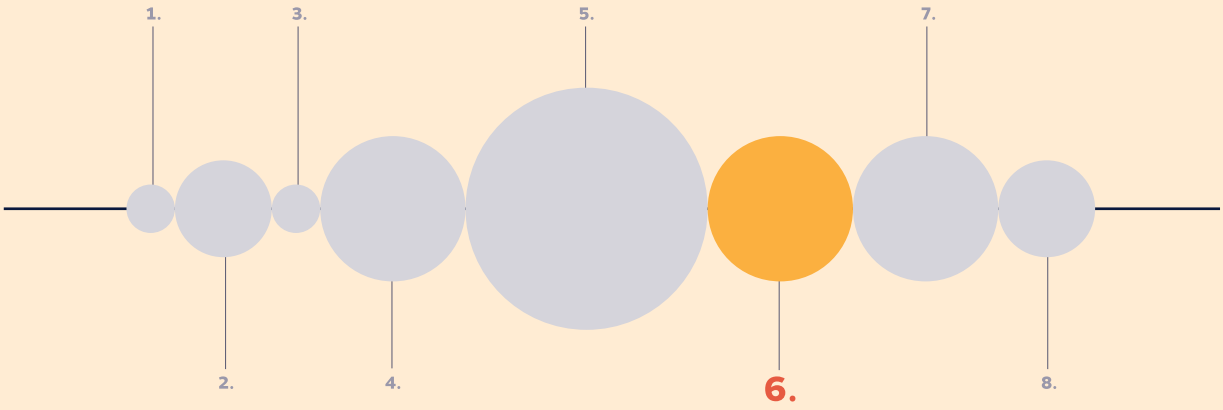
b. Discuss whether these problems vary due to gender, age, income, ethnicity, etc., if relevant.

For an editable version of these questions go to weseedchange.org/ssaap or contact us with your questions at info@weseedchange.org.

Chapter 5
Analysing and interpreting data

Maria Traoré sifts peanuts seeds in her garden in Mali.

Depending on the methods and sources used for the collection of data and information for the SSAAP, the processing and analysis of these will have to be done differently. The methods for processing and analyzing data collected from various sources are described in the following sections. This describes the details of step six of the timeline.



See full timeline on page 37.

5.1 Analyzing and interpreting data

The information from secondary sources is often in a processed or analyzed form and may not be available in the desired form. Unfortunately, it is usually not possible to disaggregate the data to exactly represent the farming communities included in the SSAAP and do further analysis unless raw data is available.

The secondary data and information extracted or obtained as average and percentage figures as well as presented as tables, diagrams, or maps can be used directly in the report without further analysis. If the reporting of the results is done by sample communities, then secondary data and information do not need to be changed. But if a single SSAAP report is prepared for all the sample communities included in the assessment, then the secondary data/ information used for each sample stratum should be combined. If the secondary data is only in the form of averages and percentages, the range of such figures should be used in the combined report.

Information for qualitative and categorical data should be combined and described for each sample stratum. If combined information is presented in a table, the table should be designed to represent all information and list each sample stratum when appropriate.

5.2
Analysis of data from KIS and FGD

The data and information collected from the KIS and FGD are largely qualitative with limited scope for statistical analysis. The data should be collated (collected and combined) and described, as well as presented in tables and diagram with simple statistics, such as ranges, averages and percentages, depending on the nature of the data. The dummy tables and diagrams included in the checklists should be used to present the data/information collected from KIS and FGD sessions. Otherwise, data should be collated as follows:

- Numeric or number data, such as number of group members, number of households, etc., should be entered in the tables as collected.
- The score data should be summed, averaged or converted to percentage figures as required for the analysis.
- The string (non-numeric) data, such as name of crops and varieties, seed storage methods, seed treatment practices, major problems, etc., should be entered in the dummy tables and diagrams as included in the checklists.
- Additional tables and diagrams should be prepared and used as necessary.

An example of how both numeric and string data could be analyzed and presented is shown in **Table 1.**

SSAAP in Timor-Leste

TABLE 1

Information on key crops cultivated last year in the sample communities (an example from SSAAP report of communities of Kiro stratum in Mali, 2016)

KEY CROPS	% HHS*	% AREA	YIELD (Kg/hectare)	NAME AND TYPE OF THE VARIETIES‡
Millet	100 (30/30)	37 (11/30)	500	*Kadogno* (L), *Toroniou* (L), *Bambaragno* (L), *Nochigno, souna* (L)
Sorghum	100 (30/30)	13 (4/30)	350	*Kounchouri* (L), *Boyori* (L), *songolo* (L), CSM63E (L), *Makakeninke* (L), *Simini kala* (L), *Keninke wheat* (L)
Rice	100 (30/30)	17 (5/30)	1500	*Kaka* (L) BKN (I) *Thioroda* (L) *Ayamalo* (L) *Adeni 11* (I)
Bambara nut	100 (30/30)	7 (2/30)	150	*Tekenicouro djema* (L) *Tekenicourognakamine* (L) *Tekenicouroblema* (L)
Cowpea	100 (30/30)	10 (3/30)	400	*Korobalen* (L), *Gromgrom* (I), *Chodjema* (L) *Choblema* (L) *Wolokounkolo* (L)
Peanut	100 (30/30)	7 (2/30)	360	*Malitigue* (I) *Maatige* (L)
Sesame	33 (10/30)	7 (2/30)	270	*Benedjema* (L), *Beneblema* (L)

* The percentage figure is rounded to the nearest whole number and the figures in parentheses are scores (n) out of total 30 (N). In the final table only, percentage figures are retained.

‡ Type of varieties: L = Local; I = Improved

The data and the results are first organized and presented by each sample community. This serves as a record of data and information collected for SSAAP which will be shared back with the community. When a single report is desired and prepared to include the results of all the sample communities, then the data and information from each stratum is combined. Number and score data are summed and the averages and percentages are calculated. String data are simply compiled and presented in tables or described in the report. Processing – addition and calculation of averages and percentages – can be done manually or using software such as Microsoft Excel or Google Spreadsheets. This will also serve as data storage for future reference and use.

5.3
Analysis of data from household survey

When a household survey is used to collect household specific data for the SSAAP, computer software can be used to make data analysis more efficient. The household survey questionnaire consists of both numeric and string variables. The entry and analysis of numeric data in the computer software is easy. On the other hand, the data entry of string variables is cumbersome, time-consuming and prone to mistakes. One way of reducing such problems is to apply recoding to convert the string variables into numeric variables.

We suggest using Microsoft Excel or Google Spreadsheets for the entry and analysis of the household data as they are easily available and widely used. If desired, the data could be transported into SPSS software to help carry out efficient and additional statistical analysis. The following steps are used for computer data entry:

- a data entry sheet or scheme is set up with column for each variable in the household survey questionnaire;
- each household represents a case and is assigned a row;
- a list of codes for each variable with description is prepared and saved in a separate sheet and serves as a legend to help analysis as well as future reference.

The data analysis involves calculating average and percentage figures for numeric variables. Use functions available with both Excel and SPSS software to derive descriptive and other statistics. Depending on the interest and purpose of the assessment, other statistical analysis to compare seed production and management practices, and seed security situations of different categories of farmers or different farming communities could also be performed. For example: assessing differences in seed selection practices between men and women farmers or between different wealth categories of farmers. For string or categorical variables and data, analysis will involve getting frequencies and calculating percentages of responses for these categories. An example of this is presented in **Table 2**.

TABLE 2

Sources of seeds when farmers access from outside sources (N=50)

SOURCES OF ACCESSING SEEDS	RESPONDING HHS	
	No. of HHs	% HHs
Exchange/ barter with other farmers	25	50
Seed gift from other farmers	5	10
Seed loan from other farmers	10	20
Seed loan from community seed bank	15	30
Seed purchase from other farmers	20	40
Seed purchase from market	30	60
GO/NGO support/ seed aid	5	10

The analysis results should be presented in tables and diagrams for easy understanding and interpretation. It is recommended to use the dummy tables included in the household survey questionnaire to present the analyzed data. In order to interpret results, it is important to include an explanation of the existing context and practices, and reflect on how these results affect the seed security of smallholder farmers. For example, see **Annex 3** for possible interpretation of the four-cell analysis. The analysis and interpretation should also help identify possible seed security action plans. See Chapter 6 for more details on seed security action plans.

5.4
Presentation and reporting assessment results

The main purpose of the seed security assessment is to provide a good understanding of the seed security situation in particular farming communities or regions and help develop action plans to improve the seed security of all farmers. The raw data collected from various sources for the SSAAP and the analyzed results should be retained as internal documents and can be used periodically to plan and review seed security programs and activities.

A report incorporating SSAAP data and results can be prepared if time and resources permit. The report is useful and serves as a reference document to share with relevant actors and a wider audience, including research and development professionals and policy makers in government institutions. The report could also serve as an advocacy document, particularly to bring much needed supports to strengthen farmers' seed systems. Reports should also be shared with communities that participated in the FGD and with those interviewed during the KIS and with households who participated in the household survey. This builds ownership in the results and is more likely to result in actionable changes. It can also build relationships between the SSAAP team who conducts the SSAAP and those who participate to ensure that future collaboration can be fruitful. As such, it is important to keep the language of reports accessible to everyone and to consider translating reports into multiple languages, as necessary.

The SSAAP report can be presented in two different formats depending on the availability of time and resources. A single report that combines SSAAP data and results across all farming communities included in the assessment is easier to read and can be more powerful as a tool for advocacy. If the SSAAP covers a small and similar geographical area (for example, one farming community or similar adjoining communities in one region), then it is easier to analyze and present the results in one report. If the assessment includes several farming communities over a wider geographical area, then the collected data and information has to be combined and analyzed first. The combined results are then presented in a single report. An outline of a combined report format is presented in **Annex 4.**

The use of participatory methods and tools generates qualitative data, which will take time to process and combine across strata. Therefore, it is easier and less time-consuming to analyze and present the SSAAP results in one report for each sample stratum. A third option would be to prepare a single SSAAP report which includes the results of the different strata in separate sections. This will reduce time and cost since there would only be one introduction, methodology, and agricultural system analysis sections. An outline of such a report format is presented in **Annex 5**.

