RESILIENT SEED SYSTEMS: STRATEGIC CONVENING
Participant Perspectives –
What is your vision for resilient seed systems?

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She took the large jar of seeds down from the shelf. The writing on the label stood out: Cow pea – Kwaedza variety, harvested 17th April 2018. She opened the lid with care, nursing this baby in the crook of her left arm. With her other hand she took a fistful of seed out and gave it to Amai Tendai. “That is the best cowpea seed I have. No disease has attacked it for years and, because I look after my soil, no aphids either.” Amai Tendai replied: “I don’t know what we would do without your knowledge, skill and diligence, Gogo Maria. Thank goodness you are passing these all on to the daughters in your family."
“A resilient seed system ensures food security, sufficient income and cultural capital to farmers and communities. It is based upon a true relationship between crops and humans, upon agricultural biodiversity, environment-friendly techniques and lively social networks.”
“Tienen que ser una diversidad de sistemas decentralizados con características diversas que coexisten, se complementan y respetan entre sí. Tiene que haber un flujo importante de información sistemática entre estos sistemas y sus participantes.”
“A seed system is resilient if both the ecological and social systems have the capacity to withstand disturbances or shocks which can be brought about by natural causes such as climate change or human-made disruptions such as economic or political turmoil, and to bounce back without shifting into poorer state or conditions.”
The word resilient I understand as something that brings harmony...I would say that a seed system is resilient if it responds to the challenges of environment, food security, consumer needs, growing population etc...It allows farmers to continue their work and practices but at the same time it also allows them to have a large choice of the types of seeds they wish to use, as well as security in terms of seed supply. A really key feature of seed systems should be to give this choice to farmers and allow them to grow and improve as they can/wish. In the end, it means that a resilient seed system will be a seed system which takes the realities into account and properly responds to them. This may vary from region to region or country to country and the criteria that will make a seed system resilient may thus also differ accordingly. But generally speaking it can be said that to be resilient seed systems will usually have to embrace the various types of players, so formal, informal and perhaps intermediary seed systems should co-exist and work in harmony together."
“Promoción de la diversidad genética, fortalecimiento de los sistemas de vida de los pequeños productores, visibilizar la aportación de la agricultura tradicional.”
“A seed system is resilient if both the ecological and social systems have the capacity to withstand disturbances or shocks which can be brought about by natural causes such as climate change or human-made disruptions such as economic or political turmoil, and to bounce back without shifting into poorer state or conditions.”
“Farmers, all different types – women and men – have access to the good quality seed of the crops and varieties they need at the right time, and they can be sure of this. In addition, the seed systems need to be able to adapt over time to the changes farmers are facing or demanding; responding to new opportunities and challenges. This thus includes that farmers have access to the appropriate information about seed-based innovations, and have a chance to influence the variety of development agenda(s). Farmers who invest efforts, skills, knowledge, genetic materials, as well as networking should have a chance to benefit from these contributions/innovations/initiatives.”
“Farming communities empowered with documented knowledge on in-situ conservation, utilization, and propagation of diverse crop varieties supported by a strong culture that promotes farmers' rights. National Agricultural Programs that fully recognize and support biodiversity and agroecological initiatives. Farmers freely sharing information on diverse seeds.”
“A resilient seed system is one that ensures seed security to the farmer and contributes to sustainable food systems for society.”
Un sistema de semillas resilientes debe ser garantizado desde la base campesina, ya que son los y las campesinas que con su labor saben reconocer la vitalidad de las semillas que van garantizar la autosostenibilidad alimentaria y económica de la familia. De igual forma son quienes con su forma de reproducir la garantizan el cuidado de los bienes comunes, previniendo la explotación excesiva del suelo y el uso de químicos para conservarla. Un sistema de semillas resilientes implica el conocimiento ancestral en diálogo y colectividad con otros campesinos pero también con un nuevo conocimiento para avanzar en estrategias para implementar en este nuevo contexto de cambio climático.”
“(A resilient seed system) broadens the genetic base of our food systems, including traditional and modern varieties, with empowered communities organized to demand resources and services, and a multi-stakeholder engagement that works on equitable and sustainable policy reform.”
“Most food is grown from local open pollinated seeds, using diverse planting systems, regenerative agriculture and good management. Seed is improved through farmer experimentation and also through the interaction with academic institutions allowing access to improved seeds where necessary.