Advanced planning and preparation will be helpful when a single combined SSAAP report is planned. It is easier to produce a combined report when the household survey method is employed since the quantitative data are easier to combine and analyze than the qualitative data from the KIS and FGD.

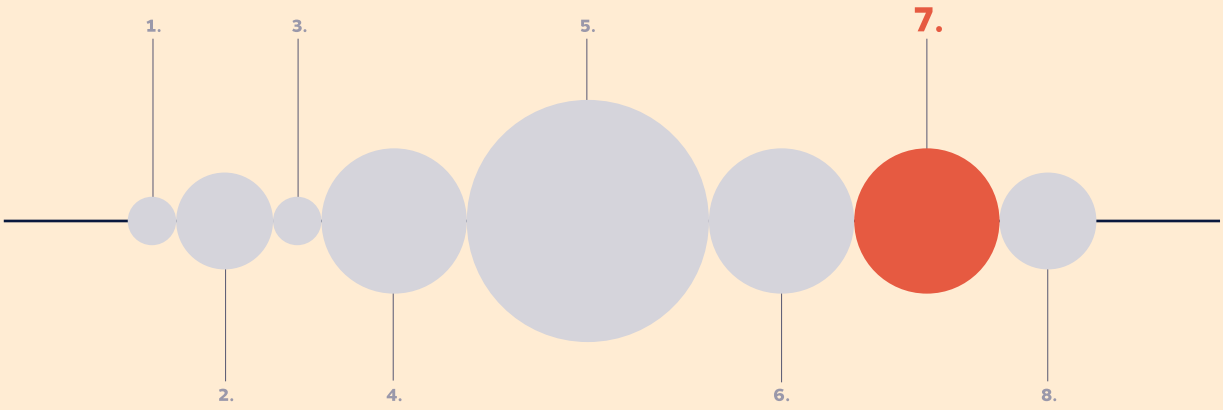
If you have questions or need support in the analysis and interpreting of your SSAAP findings, please contact us at info@weseedchange.org.

Chapter 6
Developing action plans

Facunda Colque and Luis Mamani display a diversity of native potatoes in Bolivia.

The process of identifying actions necessary to improve seed security draws on the results of the three key components of the SSAAP, namely Agricultural System Analysis, Seed System Analysis, and Seed Security Analysis. Together these provide an overview of the context in the community, region and country, and identify the problems that affect seed security. The goal is to understand the underlying causes for each of these problems in order to develop an action plan to bring desired changes. The following steps are suggested for identifying seed security actions and preparing an action plan:

1. List major problems that constrain seed security and find their causes using survey results, including existing context and practices
2. Identify major short- and long-term solutions or actions to the problems and prioritize them (prioritization could be done based on ease of implementation, urgency, lowest cost, etc. depending on the goals determined)
3. Identify actors involved in ensuring that solutions are implemented (for example, elected officials, bureaucrats, researchers, funders, program managers, women and men farmers, etc.)
4. Develop an action plan for the implementation of priority short- and long-term action plans
5. Share the action plans with community members to ensure that they are empowered to enact these plans in their own communities and hold decision-makers accountable **(see Chapter 7)**.



See full timeline on page 37.

6.1
Causal analysis of seed security problems

The first step in developing an action plan is to identify problems that constrain the seed security of smallholder farmers. These are related to and identified in the analyses of Seeds Systems and Seed Security components of SSAAP, and are organized according to the parameters of these components, as shown in the **Table 1 and 2**. Tables 1 and 2 could also be combined to organize all the problems in one table with or without the specific topics. The SSAAP team should decide which format is more appropriate for their context and make modifications as necessary. Also note that the problems of the Seed System component may be causes for problems identified in the Seed Security component.

The next step requires identifying and understanding causes for each of these problems. The specific situations and practices found in the analysis of first three components, i.e. agricultural system, seed system and seed security are used for this purpose. For example: the problem of low seed availability may be due to low production which may result from insufficient irrigation; while the problem of poor quality seed may be due to lack of good quality 'source seeds' and/or lack of extension support (training and technical advice). See **Table 3** for more systematic examples. It is important to identify the causes of problems in order to help find the right seed security actions. The causal analysis should be based on the findings of the SSAAP. The SSAAP team should validate and/or support the analysis with their knowledge and experiences of the farming communities.

One example of an action plan activity includes organizing a seed fair. Here, Fanta Traoré in Mali shows off her seed varieties.

6.2 Identifying seed security actions

Based on the causal analysis of the problems constraining the seed security of smallholder farmers, seed security actions are identified that are appropriate for the farmers of a particular community, region, or country included in the SSAAP. The understanding of the causes that lead to particular problems guides the identification of the most appropriate actions to improve the seed security situation. Both short and long-term seed security actions are identified to address the causes and resolve the problems.

The SSAAP team involved in identifying the seed security actions should draw upon known or existing opportunities, successes and experiences relevant for strengthening seed systems and seed security in the communities. The team should also use the advice of seed experts and professionals from government agricultural extension and development agencies and research institutions, universities and private sector as appropriate and necessary. The presentation of the seed security actions should follow the same format as adopted for the causal analysis of the problems, and can be included in the same Table **(see Tables 1 and 2)**. Some examples of seed security actions identified using the causal analysis are also shown in **Table 3.**

The seed security actions identified through the SSAAP may have different levels of impact and will require different levels of resources, institutional capacity and involvement of seed sector actors. Prioritization of the identified actions is, therefore, necessary for their successful implementation. A prioritization scheme is suggested in **Table 4.** An action which has high impact, low requirement of resources and stakeholder or partnership, and where the institutional capacity to implement it is high, receives higher priority. The SSAAP team can also make necessary changes to the criteria for prioritization based on the local context and requirements.

TABLE 1

Causal analysis of problems from seed system analysis identifying potential actions

	PROBLEMS		CAUSES	POTENTIAL ACTIONS	
				Short-term	Long-term
1	Seed diversity and conservation				
2	Seed production and management (processing and storage)				
3	Seed quality management (ensuring quality during production, and storage)				
4	Seed distribution and marketing				
5	Policy/legal provisions related to seed sector				

TABLE 2

Causal analysis of problems from seed security analysis identifying potential actions

	PROBLEMS		CAUSES	POTENTIAL ACTIONS	
				Short-term	Long-term
1	Availability of seed				
2	Access to seed				
3	Quality of seed				
4	Adaptability of seed				
5	Choice of seed meeting farmers' preferences				
6	Capacity to produce and save own seeds				

TABLE 3

Examples of causal analysis and identifying seed security actions

PROBLEMS	CAUSES	POTENTIAL ACTIONS	
		Short-term	Long-term
Low diversity of maize seeds in the sample communities (specify names of the communities)	*Farmers do not have access to new varieties of maize suitable for their communities.*	*Make available new maize seeds suitable for the area though the program or extension services.*	*Identify and supply seeds of new maize varieties adapted in the area through participatory variety selection (PVS) program.* *Initiate participatory plant breeding (PPB) to develop farmer preferred varieties suitable for the area.*
	Loss of many local crop varieties as farmers started cultivating new varieties	*Collection and testing of local maize varieties in the community*	*Support conservation of local maize varieties through farmers' seed networks and/or community seed banks*
Low genetic quality (purity) of farmer saved maize seeds	*Farmers select maize seeds after harvest and farmers are not aware of the negative impact of this practice on seed quality*	*Organize awareness campaign to inform farmers about the benefits of selecting seeds while crops are in the field.* *Organize training on methods of selecting seeds in the field, including mass selection or stratified mass selection practices.*	*Support community seed producers' groups following good seed selection practices if necessary.*
Low availability (quantity) of maize seed in the communities (specify names of the communities)	*Low production due to irregular rain reducing the harvest; not all farmers were able to save seed.*	*Support distribution of maize seeds through the program or extension service.*	*Support research to test new varieties and initiate PPB to develop new varieties of maize suitable for the area.*
	Seed damage during storage resulting in loss of seeds.	*Assess cause of storage damage and recommend appropriate solutions and technologies.*	*Develop improved and/ or new methods of seed treatment and storage methods appropriate for the farming communities*
	Limited exchange between farmers and no seed on sale in the market.	*Provide external support to access (loan/purchase) seed from the nearby market.*	*Support local seed production and marketing mechanisms (CSB/local seed producing farmers), including infrastructure and policy supports.*
Farmers are not able to commercially market seeds of their local varieties	*Quality of farmers' seeds vary greatly and lack quality assurance*	*Raise awareness and provide training for the production of good quality seeds.*	*Support community seed producers' groups to produce quality assured or certified seeds of local crop varieties under local control mechanisms.*
	Government seed policy and law prohibit commercial production and marketing of seeds of local crop varieties	*Lobby for policy and legal reform to support commercial production and marketing of seed of local crop varieties* *Develop and pilot local system for production and marketing of farmers' seeds*	*Policy and legal support for the inclusion of farmers' local crop varieties in the formal seed system* *Policy and legal support for local system for production and marketing of farmers' seeds*
Majority of farmers have high dependency on market for onion seeds	*Farmers have low capacity to produce own seeds due to lack of technical knowledge.*	*Organize training on onion seed production for farmers in seed production.*	*Identify onion varieties suitable for seed production in selected communities.*
	Lack of good quality 'source seed' for seed production.	*Support farmers to access good quality 'source seed' for seed production.*	*Request or collaborate with the national research program to produce source seeds of locally adapted onion varieties.*

TABLE 4

Process of prioritizing seed security actions

SEED SECURITY ACTIONS	CRITERIA FOR PRIORITIZATION*				PRIORITY‡
	Impact on seed security	Resource needs for implementation	Institutional capacity to implement	Stakeholders/ partnership requirements	

* Assign high (H), medium (M), low (L) to each criterion as relevant for the particular intervention.