Young people are involved as seed custodians who bring new thinking and technology to seed storage and distribution systems. Farmer's seed is recognised and valued as much as commercial seed. A body of research and documentation is developed taking a systems approach to find out how best to grow resilient nutritious food. Policies are in place to support the development of farm saved seeds due to the realization that a debt free farming sector leads to economic health and well being. This leads to widespread recognition of the dietary importance of agroecology.

Seed supply systems need to be diverse in themselves. As our understanding of the value and complexity of seed develops, new collaborations are built between farmers, research facilities, information technology and business to enable the most effective sharing of knowledge of this diversity and supply of seed.

The parcels of sacred land that are critical to seed evolution and seed customs are valued and protected.”
"We must recognize the remarkable intelligence and power of the seed – it perpetuates the species, preserves its diversity, ensures its resilience in the face of adversity (including modulation of species interaction with similar or dissimilar forms). This is the basis of biological diversity – biological resilience is in the diversity of the genes – and this is particularly true of the West and Central Africa region where climate induced variability and uncertainty must be met with a diverse basket of gene-based solutions harnessed through efficient breeding approaches."
“A Resilient Seed System is a set of actions with a long-term vision, driven by a variable number of actors, in order to protect the heritage of the ancestors, strengthen food autonomy, and preserve customs in terms of food, medicine and provision of plant and animal resources to protect life and social reproduction in a specific geographical area.”
“Cultural diversity and the role of farmers as stewards of natural resources will be encouraged and respected. Fair food economies will be good for people and the planet, leading to the halt of climate change. In thirty years, agroecology will be the model for food systems, while industrial agriculture will be remembered only in history books and museums.”
“(I am) not really interested in some abstract idea of a "system". There are millions of ways that small scale farmers approach seed saving and exchanges; research through observation and experimentation, and planting seeds in living soils. Common among all of them is a sense of the sacred, of the reciprocal relationship with other living beings, and the expression of gratitude for what is given and shared. Seeds are at the root of a sense of rootedness and being in one's place. We, who live outside of those relationships need to find our way back, if we want to be resilient.”
“En un sistema de semillas resilientes es necesario tomar en cuenta la interdependencia de la vida, sus interrelaciones y la cosmovisión de la gente donde incluye sus rituales, ceremonias, trueque, curaciones... Un sistema donde se cuide la Tierra y la soberanía alimentaria de una manera integral.”
“A resilient seed system is one where all local stakeholders are engaged to build a win-win system of participatory selection on varieties, producing the seeds of preferred varieties. Seeds produced must reach local farmers at adapted prices, involving agro-input dealers or farmers that are chosen for seed distribution.”
In the included photo, you meet the '3 Sisters' (in Otoro, Honduras). They're amazing farm community leaders, researchers, food providers, mothers, and daughters – who are doing their best to build a food system for their community that can withstand the shocks of climate change, that feed their families, bring income. They are growing 25+ species on a tiny, highly sloping plot of land, including corn/beans/squash – the 3 Sisters – and a whole lot more. It touches food/agriculture but also provides income, generates autonomy/power and pride, and integrates knowledge, social cohesion and culture.