‡ Prioritize each intervention as high, medium and low based on the values assigned to all the criteria. The seed security action which has high (H) impact on seed security, and requires low resources for implementation (L), low institutional capacity to implement (L) and low involvement of stakeholders should receive high priority and vice versa.

One outcome of an action plan can involve the re-introduction of underutilized crops. Here, Pedro Olvera, from La Patastera, Tolupan Indigenous community in Yoro Department, Honduras holds two bean varieties that he and his community helped save from loss.

In Guatemala at the First Agrobiodiversity Fair of Todos Santos Cuchumatán farmers display their corn varieties and share seeds and knowledge.

6.3
Developing seed security action plans

Developing an action plan for the implementation of the seed security actions first involves identifying major activities for each action. Again, the SSAAP team involved in developing the action plan should use existing opportunities, successes and experiences for identifying these activities. The team should also draw on available research results and the advice of seed sector experts and professionals as necessary. For example, on-farm conservation strategies including participatory variety selection (PVS), participatory plant breeding (PPB), value addition and marketing, awareness raising and conservation in community seed banks (CSBs), etc. can help build seed security. Meanwhile crops and varieties with weaknesses such as low yield, susceptibility to insect pests and diseases, high storage loss, difficult seed production and saving, poor taste, etc., may be at high risk of loss and require immediate attention and action for conservation. The first and foremost action would be to deposit seeds of these crop varieties in the CSBs and the National Gene Bank, followed by seed production and dissemination through diversity kit distribution and PVS, and enhancing their traits through PPB.

The next step in developing an action plan involves preparing a timeframe for the activities and identifying the lead agency and/or responsible persons for the implementation of these activities. A simple format for developing an action plan is outlined in Table 5. However, depending on the need and context, the SSAAP team can also prepare a more detailed action plan detailing out specific activities for each of the major activities, listing supporting agencies and/or persons, and preparing the budget.

TABLE 5

Plan for the implementation of short- and long-term priority actions for improving the seed security of farmers of selected communities

SEED SECURITY ACTIONS	MAJOR ACTIVITIES	TIMEFRAME	LEAD AGENCY/ RESPONSIBLE PERSON

For support in developing and implementing action plans, please visit weseedchange.org/ssaap for additional resources or contact us at info@weseedchange.org.

Chapter 7
Sharing results and recommend-ations

Marina Serrato and Pelagio Coca stand with their children in Bolivia.

7.1
Sharing with farming communities

Rationale

The SSAAP methodology uses participatory methods and tools for collecting information necessary for the assessment. It relies heavily on farmers' knowledge, perceptions, and experiences to understand and assess seed security situation in a community. It is, therefore, important and ethical to share the SSAAP results and recommendations with the farming communities engaged in the assessment. It also helps to:

- Validate the SSAAP results;
- Collect farmers' feedback on the seed security actions and action plans;
- Raise farmers' awareness about the seed security situation and motivate them to take necessary actions to improve their seed security; and
- Encourage ownership of the process by the farming communities and empower them to act.

Organizing events to share SSAAP results and recommendations with the farming communities will require additional time and resources, but experience shows that it is worth the investment.

Sharing SSAAP results in Cuba 2014.

Process

Depending on the time and resources available and how data analysis has been done, the sharing of SSAAP results and recommendations can be done in two ways:

- Organizing separate sharing workshops for the farming communities of each sample stratum; or
- Organizing a joint sharing workshop for all the farming communities included in the SSAAP.

If the time and resources allow and the data analysis is done and presented by sample strata, then the SSAAP team should use the first method. It provides a good opportunity for intimate interaction with the farmers and better validation of SSAAP results and recommendations. However, if time and resources are limited, and data analysis combines data and information from all the strata, then the second method is more appropriate.

Whichever method is used, the SSAAP team will need to prepare. To begin, ensure that a combination of farmers with different genders, ages, incomes, languages, ethnicities, etc. are invited to represent the characteristics of the communities. This will help validate the SSAAP results and recommendations to better represent all the communities included in the sample stratum and get additional data and information to supplement the analysis. Appropriate logistics should be put in place to ensure that the selected farmers, particularly women, can travel and participate in the sharing workshop without problems. It is recommended that those representing marginal perspectives be given the opportunity to share in smaller groups, since it may be more difficult for them articulate their opinions well in the overall session. The venue for the workshop should also be conveniently located to enable easy participation of the selected farmers. Once these details have been confirmed, invite members of the farming community well in advance and ensure they know the purpose of the meeting. The presentations of SSAAP results and action plans should be prepared in the local language and done in a format that is easy for famers to understand and articulate. The workshop should provide ample time for farmers to ask questions, discuss, and have their feedback recorded. Sessions should also be planned to validate the prioritization of the seed security actions and action plans.

Sharing SSAAP results in Bangladesh.

7.2
Sharing with seed sector stakeholders

Rationale

The national seed system is comprised of both the formal and farmer seed systems. Though farmer seed systems meet the majority of the needs of farmers in the South, it is not well recognized by governments or private agencies involved in the seed sector. Government policies, programs, and investments are directed to the development and support of the formal seed system. Seed policies and laws restrict both public and private agencies to the production and marketing of certified or commercial seeds and ignore the development of seeds of local crop varieties. In fact, the commercial production and marketing of farmers' seeds is illegal in many countries which makes smallholder farmers even more vulnerable to seed insecurity. Despite all the attention and investments, the formal seed system is not very sensitive and responsive to the multiple seed needs of smallholder farmers. Sharing SSAAP results and recommendations with the government and private seed sector actors has been found quite useful and effective in addressing some of these issues.

More specifically, it is useful to:

- Raise awareness about the seed security issues and problems associated with the formal and the farmers' seed systems;
- Show evidences of the importance of farmers' seed systems and draw attention to the areas that need concerted policy and program support;
- Generate commitments for institutional support both at national and local levels to address the seed security issues and needs of smallholder farmers; and
- Recognize and appreciate the need for protecting farmers' rights over their seeds.

Process

The sharing of SSAAP results and recommendations with the seed sector actors can be done in two ways:

- Sharing SSAAP reports; and/or
- Organizing a stakeholder workshop.

Sharing SSAAP reports: This is an easy and cost-effective way of sharing SSAAP results and recommendations and should be used when time and resources are limited. An executive summary consisting of key results and recommendation should be prepared to accompany with the main SSAAP report **(see Annex 7)**. If possible, the SSAAP team and representatives of their organization(s), should visit as many of the elected officials, bureaucrats, researchers, funders, program managers, etc. as possible, brief them on the assessment and findings, and request their support for the implementation of the proposed seed security actions and action plans.

Organizing a stakeholder workshop: This is an effective way to share SSAAP results and recommendations. It creates a lively environment and space for the seed sector actors to interact, provide feedback, and plan and commit to work together to help address the seed security needs of smallholder farmers. Organizing such a workshop will require additional time and resources but is worth the investment. Advance planning can help generate the necessary resources and organize the event successfully. The actors for the workshop should include government seed sector agencies, formal research institutions, private seed companies and traders, relevant non-government organizations (NGOs), universities, and farmers' organizations both at national and regional levels. Farmer representatives, including men, women and youth from the communities included in the SSAAP should also be invited and supported to participate in these workshops.

The SSAAP team should prepare a well-structured and succinct presentation with a summary of key results and recommendations. The final SSAAP report should be ready and available for distribution to ensure wider dissemination of the SSAAP results. If the full report is not ready, an executive summary report consisting of key results and recommendations should be prepared and distributed during the event **(see Annex 7)**.

If possible, a full day workshop should be organized with the first half devoted to the presentation of SSAAP findings and the second half allocated to engaging seed sector actors to develop strategies for the implementation of the seed security action plan. The implementation strategies should focus on identifying roles and responsibilities of different actors, and developing opportunities to collaborate. The SSAAP team should prepare a workshop report to document the workshop proceedings and use it as reference document.

The stakeholder workshop can be organized at regional or national levels or both, depending on the availability of time and resources. A national level stakeholder workshop should be the priority since it has the ability to bring attention to much needed policy and program supports. Meanwhile, the regional stakeholder workshops demand fewer resources, but have limited national level impacts. The regional workshops are useful when seed sector institutions and services are decentralized and regions are more autonomous.

For examples of SSAAP reports visit **weseedchange.org/ssaap.** Or if you have questions about organizing stakeholder workshops or writing reports, please contact **info@weseedchange.org**.

Sitan Coulibaly shows a handful of peanuts seeds in Mali.

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Annexes

Bean seeds in Honduras

Annex 1
Sample household survey questionnaire

The sample household survey questionnaire included here is designed for data collection in combination with FGD (see Chapter 3, Section 3.3). When the household survey is used as a sole method of data collection, then a more comprehensive household survey questionnaire consisting of questions to obtain data outlined in the checklist prepared for the assessment (see Chapter 4) should be prepared.

For an editable version of this annex and for support in designing a comprehensive household questionnaire, please contact info@weseedchange.org.

Interviewer name: _____

Date: _____

Presentation of interviewer:

My name is _____

and I work for _____

- ☐ We are conducting a survey in your community to understand the seed security situation.
- ☐ Your household was randomly selected and that is why I have approached you.
- ☐ The interview takes about 1 hour.
- ☐ If you accept to participate in this survey, your information will remain confidential.
- ☐ Do you accept to participate in this interview?
- ☐ Do you have any questions before we begin?

A. General information

1. Region/ Zone name: _____
2. District/ Municipality name: _____
3. Community name: _____
4. Respondent's name: _____
5. Sex: _____
6. Age (years): _____

B. Household information

7. Please provide information about number of female and male members in your household by their age groups.

AGE CATEGORIES (YEARS)*	Nº OF HOUSEHOLD MEMBERS		TOTAL
	Male	Female	
Young members (_____-_____ years)			
Youth members (_____-_____ years)			
Adult members (_____-_____ years)			
Total			

* Include age limits (range) for different age categories based on definition officially adopted in the country or as appropriate for the program.