That's just the start of a mini-seed system that has the seeds of resilience. It needs an engaged community, conducive markets, and an enlightened, integrated set of government policies, that puts the interests of the 3 Sisters ahead of the 3 Brothers (in suits, with briefcases) who are the ones that usually hijack government policy for their own profit.
A resilient seed system is one in which communities have access to the depth and breadth of food and non-food sources necessary to sustain their individual and collective health, well-being, and livelihoods inclusive of cultural, spiritual, and dietary preferences. The system supports living landscapes with thriving geographically-appropriate biodiversity and clean air/water/soil. The system can absorb periodic shocks and natural events such as floods or earthquakes, either by design or in connection with external partnerships and systems. Governance systems are clear and accountable."
“A resilient seed system needs to be anchored on working with farmers to preserve seeds and involving them in breeding new varieties that meet specific needs. To ensure a resilient food supply, farmers need to be able to access, exchange and improve seeds, and have a voice in formulating seed laws and policies. A resilient seed system is also where formal and informal seed systems are transformed to meet the new challenges facing humanity in terms of the food and climate crises.”
"The systems-based breeding orientation should maximize the synergy between the strengths of current four coexisting breeding orientations (community-based, ecosystem-based, trait-based, and corporate-based breeding), and develop innovative ways of organizing plant breeding and establishing stronger interactions between all components of the system to meet the future challenges of a growing global population and changing climate aiming at both ecological and societal resilience through incorporating the following global sustainability goals: 1) food security, safety and quality; 2) food and seed sovereignty; 3) social justice; 4) agrobiodiversity; 5) ecosystems services; and 6) climate robustness. In the envisioned concept of systems-based breeding, “system” is defined as the space that encompasses the civil society (with its diversity of cultural norms and values), policy (with various governance institutions), nature (including the diversity of pedo-climatic conditions and habitats), agriculture (including the diversity of agro-ecosystems and farming systems), and value chains and markets as interrelated and mutually dependent components of the entire system. Achieving that requires specific knowledge development and integration, a multitude of suitable breeding strategies and tools, and entrepreneurship, as well as a change in attitude based on corporate responsibility, circular economy and true cost accounting, and fair and green policies."
“For me a resilient seed system is a system where diversity, inter-dependence and modularity/evolution are three key principles. Diversity of seeds, of practices, of stakeholders managing seeds. Interdependence between stakeholders, networks and regions in the world. Modularity/evolution of systems, networks and seeds so as to continuously adapt to time/condition changes.”
“For me a resilient seed systems is autonomous and collective and it is based in the sustainable use of the natural resources. It helps to generate a sustainable development of the communities. Agroecology, small scale production, local markets, commons and social justice should be important pillars of a resilient seed system.”
“Small-scale women and men farmers sow and conserve local seeds, manage their land for soil health, and rely on traditional knowledge and their cultural values.”
“Cultivando y guardando variedades de nuestras semillas nativas pero para que esto siga funcionando se necesitan estrategias y políticas que apoyen para fortalecer y proteger las variedades de semillas las cuales se han adaptado al cambio climático así como el conocimiento indígena y campesino a través de intercambios y capacitaciones que fortalezcan sus capacidades, contar con suelos saludables libres de químicos.”
“A resilient seed system ensures access to diverse seeds now and in the future, for everyone. Seeds are the soul of agriculture. Their diversity ensures nutritious food under different climatic conditions. The way they are multiplied, selected, bred and distributed should support farmers, consumers, and society in general to grow the crops we need to sustain our food system. A resilient system has the capacity to adapt to stresses and changes and works in the interest of many, and not just a few. The majority of small-holder farmers in the world and the many citizens that are undernourished should be served by such a system.”
A seed system can be said to be a Resilient Seed System when it is able to maintain the customary practices of seed saving, exchange and selling by farmers; and facilitate the easy access to diverse seeds / varieties of newly developed resilient varieties that can enhance social and economic resilience of the farming communities. A combination of formal and informal sector is essential for any seed system to be resilient. Other important aspects of resilient seed systems are: 1) strong social seed network involving formal and informal sector players for flow of information about seed; 2) linkage of in-situ and ex-situ seed conservation for easy access to plant genetic materials; 3) community based actions (like community seed bank) to facilitate the seed exchange and access; 4) participatory seed selection/variety development process according to the adaptation needs of farmers; and 5) protection of the rights of farmers as well as breeders of seed.”
SEED SOVEREIGNTY FOR FARMERS!