8. Is this a woman-headed household?

a. Yes
b. No

9. Does your household have access to agricultural land?

a. Yes
b. No *[Skip to question 11]*

10. If yes, provide following information on land tenure systems of agricultural land of your farm.

	TYPE OF LAND	AREA*
1	Own private land	
2	Usufruct land (use right only)	
3	Leased land	
4	Other land (specify):	
	Total	

* Specify local unit used to measure land and later convert to hectare

11. Do any of the women members of your household have access to their own parcel of land?

a. Yes
b. No *[Skip to question 13]*

12. If yes, is the access to this land through: *[read all options; mark all that apply]*

a. Ownership
b. Rent or lease
c. Access to plot in collective gardens
d. A portion of family land allocated to women
e. Other: _____

13. Does your household have access to irrigation?

a. Yes
b. No

14. Do women in this household have access to irrigation?

a. Yes
b. No

15. Does your household use synthetic (chemical) fertilizers?

a. Yes
b. No

16. Does your household use synthetic (chemical) pesticides?

a. Yes
b. No

17. Please provide information about the following key crops cultivated by your householdlast year.

C. Seed system and seed security analysis

KEY CROP	WHO IS INVOLVED? Men/ Women/ Both	NUMBER OF VARIETIES CULTIVATED	AREA CULTIVATED*	AMOUNT OF SEED USED‡	TOTAL PRODUCTION‡

* Specify local unit used to measure land and later convert to hectare.

‡ Specify local measurement unit and later convert to kilograms.

Note: Use the same key crops identified for the FGD

18. Please provide information about seed selection practices used for key crops by your household and who is involved in this.

KEY CROP	SEED SELECTION METHODS*

* Use code for seed selection methods: **1**=Select in the field; **2**=Select after harvest; **3**=Both 1 & 2; 4=None.

19. Provide information on the amount and sources of seed used for the production of key crops last year.

KEY CROPS	AMOUNT OF SEED BY SOURCE (SPECIFY UNIT)*					
	Own seed	Farmers of same community	Farmers of other community	Community seed bank	Market	GO/NGO support/ seed aid

* Specify local unit used to measure production and later convert to kilograms. The row total for each crop will be total seed used by the household last year.

20. Which of the following modes does your household use when accessing seeds from outside sources?

a. Exchange/barter
b. Seed gift
c. Seed loan
d. Seed purchase
e. GO/NGO support or other seed aid

21. If your household purchased seeds from others, how much money was spent in last 2 years?

Money spent on seed purchase in last 2 years: _____

22. Has your household used seeds of new varieties of any key crops in last 3 years?

a. Yes
b. No *[Skip to question 24]*

23. If yes, list the names of the new varieties of key crops.

KEY CROP	NAME OF NEW VARIETIES

24. Has your household been involved in the production of certified or commercial seeds of any key crops?

a. Yes
b. No [Skip to question 26]

25. If yes, list the names of the key crops certified or commercial seeds were produced.

Names of key crops: _____

_____

_____

26. Has any member of your household participated in training related to seed production?

a. Yes
b. No

27. If yes, which of the following members participated?

a. Men
b. Women
c. Both

D. Close interview

We have reached the end of the interview. Thank you very much for your participation. *[Inform how they can access results of the survey if they wish so].*

Annex 2
Matrix scoring method

Introduction

Matrix scoring involves scoring for various traits, characteristics or other features of different categories or types to determine their relative size, amount, importance, preference, etc. The scoring is done by constructing a table with categories or types of items in rows in the first column, and the traits or characteristics in subsequent columns. For example, for matrix scoring for percentages of households and areas under different key crops, the key crops are organized in rows in the first column and the percentages are organized in the second and third columns **(see Table 1)**. Scoring is then done to assign a relative percentage for each key crop. The method uses farmers' perceptions and experiences to estimate the score.

Process

The following steps are suggested for conducting matrix scoring:

1. Prepare materials necessary for the matrix scoring exercise, including a large version of the table for the exercise, and seeds or pebbles that can be easily counted. Draw the matrix table on paper or use another participatory method as appropriate to facilitate good participation and discussion.
2. Facilitate discussion on the topic of the exercise and ask farmers to provide responses using the seeds or pebbles that you have distributed to them. Depending on how the matrix table is constructed and on the nature of enquiry, the scoring can be done by traits (columns) or by categories (rows). When scoring by trait (column), score each trait before moving on to the next. For example, in **Table 1,** complete the scores for percentages of households growing different key crops first and then complete the scores for percentages of land areas. When scoring by category (row), sore for each trait in a category before moving on to the next category. For example, in **Table 2**, the recommended steps are to score for percentages of seeds accessed from various sources for maize first and then move to beans and so on.
3. Provide enough seeds or pebbles to facilitate easy comparison and further analysis of the data. For example, scoring for **Table 1** could be done by using 100 seeds as a counting material for each column. Likewise, for scoring for **Table 2**, provide 100 seeds for each row. Scoring is done through discussion in order for farmers to arrive at a group consensus for each response. Organize separate men and women group discussions and scoring when gender disaggregated data is needed or to help address gender inequality in participation.
4. Record the scores and take photos of the completed matrix tables.

TABLE 1

Households and area under key crops cultivated last year

KEY CROPS	% HHS GROWING THE CROP	% LAND AREA UNDER THE CROP
Maize		
Beans		
Potato		
Rice		
Finger-millet		
Wheat		
Sesame		

TABLE 2

Mode of accessing seeds for key crops from outside sources

KEY CROPS	% OF SEED FROM VARIOUS SOURCES					
	Exchange/ barter	Gift	Seed loan	Seed purchase	GO support	NGO support
Maize						
Beans						
Potato						
Rice						
Finger-millet						
Wheat						
Sesame						

Annex 3

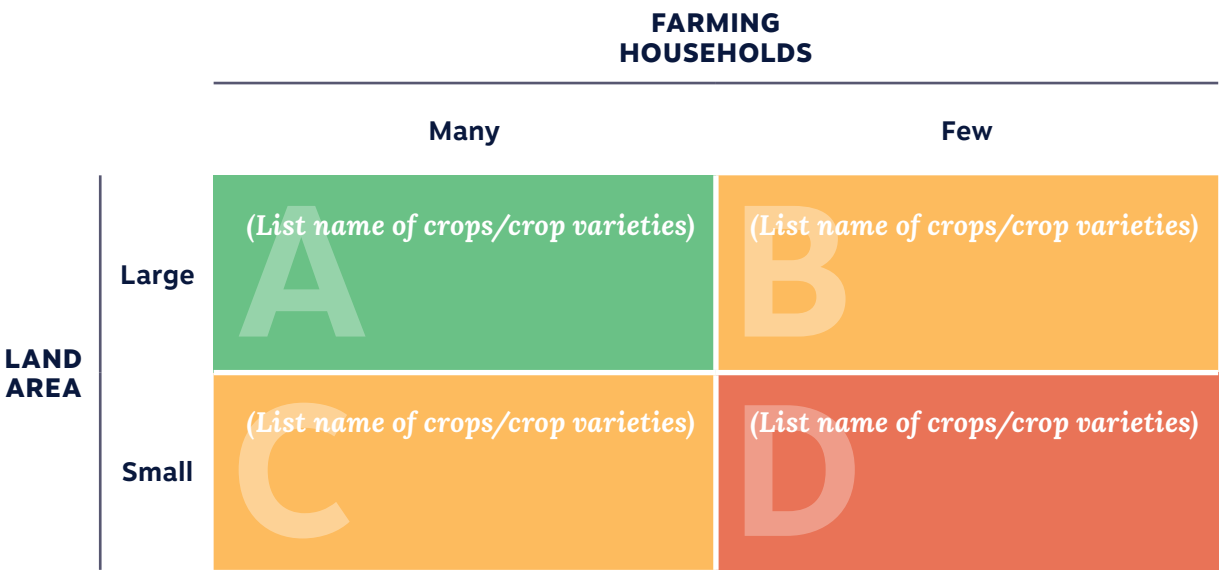
Four-cell analysis method

Introduction

Four-cell analysis is a participatory method used to assess the status of on-farm diversity of crops and crop varieties. It helps identify those crops or varieties at risk of loss due to socio-economic conditions, technical issues, or challenges related to policy and law. Based on whether the crops or varieties are cultivated in large or small areas and by many or few households, four categories as shown in **Diagram 1** are identified. Knowing why certain crops and varieties are in particular cells is very helpful to develop on-farm conservation strategies. For example, if a crop variety is in cell D because of high disease incidence, then Participatory Plant Breeding (PPB) may be used to enhance its disease resistance.

DIAGRAM 1

Four-cell analysis of diversity of key crops cultivated in the community



Crops/crop varieties in cell A:
The crops/ crop varieties in cell A are grown in large areas and by many households, and are important for the food security of farming households. They are well conserved on-farm and are not at risk of loss.

Crops/crop varieties in cell B:
The crops/ crop varieties in cell B are grown in a large area and by few households. Most commercial crops and crop varieties fall under this category. There are generally a few households who specialize in production of these crops and varieties, and they are grown in larger areas. Since only a few households cultivate these crops and varieties, they may go out of cultivation due to changes in market conditions.

Crops/crop varieties in cell C:
The crops/crop varieties in cell C are grown in small areas and by many households. These crops and varieties are often important to address the food preferences and the nutritional needs of households and for cultural ceremonies. A majority of households need these crops and varieties, but only in small quantities. Since these crops and crop varieties are cultivated in small areas, they may go out of cultivation due to changes in food preferences or loss of cultural ceremonies. Therefore, they need some attention for conservation. A number of conservation strategies can be adopted for their on-farm conservation. These strategies include: participatory variety selection (PVS), participatory plant breeding (PPB), value addition and marketing, awareness raising and conservation in community seed banks (CSBs), etc.