Seed sovereignty means that farmers have control over, and are at the centre of their seed systems

You as a farmer are seed sovereign if you have the right to:

- sow, breed, save and exchange all seed and other planting material
- participate in decisions concerning seed improvement/breeding, selection, quality standards, pricing, production, distribution and diversity
- customary practice especially in regard to indigenous seed
- access to seed
- be protected from being sold fake and inappropriate seed
- have a true choice between the use of certified and seed from farmer managed seed systems
- enforce your farmers’ rights and that these are not lower in status than breeders’ rights.
East-West Seed recognizes the important role of the informal seed system in making seeds available and accessible to smallholder farmers especially in remote areas. The informal seed system offers wider crop choice. However, we also recognize that a sustainable seed system calls for an integration of both the formal and informal seed systems. They are interdependent and have multiple links with each other. The complementarity of the informal and formal seed system is a desired element of a resilient seed system. In this system, farmers of any farm size have the opportunity to choose the seed that best meet their needs. This means striking a balance between growing local crops (sometimes including crop wild relatives) and improved varieties in a sustainable manner. Local crops have strong adaptation to local growing conditions and are valuable sources of nutrition. The formal seed system brings to farmers ‘climate-smart’ varieties (e.g., resistant to heat, drought, salinity, floods, and water and nutrient efficient), environmentally friendly varieties (e.g., pests resistant varieties require fewer pesticides) and high-yielding varieties to increase food production per unit area and alleviating pressure to add more arable land to production systems.”
“A resilient seed system is one that allows stakeholders to access adapted good quality seed of a desired agricultural commodity at the desired time. This calls for concerted effort to empower farmers and other key stakeholders on the issues of agrobiodiversity and seed systems, environmental changes and adaptive potential of agroecosystems, exchange of knowledge between stakeholders and the spatial and temporal dynamics associated with adaption and use of agrobiodiversity.”
Farmers have sufficient crop genetic diversity in the form of seeds and other planting materials to increase productive gains, while at the same time maintaining resilience against the probability of future crop and ecosystem service losses due to external shocks. This system is supported by seed suppliers (including farmer suppliers, commercial seed, community seed institutions, and by local, national and international policy)."
“A resilient seed system:

• Serves the needs of all farmers
• Manages diversity optimally
• Supports agroecological farming
• Is governed in a participatory manner
• Is seeking continuous improvement”
A resilient seed system is a robust seed system where farmers have access to their preferred seed at all times and that they are able to save, sell and exchange seed with others. In addition, the farmers are able to participate in decision-making processes especially on issues that affect their food and seed sovereignty. And where farmers are motivated to continue improving seed to make it more resilient to changing conditions in order for them to have food and nutrition security.”
“A resilient seed system works when there is respect for the cultivators, farmers, women, landless who till the land and produce the food we eat and actively preserve agricultural biodiversity. This needs to be supported by public policy interventions including by agriculture policy, seed policy, that supports farmer saved seed systems to ensure right to food for all.”
“Para guardar, seleccionar e intercambiar semillas que requieren solo de las libres dotes de Tierra, agua, luz solar y suelo saludable para crecer, las y los agricultores y los pueblos indígenas no necesitan comprar en cada estación costosas semillas, fertilizantes y pesticidas. En cambio, las prácticas agrícolas agroecológicas mejoran la salud, la ecología y la fertilidad natural de suelo. Desarrollando de este modo el carbón del suelo se podría reducir las actuales emisiones de gas de efecto invernadero entre el 24% y el 30%. Suelos más saludables se benefician también del incremento de la capacidad de retención de agua y la resiliencia a las sequías e inundaciones. Cualquier respuesta seria al cambio climático, por lo tanto, debe apoyar las prácticas agroecológicas, la diversidad de semillas y los sistemas de conocimiento de las y los agricultores y los pueblos indígenas. Finalmente, reclamando la diversidad de semillas afianzamos un sistema de alimentos ecológicamente sano que pone a las y los agricultores, pueblos indígenas, sus conocimientos y su dignidad en el corazón de la agricultura y la biodiversidad.”
“A resilient seed system is one that is based on agricultural biodiversity and local seed diversity, and is the basis of diversified agroecological systems. Its resilience is in terms of environmental and climate resilience, social resilience and economic resilience. A resilient seed system is connected to diverse cultural and culinary traditions, and promotes diet diversity and health. Farmers are the key actors in a resilient seed system, contributing their knowledge, experience, and skills. Their practices of seed saving, use, and exchange are critical in ensuring a diverse and resilient farmer-managed seed system.”
Farmer managed seed systems present an existing, viable and coherent alternative to the corporate-industrial capture of African seed systems. Farmer seed systems are, by definition, diverse and context specific. What is required is deepened and shared understanding of this alternative in its diverse contexts, considering, amongst other things, the revival and use of indigenous/farmer varieties; the use of public sector germplasm and farmer varieties for seed enhancement/improvement; participatory methodologies including plant breeding and quality controls; in situ selection, enhancement and production of seed by farmers; appropriate local storage technologies including seed banks with diverse and locally appropriate seed; local exchange/markets for seed produced by farmers; farmer-to-farmer learning and sharing; extension methodologies and links to formal sector research and development.”
In a resilient seed system, farmers and other stakeholders produce, market, and disseminate through formal and informal channels quality seed of adapted varieties. The system is robust and dynamic, able to access new germplasm responding to climate change and other events. The system is vibrant, generating opportunities for smallholder farmers, respecting and appreciating peoples gender, generation and culture as assets.”
To be fully responsive to climate change, changing markets, and the needs of those involved in producing material, short supply chains of seeds and information will be needed. This means that there needs to be an easy flow of exchange between all main stakeholders at small, local levels as well as national and international levels.

I see a resilient seed system that allows and encourages this to ensure that new and old material becomes available and is developed in conjunction with all main stakeholders.”
“A resilient seed system is one that is managed by local farmers that understand the constraints they deal with, and are appreciated/supported to share this information with each other. Ultimately, we can imagine communities that crowd-source their knowledge on seed diversity, and do so because it is in their benefit to do so, while contributing to important global knowledge.”
In a resilient seed system, diversity is abundant. Diverse crops, and varieties of crops, are continuously growing and adapting in farmers' fields, farmers have agency in the seeds they grow, and how they grow them. A resilient seed system is equitable and just. All forms of knowledge are acknowledged and respected, benefits are shared across the system, and the rights of the people at the heart of seed and food systems are protected.”
“Farmer-led: Opening, creating and promoting spaces for farmers to express their views, concerns, achievements and issues; Ensuring farmers’ rights and capacity to produce, exchange and trade seed; Shifting research towards farmer-driven research. Strengthening Sustainable practices; Recognition and enhancement of local and Indigenous knowledge and innovations; Promoting and upholding ecological practices; An emphasis on conserving and evolving farm saved seeds of high quality (not genetically engineered). The following are key in any resilient seed system: Infrastructure of seed systems; Trade and Exchange; Capacity building; Advocacy for farmer seed rights; and Research.”
A resilient seed system should satisfy seeds needs of all farmers through guaranteed accessibility of diverse seeds varieties for all cultivated crop species.