Crops/crop varieties in cell D:
The crops/crop varieties in cell D are grown in small areas and by few households. These crops and varieties usually have some weaknesses, such as low yield, susceptibility to insect pests and diseases, high storage loss, difficult seed production and saving, poor taste, etc., that restrict many farmers from cultivating them. Despite these constraints, some farmers cultivate these crops and varieties for their special traits, such as unique taste, specific colour, medicinal values, early maturing, family heritage, etc. The diversity and conservation of these crops and crop varieties are at highest risk of loss and require immediate attention and action for conservation. The first and foremost action would be to deposit seeds of these crop varieties in the CSBs and the National Gene Bank, followed by seed production and dissemination through diversity kit distribution and PVS, and enhancing their traits through PPB.

Process

The four-cell analysis is done both for crop species as well as for crop varieties. The methodology for four-cell analysis is well documented in a publication by LI-BIRD and Bioversity International (Sthapit et al., 2006). The following steps and processes are suggested for four-cell analysis:

Step 1: Prepare for four-cell analysis

- Discuss with farmers participating in the FGD about the purpose of the exercise, and the participation and contribution expected from them.
- Write down the names of key crops and their varieties on separate pieces of paper from the list of these crops and varieties prepared in one of the earlier FGD sessions.
- Draw four cells on a large sheet of paper clearly marking each cell for large or small areas and many or few households as shown in Diagram 1. Lay the four-cell diagram on the ground for all the participating farmers to see.

Step 2: Conduct participatory four-cell analysis

- Develop a common understanding for defining 'large' vs. 'small' areas and for 'many' vs. 'few' households. Identify the critical size of a small area and few households below which the crop species and varieties become vulnerable to go out of cultivation at any time. Experience shows that farmers are able to come up with a cut-off point when they are asked to do so. This will also vary on the type of crops. Usually, cut-off points for land areas is much less than the average land holding per household and less than five households for number of households cultivating the particular crop or variety. Be sure to record these values for each crop.
- Once the definitions are determined, get farmers to place key crops in different cells based on whether each is cultivated in a large or small area and by many or few households. Facilitate group discussion to build consensus among farmers where each crops and varieties belongs.
- After completing the four-cell analysis for key crops, conduct a four-cell analysis for varieties of each key crop separately. Ask farmers to repeat the same process and do four-cell analysis for varieties of each key crop one after another in separate four-cell diagrams.

Step 3: Find reasons for placing crops and varieties in different cells

- After completing the placing of crops and varieties in four cells, ask farmers about the reasons for placing different crops and varieties in each of the four cells. Record these reasons separately:

  Reasons for crops and varieties being in cell A (many households and large area)

  Reasons for crops and varieties being in cell B (many households and large area)

  Reasons for crops and varieties being in cell C (many households and small area)

  Reasons for crops and varieties being in cell D (few households and small area)

- Repeat the process and record the reasons separately for each four-cell diagram.
- Take photos of completed four-cell diagrams and also write down the names of crops and varieties in the four cells of the diagram.

Annex 4
Format for strata-wise or single SSAAP report with combined strata results

Foreword
Acknowledgements
Abbreviations

1. Introduction

1.1. Background: provide information about programs or seed security initiatives, farming communities, and need for SSA
1.2. Objectives of seed security assessment: define the specific purpose of this assessment

2. Methodology

2.1. Selection of methods for data collection: explain why decisions were made to use these methods
2.2. Sampling of farming communities and households: sampling methods used, names of communities, numbers of participants, dates of FGD, etc.
2.3. Instruments for data collection: information about checklists and household survey questionnaire
2.4. Data analysis and presentation: explain who did this work (SSAAP team or program managers) and how it was done (computer or manually)

3. Findings and Discussion

3.1. Agricultural system analysis

3.1.1. Topography and agro-climatic conditions
3.1.2. Demographic feature of the farming population
3.1.3. Access to infrastructures and services
3.1.4. Access to production resources
3.1.5. Agricultural production systems
3.1.6. Access to agricultural research process and agricultural technologies
3.1.7. Access to agricultural extension and development services
3.1.8. Farmers' organizations (FOs)
3.1.9. Major problems associated with agricultural production

3.2. Seed system analysis

3.2.1. Seed diversity and conservation
3.2.2. Features of formal seed system
3.2.3. Features of farmers' seed system
3.2.4. Policy and legal provision for seed production and distribution
3.2.5. Major problems associated with various seed systems
3.2.6. Gender roles and decision-making in seed related activities

3.3. Seed security analysis

3.3.1. General seed security status of the crops and varieties
3.3.2. Seed availability to farmers
3.3.3. Farmers' access to seeds
3.3.4. Quality of seeds available to and accessed by farmers
3.3.5. Adaptability of seeds accessed from outside sources
3.3.6. Choice of seeds meeting farmers' preferences
3.3.7. Capacity of farmers to produce their own seeds
3.3.8. Major problems constraining seed security in the community

4. Seed security action plan

4.1.1. Problem-cause and intervention analysis for seed system situation
4.1.2. Problem-cause and intervention analysis for seed security situation
4.1.3. Prioritization of seed security actions
4.1.4. Plan of action for the implementation of seed security actions

5. Conclusions and observations (regarding the outcomes and use of the methodology)

6. References

7. Annexes

Checklists for key informant survey and focus group discussion
Household survey questionnaire (if used)
Conversion of local measurement units used in the report (if any)
List of participants in the focus group discussions
Others (if any)

Annex 5
Format for single SSAAP report with separate sections for strata results

Foreword
Acknowledgements
Abbreviations

1. Introduction

1.1. Background: provide background information about programs or seed security initiatives, farming communities, and need for SSA
1.2. Objectives of seed security assessment: define the specific purpose of this assessment

2. Methodology

2.1. Selection of methods for data collection: explain why decisions were made to use these methods
2.2. Sampling of farming communities and households: sampling methods used, names of communities, numbers of participants, dates of FGD, etc.
2.3. Instruments for data collection: information about checklists and household survey questionnaire
2.4. Data analysis and presentation: explain who did this work (SSAAP team or program managers) and how it was done (computer or manually)

3. Findings and Discussion

3.1. Findings and discussion for stratum (specify name of stratum)

3.1.1. Agricultural system analysis

3.1.1.1 Topography and agro-climatic conditions
3.1.1.2 Demographic feature of the farming population
3.1.1.3 Access to infrastructures and services
3.1.1.4 Access to production resources
3.1.1.5 Agricultural production systems
3.1.1.6 Access to agricultural research process and agricultural technologies
3.1.1.7 Access to agricultural extension and development services
3.1.1.8 Farmers' organizations (FOs)
3.1.1.9 Major problems associated with agricultural production

3.1.2. Seed system analysis

3.1.2.1 Seed diversity and conservation
3.1.2.2 Features of formal seed system
3.1.2.3 Features of farmers' seed system
3.1.2.4 Policy and legal provision for seed production and distribution
3.1.2.5 Gender roles and decision making in seed related activities
3.1.2.6 Major problems associated with various seed systems

3.1.3. Seed security analysis

3.1.3.1 General seed security status of the crops and varieties
3.1.3.2 Seed availability to farmers
3.1.3.3 Farmers' access to seeds
3.1.3.4 Quality of seeds available to and accessed by farmers
3.1.3.5 Adaptability of seeds accessed from outside sources
3.1.3.6 Choice of seeds meeting farmers' preferences
3.1.3.7 Capacity of farmers to produce their own seeds
3.1.3.8 Major problems constraining seed security in the community

3.2. Findings and discussion for stratum (specify name of stratum) Repeat all sub-sections as in 3.1 for each stratum

4. Seed security action plan

4.1. Seed security action plan for stratum (specify name of stratum)

4.1.1. Problem-cause and intervention analysis for seed system situation
4.1.2. Problem-cause and intervention analysis for seed security situation
4.1.3. Prioritization of seed security actions
4.1.4. Plan of action for the implementation of seed security actions

4.2. Seed security action plan for stratum (specify name of stratum) Repeat all sub-sections as in 4.1 for each stratum

5. Conclusions and observations (regarding the outcomes and use of the methodology)

6. References

7. Annexes

Checklists for key informant survey and focus group discussion
Household survey questionnaire (if used)
Conversion of local measurement units used in the report (if any)
List of participants in the focus group discussion
Others (if any)

Annex 6
Checklist for short version SSAAP

For an editable version of this annex, please contact info@weseedchange.org.

Name of the community: _____

Date(s) of Focus Group Discussion: _____

A. Agricultural system analysis

1. Provide following information on farming households in the community.
    a. Total number of households engaged in agriculture in the community: _____
    b. Number of women-headed households engaged in agriculture in the community: _____
2. Provide following information about agricultural land holding:
    a. Number of households without agricultural land holding: _____
    b. Minimum land holding per household: _____
    c. Maximum land holding per household: _____
    d. Landholding for a majority of households (range): _____ - _____
    e. % of women having land ownership: _____
3. Provide percentage of households engaged in main production systems in the community **(Table 1)**. For example, households may be pastoralists, agro-pastoralists or agriculturalist and so on in some communities. In other communities, households may be engaged in subsistence farming, or commercial farming or combination of both. Production system may also be categorized by dominant crop, for example, maize-based cropping, sorghum-based cropping, millet-based cropping, etc.

TABLE 1

Percentage of households engaged in main production systems in the community

MAIN PRODUCTION SYSTEMS	% HHS	KEY FEATURES OF THE PRODUCTION SYSTEM*

* Describe key components, elements or activities of the production system.

4. Provide following information on access to irrigation in the community.
   a. % households having access to irrigation in the community: _____
   b. % of women having access to irrigation: _____
   c. % of land area with irrigation facility in the community: _____
5. What percentage of households uses synthetic/chemical fertilizers? _____%
6. What percentage of households uses synthetic/chemical pesticides? _____%
7. Describe market access of farmers of the community in terms of high, medium or low.
   a. Market access to sell agricultural products: _____
   b. Market access to sell seeds grown for men: _____
   c. Market access to sell seeds grown for women: _____
8. What is the level of agricultural development interventions (number of agricultural research and development programs) by both government and other actors in the community in terms of high, medium and low? _____

B. Seed systems analysis

1. Seed diversity and conservation

1.1. Types of cultivated crops

List different types of cultivated crops – cereals, root/tubers, legumes, vegetables, fruits, oil and spices cultivated in the sample communities **(Table 1)**.

TABLE 1

Types of crops grown by the men and women farmers in the sample communities

CROP TYPES	NAMES OF ALL CROPS/FRUIT TREES GROWN IN LAST TWO YEARS	NAME OF NEW CROPS/FRUIT TREES INTRODUCED IN LAST FIVE YEARS
Cereal crops		
Root/tuber crops		
Legumes crops		
Vegetable crops		
Fruit crops		
Oil crops		
Spice crops		

1.2. Key crops and their cultivation status

a. List key crops as identified by the farmers of the sample communities. Identify these crops in consultation with farmers using criteria, such as area coverage, number of households growing these crops, importance for household food and nutrition, importance for cash income, crops affected by the disaster, etc. Continue to use the same key crops for both the Seed System and Seed Security Analysis.

b. Find information on key crops as outlined in **Table 2**. Note whether key crops are grown with the involvement of women, men, or both and determine whether differences exist for women -headed households.

TABLE 2

Information on key crops cultivated last year in the sample communities

KEY CROPS	% HHS GROWING THE CROP*	WHO IS INVOLVED? M/W/Both	% LAND AREA UNDER THE CROP*	CROP YIELD (Kg per hectare)‡	NAME AND TYPE OF VARIETIES§

* Use matrix scoring method to find % of households (HHs) and % land area for each crop.

‡ Specify local unit used to measure land and later convert to hectare

§ Put 'L' for local and 'I' for improved variety in parentheses after the name of the variety

c. Find information on the use of improved or commercial seeds of key crops in the community (**Table 3**).

TABLE 3

Information on the use of improved on commercial seeds of the key crops

KEY CROPS	% OF IMPROVED OR COMMERCIAL SEEDS OF THE TOTAL SEED USED*	% HHS USING IMPROVED OR COMMERCIAL SEEDS*

* Use matrix scoring method to find % of improved or commercial seeds (out of total seed used) and % of households (HHs) using such seeds.

1.3. Cropping calendar of key crops

Prepare cropping calendar of key crop cultivated in the community **(Table 4)**.

The cropping calendar can also be prepared using a diagram instead of a table as convenient.

TABLE 4

Cropping calendar of key crops cultivated in the community

KEY CROPS	LAND PREPARATION (Month and week)	SOWING/ PLANTING (Month and week)	HARVESTING (Month and week)

1.4. Diversity status of **key crops and varieties**

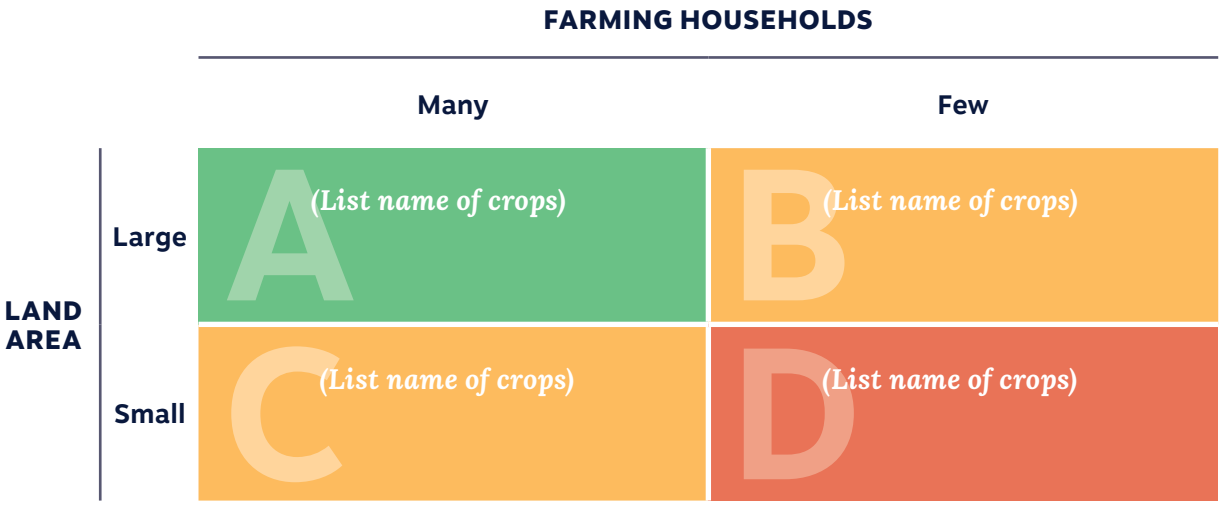
a. Determine the cultivation and conservation status of **key crops** using the four-cell matrix shown **in Diagram 1**. Use the following steps:

- Place key crops in different cells of the four-cell matrix based on whether they are grown in large or small area and by many or few households.
- After the crops are put in different cells, ask farmers the reasons why different crops are placed in each cell.
- After the exercise is over, write down the name of the crops in each cell and take a photo. There should be only one diagram of four cell analysis that includes all key staple food crops.

DIAGRAM 1

Four-cell analysis of key crops

Refer to the four-cell analysis method described in Annex 3.

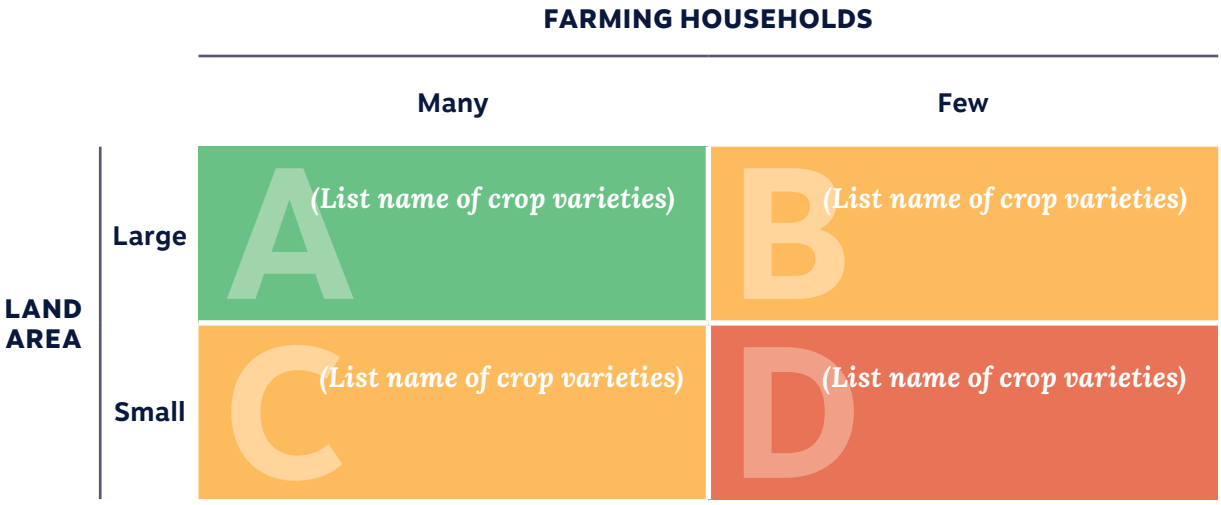


b. Determine the cultivation and conservation status of crop varieties of key crops using the four-cell matrix shown in **Diagram 2**.

- Place crop varieties of key crops in different cells of the four-cell matrix based on whether they are grown in large or small area and by many or few households.
- After the crop varieties are put in the different cells, ask farmers the reasons why different crops are placed in each cell.
- After the exercise is over, write down the name of the crop varieties in each cell and take a photo. Repeat the above steps for each of the key crops selected for the exercise. There will be as many diagrams of four cell analysis as the number of key crops.

DIAGRAM 2

Four-cell analysis of crop varieties of key crops



c. List crops and varieties lost from the sample communities, if any. What were the reasons for these losses and how did it impact production?

2. Features of Farmers' (Informal) Seed System

2.1. Farmers' sources of 'source seed' used for organized production of seeds of key crops

a. Are farmers of the communities involved in organized seed production for their own use and/or for market?

b. If yes, find information on the crops included, and the sources and proportion of 'source seed' used, as presented in **Table 5**. 'Source seed' refers to seeds used specifically for the production of next generation seeds.

TABLE 5

Sources of 'source seed' used for seed production of key crops

KEY CROPS	% OF SEED FROM VARIOUS SOURCES*						
	Own seed	Farmers of same community	Farmers of other community	Community seed bank	Market	GO support	NGO support

***** Use matrix scoring method to find out estimated percentage of source seeds used from various sources.

2.2. Farmers' seed production and selection methods for key crops

a. Record information about whether farmers produce seed separately or select from the same field used for food production **(Table 6)**.

TABLE 6

Information on farmers' seed production methods used for key crops

METHOD OF SEED PRODUCTION	LIST KEY CROPS INCLUDED IN EACH METHOD	% HHS USING THE METHOD*
Separately produced as seed		
Grain and seed produced together		

***** Use matrix scoring method to find out estimated percentage of households (HHs).

b. Record information on seed selection practices used by farmers for the production of quality seeds of key crops **(Table 7)**.

TABLE 7

Information on farmers' seed selection practices used for key crops

SEED SELECTION METHODS	LIST KEY CROPS INCLUDED IN EACH METHOD	% HHS USING THE METHOD*	SELECTION CRITERIA USED
Selection in field			
Selection after harvest			
Selection from store just before planting			

***** Use matrix scoring method to find out estimated percentage of households (HHs).

2.3. Farmers' seed processing and storage methods for key food crops

a. Record information on seed processing/treatment practices used by farmers **(Table 8)**.