A resilient seed system operates under the following principles:

1. Always serving all farmers regardless of their scale of operation

2. Should always be conserving agriculture biodiversity for all crops including commercial and local crops

3. Should be inclusive allowing as many players to participate as possible

4. Should satisfy community food and nutritional needs”
“The foundation of resiliency is in diversity. This resilient seed system would have biodiversity held on many levels (both inter-specific and intra-specific) in a range of local/regional and national initiatives. A balance between in situ stewardship and ex situ safekeeping. A resilient seed system also has a diversity of voices that are guiding initiatives. Intergenerational and intercultural.”
“I see diversity as one of the most critical aspects of resilient seed systems. A diverse seed system can contribute to resilience to shocks and surprises as well as slow, gradual changes and can also be beneficial from a nutrition perspective by contributing to dietary diversity. Related to governance...food sovereignty and Farmers’ rights to productive assets and natural resources, such as land, water and seeds are key aspects, as well as landscape approaches and sector integration at multiple scales. To broaden participation and achieve greater equity, it is important to consider power relations and inequality between diverse actors in the food system across scales.”
Un sistema que permita el acceso abierto para que gente del ámbito rural, periurbano y urbano cuenten con semillas locales de calidad, en donde haya espacios para la formación y donde las políticas públicas favorezcan sus actividades. Así mismo como un espacio donde se valore el conocimiento campesino, el académico y puedan dialogar para construir procesos hacia el bien común, en donde los jóvenes se entusiasmen y las mujeres se sientan incluidas.”
“Sustainable and resilient seed system that is globally and traditionally acceptable.”
There are elements of diversity, local control, experimentation, farmer participation, scientist participation, exchange, commerce, information exchange, and availability. The key characteristics of fruits would be optimized in collaboration with local populations. Support would exist for farmers to maintain diverse wild cultivars and local varieties much like the CIGAR system but be living botanical gardens in collaboration with local farmers and resourced in strong ways. Farmers would know their rights and states would support them with both information and ideas. Universities and research institutes would create agendas for study based on farmer and consumer demand for healthful foods. Companies would enable farmers to reach markets and develop products that benefit all.

There is more on the second part about how cities and states promote and support the purchase of fresh local foods for access to consumers and institutions like schools, hospitals, prisons, and workplaces. The photo below is of Mixed cropping with Enset in Ethiopia from 2016.”
“A resilient seed system is the one in which seed availability, access to different varieties and seed quality are balanced according to the perception of the different stakeholders involved in the seed system.”
I think of resilience as the capacity of the seed system to absorb stresses and shocks; maintain function in the face of stresses and variability related to environmental change; and evolve into a system capable of withstanding a wide range of future conditions. This should be regarded as a social-ecological perspective. A very simple test would use the old view of a functional seed system as one that ensures that farmers have the right seed in the right condition at the right time. To this, for resilience, we should add the importance of ensuring that farmers have access to diversity – as crops and varieties and as diversity within varieties. This diversity at a system level should be capable of ensuring complementarity, a portfolio of choice, future options and adaptability, thus creating necessary (but not sufficient) conditions for resilience. Thus there is a need for access to diversity at all levels and the necessary range of materials have to be available. Evidence suggest that local institutions play a key part in strengthening resilience.”
A resilient seed system is one that allows farmers to withstand biotic and abiotic adversities so that they can continue having access to quality seed after all. It should be backed up by favorable seed policies, appropriate and sufficient seed infrastructure (seed laboratories, seed store, etc.), training sufficient human resources to serve the seed sector in the seed value chain, capacity building for rural community to efficiently produce seeds i.e., improve and support informal seed sector especially for indigenous and “low value” crops which are important for nutrition and food security of rural dwellers and creation and maintenance of an enabling environment for the seed sector in general.

Irrigated seed production for early seed generations, promotion of the importance of quality seeds using mass media such as rural radio, reinforcement of maintenance of the plant genetic resources of the countries for its sustainable use are also crucial for resilient seed system.”
“Millions of farmers selecting, adapting, and creating seeds around the world, as part of autonomous family businesses, and respecting agroecological principles.”
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