TABLE 8

Information on farmers' seed processing and treatment methods used during seed storage of key food cops

SEED PROCESSING/ TREATMENT METHODS	LIST KEY CROPS INCLUDED IN EACH METHOD	% HHS USING THE METHOD*
Sun drying		
Treatment with traditional bio-pesticides		
Treatment with commercial bio-pesticides		
Treatment with chemical pesticides		
Traditional methods (specify):		

***** Use matrix scoring method to find out estimated percentage of households (HHs).

b. Find information on seed storage methods used locally for the storage of seeds of key crops **(Table 9)**. These methods may include use of sacks/bags, metal bins, wooden boxes/pots, bamboo baskets/bins and so on. Document local names and details of the storage methods.

TABLE 9

Information on farmers' seed storage methods for key crops

SEED STORAGE METHODS	LIST KEY CROPS INCLUDED IN EACH METHOD	% HHS USING THE METHOD*	PERFORMANCE OF STORAGE METHODS‡

* Use matrix scoring method to find out estimated percentages of household and land areas.

‡ Good (Seed loss is low); Medium (Seed loss is medium); Poor (Seed loss is high)

2.4. Community norms and mechanisms for managing the quality of farmers' seeds

a. Are there any community norms and regulations, and mechanisms traditionally practiced to ensure quality of farmer produced seeds? If yes, describe them.

b. Are these community norms and regulations, and mechanisms effective? If not, what are the challenges?

3. Gender roles and decision making in seed related activities

3.1. Gender roles in seed related activities

Find information on the involvement of women, men and children (boys and girls) in seed related activities **(Table 10).** Check the list of activities with participating farmers and rephrase, delete or add more activities as necessary. Describe if gender roles of women, men or children are significantly higher for certain crops.

TABLE 10

Degree of involvement of women, men, boys, and girls in seed related activities for key crops

SEED RELATED ACTIVITIES	MEN	WOMEN	BOYS	GIRLS
Selection of seeds for next season				
Processing of seed (cleaning)				
Treatment of seed (drying + other treatments)				
Management of seed storage				
Allocation of seeds for next season				
Seed exchange (gift, loan, barter)				
Seed sale				
Finding and obtaining seed at the time of shortage				
Selection of seed for planting				
Preparing seeds for sowing/ planting				

Note: Use matrix scoring method to indicate who does more work for particular activities. Use picture of men, women and children to facilitate the discussion if necessary (this is very useful to draw attention and interest of participants).

3.2. Gender decision making practices in seed related activities

Who makes decisions regarding seed related activities **(Table 11)**? Check the list of activities with participating farmers and rephrase, delete or add more activities as necessary. The decision making may differ for different types of crops – food crop, cash crops, or even for different crop species. Discuss about this with the farmers and capture these differences in **Table 11**. Describe if decision making by women, men or children are significantly different for certain crops.

TABLE 11

Decision making between women and men regarding seed related activities for key crops

SEED RELATED ACTIVITIES	MEN	WOMEN
Use of particular seed selection method/practice		
Use of particular methods of seed processing (cleaning)		
Use of particular methods of seed treatments (drying + other treatments)		
Use of particular methods of seed storage		
Selection of seeds of particular crop and variety for next season planting		
Amount of seeds to keep for next season		
Giving seeds to other farmers		
Selling/ exchanging seeds		
Decision on renewing seeds that have been continuously used of a crop variety		
Type and quantity of seeds of new variety to be planted		

Note: Use Matrix scoring method to indicate level of decision-making for particular activities. Use picture of men and women to facilitate the discussion if necessary (this is very useful to draw attention and interest of participants).

4. Major problems associated with seed system

    a. List major problems associated with production, storage and distribution of the seeds of key crops in the sample communities and assign their relative importance **(Table 12)**.

TABLE 12

Major problems associated with production, storage and distribution of the seeds of key crops

LIST OF MAJOR PROBLEMS	IMPORTANCE*

* Use matrix scoring method to indicate importance of the problem.

b. Discuss whether these problems vary due to gender, age, income, ethnicity, etc., if relevant.

C. Seed security analysis

1. General seed security situation of key crops in the sample communities

1.1. Assess seed security situation of key crops using the six parameters of seed security

a. Find out the seed security status of key crops based on availability, access and quality, adaptability and choice of seeds, and capacity to produce their own seeds using **Table 1**.

b. Use the data from **Table 1** to draw seed security wheel (**Diagram 1**). Either produce a separate wheel for each key crop or a single wheel with different lines representing different key crop. The wheel can also be drawn directly by scoring for the seed security parameters for each key crop and putting the score along the spoke for each parameter as shown in **Diagram 1**.

TABLE 1

Seed security situation of key crops in the sample communities

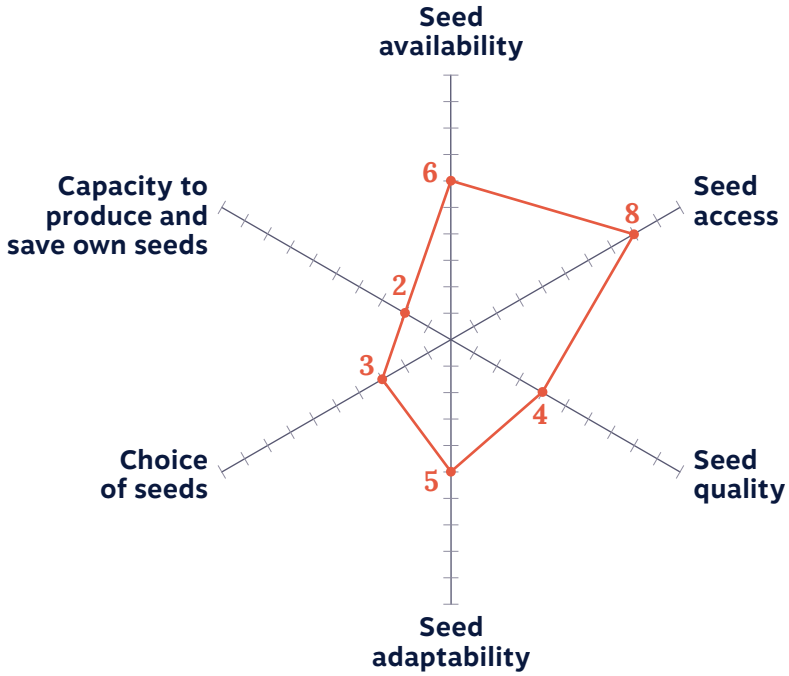
KEY CROPS	SEED SECURITY SITUATION*					
	Seed availability	Seed access	Seed quality	Adaptability of seeds	Choice of seeds	Capacity to produce seeds

* Use matrix scoring method to find out scores for six parameters of seed security. Take one crop at a time and complete scoring for six seed security parameters by moving along the rows.

DIAGRAM 1

Seed security wheel mapping seed security parameters for key crops

(sample)



1.2. Crops and varieties with seeds in high demand but low in supply

a. List crops and varieties which have seed in high demand but low in supply both from community production as well as from the market. Collect reasons for this situation.

b. Do the seeds used by women face different seed security situations than those grown by men? Do the seeds used by women-headed households face different seed security situations than those used by women from men-headed households?

2. Seed availability to farmers

2.1. Farmers' sources of seeds for key crops in the 'normal' and 'bad' years

Record information on sources and proportions of seeds for key crops in 'normal' **(Table 2)** and 'bad' years **(Table 3)**

TABLE 2

Sources and proportions of seed used for the production of key crops in *'normal'* years

KEY CROPS	% OF SEED FROM VARIOUS SOURCES*						
	Own seed	Farmers of same community	Farmers of other community	Market	Community seed bank	GO support	NGO support

* Use matrix scoring method to find out estimated percentage of seeds from various sources.

TABLE 3

Sources and proportions of seed used for the production of key crops in *'bad'* years

KEY CROPS	% OF SEED FROM VARIOUS SOURCES*						
	Own seed	Farmers of same community	Farmers of other community	Market	Community seed bank	GO support	NGO support

* Use matrix scoring method to find out estimated percentage of seeds from various sources.

2.2. Causes of seed shortage of key crops and strategies used to cope with shortages both in normal years and in bad years

a. Document history and causes of seed shortages in communities.

b. List strategies used by men and women farmers to address the problem of seed shortages. Organize separate FGDs with men and women farmers.

c. Seed supply networks used by farmers to meet their seeds needs

Record seed supply networks consisting of producers, distributing or marketing agencies and users, if any, for example government, private, and farmers' seed networks operating in the communities. Describe their coverage (seed types and number of households) and effectiveness in meeting farmers' needs **(Table 4).**

TABLE 4

Information on seed supply network used by the farmers to meet their seed needs

SEED SUPPLY NETWORKS	DESCRIPTION OF THE NETWORK (what does the network consist of?)	COVERAGE		EFFECTIVE OF THE NETWORKS
		Crops	% HHs*	
Government				
Private				
Farmer				
Other (specify):				

* Use matrix scoring method to find out estimated percentage of households (HHs) using specific seed network.

3. Farmers' access to seeds

3.1. Accessing seeds of key crops from outside sources

a. Record information on the mode of seed access for key crops used by farmers **(Table 5 and 6)**.

TABLE 5

Percentage of *seeds* for key crops accessed from outside sources

KEY CROPS	% OF SEED ACCESSED FROM VARIOUS SOURCES*					
	Exchange/ barter	Gift	Seed loan	Seed purchase	GO support	NGO support

* Use matrix scoring method to find out estimated percentage of seeds from various sources.

TABLE 6

Percentage of *households* accessing seeds for key crops from outside sources

KEY CROPS	% OF HOUSEHOLDS ACCESSING SEED FROM VARIOUS SOURCES*					
	Exchange/ barter	Gift	Seed loan	Seed purchase	GO support	NGO support

* Use matrix scoring method to find out estimated percentage of households accessing seeds from various sources.

a. What kinds of seeds of key crops are used when accessed from outside sources **(Table 7)**? It may be seeds which were produced and sold/ exchanged as seeds or grains used as seeds.

TABLE 7

Types of seeds of key crops used by farmers when accessed from outside sources

KEY CROPS	TYPES OF SEED WHEN ACCESSED FROM OUTSIDE SOURCES (Yes/No)		
	Use of seeds produced as seed	Use of grain as seeds	Both

3.2. Seed purchase and pricing mechanisms

Record information on household purchasing seeds of key crops and price difference between seed and grain **(Table 8)**.

TABLE 8

Information on farmers purchasing seeds and price difference between seed and grain

KEY CROPS	% HHS PURCHASING SEEDS*	PRICE DIFFERENCE (Price/kg)‡

* Use matrix scoring method to find out estimated percentage of households (HHs) purchasing seeds.

‡ Record price difference between per kilogram of seed and grain in local currency.

3.3. Supports provided to facilitate farmers' access to seed

a. What kinds of support have been provided by various service providers (e.g., governments, NGOs and private organizations) to increase farmers' access to seeds in the sample communities? **(Table 9)**

TABLE 9

Supports provided to increase farmers' access to seeds

SUPPORTS PROVIDED TO FARMERS	WHO PROVIDED SUPPORT?*	CROPS COVERED BY SUPPORTS	EFFECTIVENESS OF SUPPORTS‡

* Support providers: list name of the organizations providing such support and mention type of organization, for example governments, NGO, private in the parentheses.

‡ Effectiveness: 1. Good; 2. Medium; 3. Poor.

b. Are there any supports specifically provided to women and/or women-headed households? If yes, list and describe these supports.

4. Quality of seeds

4.1. Quality of seed of all key crops obtained from different sources

Record information on quality of seeds (physical purity, germination and vigor, disease/insect infestation, adaptability) of seeds of key crops obtained from different sources **(Table 10).**

TABLE 10

Specific quality of seeds of all key crops combined accessed from various sources

SOURCES OF SEED OF ALL KEY CROPS	SCORES FOR QUALITY OF SEEDS FROM VARIOUS SOURCES*				
	Physical purity	Germination/ vigor	Disease/ insect free	Locally adapted	Overall quality
Farmers' own seeds					
Other farmers' (community) seeds					
Community bank seeds					
Market seeds					
GO seeds					
NGO seeds					

* Use matrix scoring method to indicate the specific quality levels of the seeds – higher score for higher quality.

5. Adaptability of seeds accessed from outside sources

5.1. Methods of introducing seeds new crop varieties of key crops

Are adaptation tests done before the introduction of seeds of new varieties of key crops in the sample communities? If yes, name the crops and frequency of adaptation tests.

5.2. Incidences of crop failure due to seeds of new crop varieties of key crops

Were there incidences of crop failure due to the introduction of seeds of new varieties of key crops in the sample communities? If yes, record details of these failures, for example, names of crops and crop varieties, reasons of crop failures and extent of losses.

5.3. Issues/challenges related to adaptability of new seeds faced by farmers

List issues/challenges related to adaptability of new seeds of key crops faced by farmers. Distinguish between men and women farmers and women-headed households.

6. Choice of seeds meeting farmers' preferences

6.1. Availability of seeds of key crops with farmers' preferred traits

Record information on preference of men and women farmers to seeds of new varieties of key crops introduced in the communities in the last three years **(Table 11).**

TABLE 11

Information on farmers' preference to seeds of new varieties of key crops introduced in the sample communities in last three years

KEY CROPS	NO. OF NEW VARIETIES INTRODUCED IN THE SAMPLE COMMUNITIES	N° OF NEW VARIETIES MEETING PREFERENCES OF	
		Men farmers	Women farmers

7. Capacity of farmers to produce and save own seeds

7.1. Technical capacity of farmers to produce seeds of key crops

a. Have farmers in the community faced problem due to lack of technical knowledge for the production of seed of any new crop variety? If yes, record information about the crop variety and the details or the problem.

b. Have farmers received training on production and management of quality seeds key crops in the last three years? If yes, find detailed information on such training **(Table 12).**

TABLE 12

Information on farmers training on production and management seeds of key crops in last three years

TOPICS OF TRAINING	N° OF HOUSEHOLD RECEIVING TRAINING	N° OF FARMERS RECEIVING TRAINING	
		Men	Women

c. Have farmers participated in exchange visits to learn about production and management (processing and storage) of quality seeds in the last three years? If yes, find detailed information about these exchange visits, including number of households and gender composition of participating farmers etc.

7.2. Socio-economic capacity of farmers to produce own seeds

Are there farmers' organizations (groups, association, cooperative or others) engaged specifically in the production and marketing of seeds in the community? If yes, find details of these organizations, including number and gender composition of members, crops included in seed production, volume of seeds produced and marketed annually, group fund managed, membership fee, etc.

Have farmers received training on seed marketing in the last three years? If yes, find detailed information of this training, including topics, number of households and gender composition of the participants etc.

8. Major problems constraining seed security

d. List major problems associated with seed security reported by farmers in the sample communities and assign their relative importance **(Table 13).**

TABLE 13

Major problems associated with the different components of seed security

LIST OF MAJOR PROBLEMS IN THE FOLLOWING CATEGORIES	IMPORTANCE*

* Use matrix scoring method to indicate importance of the problem.

e. Discuss whether these problems vary due to gender, age, income, ethnicity, etc., if relevant.

For an editable version of this annex, please contact info@weseedchange.org.

Annex 7
SSAAP executive summary

This executive summary template would summarize all SSAAPs using the final (or draft) reports in 2-4 pages. This executive summary can be used to support the sharing of findings with key seed sector actors and build support for the recommendations.

Outline

- **Introduction**

  (provide information about the organizations involved, what were the objectives, a brief timeline of data collection)

- **Methodology**

  (name communities that participated, provide the number of households included in the household survey and the number of participants at the FGD, describe the methodology, including sampling)

- **Key findings**

  (summarize the main findings discovered through this process)

  Consider including a Socratic wheel to demonstrate the seed security of one or all key crops.

- **Action plan highlights**

  (what steps have already taken place, what still needs to happen)

- **Recommendations**

  (what is the community asking key actors to do)

- **Conclusions**

  (next steps of the SSAAP, overall benefits to participants, etc.)

Fanta Traoré shows some onion seeds in her garden, Mali.

Photo credits

APN Sahel: page 77

ASOCUCH: page 33

Cab Demeso: pages 11 and 49

David Alvarado: pages v, x, 38-39, 52-53, 131 and back cover

Michele Cattani: pages viii, xvi, 1, 9, 13, 34, 102-103, 128, and 168

Kath Clark, SeedChange: page 33

Sarah Dalle, Development Fund - Norway: pages xiv and 55

Juan Manuel Lobaton: cover page, pages 112-113 and 122-123

Beatriz Oliver, SeedChange: pages 22, and 120/120

Jim Richardson: pages 16-17

Élodie Rouselle, SeedChange: page 115

Pratap Shrestha, SeedChange: pages 7, 30, 43, 63, 79, 92, 106, 124, and 125

The SeedChange Seed Security Assessment and Action Plan (SSAAP) Guide builds on the available seed security assessment methodologies and presents a systematic assessment and planning framework for assessing seed security and developing action plan relevant to smallholder farmers.

The following features make SeedChange SSAAP methodology quite unique and easy to integrate into seed related research and development programs:

A holistic and systematic approach.

The guide looks into both farmers' and formal seed systems and the interaction between the two, and examines the agricultural and seed systems impacting the seed security of smallholder farmers. It also considers factors such as farmers' knowledge and practices, market, and institutional and policy environments, that influence seed security.

This methodology works in normal as well as in post-disaster situation.

SeedChange recognizes farmers may experience seed insecurity on a day-to-day basis and in any cropping season when there is a breakdown in their seed systems. These breakdowns may arise due to damage and loss of seeds during production and/or storage, disruption in farmers' seed exchange system, lack of adequate marketing mechanisms, and inadequate research and development support. The methodology can also be adapted to seed security issues in a post- disaster situation.

Inclusion of seed security action planning.

The methodology uses results of the assessment to design seed security actions suitable for smallholder farmers of the community. The SSAAP team shares results with farming communities and seed sector stakeholders and involve them in identifying and preparing action plans necessary to improve their local seed security.

Flexibility for adapting the methodology to suit local context and need or scope of the assessment.

The methodology provides a framework that can easily be adapted to include local features of the seed systems, including crops and seed networks. It can also be adjusted depending on whether the assessment is planned for community or regional or country level, the type and number of crops to be included, and purpose of the assessment.

Clearly defined and disaggregated seed security parameters addressing agricultural biodiversity, seed sovereignty and gender aspects of seed security.

The guide uses six parameters to assess seed security including: availability, access, quality, adaptability, choice of seeds, and capacity to produce and save seeds. The latter three parameters provide a measure of seed sovereignty, while the choice of seeds is dependent on the amount of agricultural biodiversity available at the household and community level. The methodology recognizes the important roles women play in local seed systems, particularly as knowledge holders and custodian of local seeds.

Participatory and community-based approach to seed security assessment and planning.

The guide uses participatory methods and tools to actively engage farmers and farming community and seed sector stakeholders. This includes organizing community workshops with female and male farmers, both young and old, as well as representatives from government, non-government and private sector organizations in collecting, analyzing, and designing seed security action plans. Participatory approaches contribute to a sense of ownership of the process and action plans by participants. This may include increased trust between farming communities and seed sector actors, as well as broader support for seed security action plans.

Sharing results and recommendation with farmers and seed stakeholders.

This is important and helpful in raising awareness, and building consensus, solidarity and collaboration and harnessing policy, legal and program support for the implementation of seed security action plans.

Scope for accompaniment providing technical support to help acquire, use and internalize the methodology in their program.

This can include training, and support in planning for fieldwork, and/or developing action plans.

What is unique about SeedChange's Seed Security Assessment and Planning Guide?

See inside back cover for more information.

SeedChange
Formerly USC Canada