



# SEEDS FOR LIFE

SCALING UP AGRO-BIODIVERSITY



**Ecumenical Advocacy  
Alliance**



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# SEEDS FOR LIFE: SCALING UP AGRO-BIODIVERSITY

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Further recommended resources:  
EAA report: Scaling up Agroecology <http://tinyurl.com/EAAagroecology2012>  
Gaia Foundation & ABN film: Seeds of Freedom <http://seedsoffreedom.info>

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## SUMMARY

**U**rgent action is needed to ensure that farmers today can grow resilient, nutritious food for us all, in the face of climate change and other challenges. At the core of such action must be strategies to revive the diversity of seed that has been lost from the world's fields, and to support the knowledge and diversity that remains. Farmers' complex farming knowledge, and their right to save, adapt, exchange and sell seed must be recognized and protected in policy and practice. These strategies are critical for us all today, and for the generations who come after us.

## SEED IS LIFE

**T**he lives of humanity and seed are inextricably linked. For thousands of years, generations of farmers across the globe have been observing, selecting, nurturing, breeding and saving seed, so that with every generation agricultural diversity has increased. Farmers have creatively cultivated ever more crop varieties to deal with many different challenges of soils, climates, nutrition, flavor, storage, pests and diseases. All of us – as descendants of our seed-selecting ancestors – are living proof of the successful knowledge and diversity that farmers have enhanced and bequeathed to each generation.

Cultural practices around the world have played an important role in the recognition and passing on of diverse seed and related knowledge. Across Africa, for example, women have always played a valued role in their communities as the custodians of seed. Traditional ecological knowledge systems are based on the fact that without seed we cannot eat, that seed is sacred, that seed is life.

## SQUANDERING OUR INHERITANCE?

**B**ut for the first time in humanity's history, the last century has seen a dramatic decrease in global seed diversity. After the nerve agents and explosives developed during world wars I and II were reformulated in peacetime to become chemical pesticides and fertilizers for crops, corporations moved into the agrochemical and seed industry, seeking to create new customers from the world's billions of farmers. The so-called "Green Revolution" of the 1960s introduced new varieties of rice and wheat, bred to be high-yielding, but requiring large amounts of fertilizer and pesticides. These hybrid varieties gave – and continue to give – agribusinesses a captive market every year, as farmers found that seeds saved from hybrids performed unreliably when replanted. In addition, farmers' rights to save, breed, exchange and sell seed have been diminished as many countries' laws have favored corporations and criminalized farmers' traditional activities.

Thus in just a few decades, a profound change in farmers' relationships to seed has taken place. Where genetic diversity and farmers' knowledge was once the basis of farming, farmers are increasingly seen as customers, with corporate seed and chemicals replacing their own ingenuity. What was once agri-culture is increasingly becoming agri-business.

It is estimated that 75% of the world's crop diversity has been lost<sup>1</sup>; and the erosion of agricultural biodiversity continues today. Across much of the industrialized world – and increasingly in the global South – traditional seed diversity and related knowledge are no longer passed on, as farmers are encouraged or pressured to purchase seed. Tragically, our generation is squandering this incalculably valuable inheritance of seed diversity and knowledge.

“ I used to see 30 types of bean in the market, but now I only see 2.

– Ugandan farmer

## HUNGRY FARMERS

**T**he transformation of global farming has had many visible impacts. Water and fuel use in agriculture have risen dramatically, while vast amounts of food are wasted at every stage of the global production and transport chain. Global commodity crops have largely replaced those that are valued and eaten locally, and more than half of global calories eaten now come from just three plant species<sup>2</sup>. The shift from indigenous local crops grown for nutritional content, to just a few staple crops grown for

<sup>1</sup> UN FAO report "State of the world's plant genetic resources for food and agriculture" 2010.

<sup>2</sup> UN FAO "Dimensions of need: an atlas of food and agriculture" 1995.



## RESILIENCE TO CLIMATE CHANGE

yield has contributed to a loss of nutrients in diets and to global malnutrition. Furthermore, low prices earned on a competitive global market mean that farmers may find themselves increasingly in debt to pay for seed and chemical inputs. In the global South, millions have been forced to sell their land and to become labourers on large plantations.

In spite of these pressures, and the myth that large-scale industrial agriculture is more efficient, the “peasant food web” currently feeds 70% of the world’s population<sup>3</sup>, using only 30% of the land.

“ When I grew up, maize was sweet and had colors. Now the color has disappeared, it’s not sweet and it has hard skin. Where did our maize go?

– Ugandan farmer

By growing and saving dozens of seed varieties, farmers have traditionally spread their risk and guaranteed a harvest – even if they faced late or early rains, droughts, floods, pests and diseases. Additionally, by ensuring genetic diversity – rather than uniformity - within a variety, farmers also increase the likelihood that a portion of seeds will germinate under difficult conditions. Their in-depth knowledge and understanding of crops, seed, selection and local conditions has meant that they have created a wide range of germplasm, from which they can further breed and adapt new resilient and nutritious varieties.

But as the impacts of climate change hit farming, the problems with corporate agriculture are becoming clear. Farmers are increasingly finding that their supposedly high-yielding crops no longer perform as well in the face of unpredictable rains and temperatures, floods and droughts. Meanwhile, extensive use of fertilizer undermines natural health, water-holding capacity and resilience of soil to climate change. In addition, the industrial food system is estimated to contribute 44-57% of all global greenhouse gas emissions.<sup>4</sup>

Without their traditional seed diversity, farmers are losing the tools and resilience to deal with these challenges. Farmers, our communities and the entire global food system are thus highly vulnerable to climate change due to the erosion of the world’s agricultural biodiversity.

<sup>3</sup> ETC Group report “Who will feed us?” 2009.

<sup>4</sup> GRAIN “Food and climate change: the forgotten link” 2011.

## POLICIES ERODING SEED DIVERSITY

In many countries policies are successfully pushed by corporations, which allow them to claim “intellectual property” or patents over seed that they have developed, while simultaneously restricting the rights of farmers to save, exchange and re-use seed. Some farmers accuse these policies of effectively enabling “biopiracy” – or theft. Corporations can only develop seed by breeding from a common heritage of varieties that have been developed and freely shared by farmers for generations. Far from being the inventors of the seed, the corporations are profiting from farmers’ ingenuity, while undermining those to whom they are indebted.

Such policies have meant that in parts of the world, farmers can only access corporate seed. Now a small number of seed varieties are grown in huge monocultures across entire continents. The following initiatives are leading to the dramatic erosion of the world’s seed diversity:

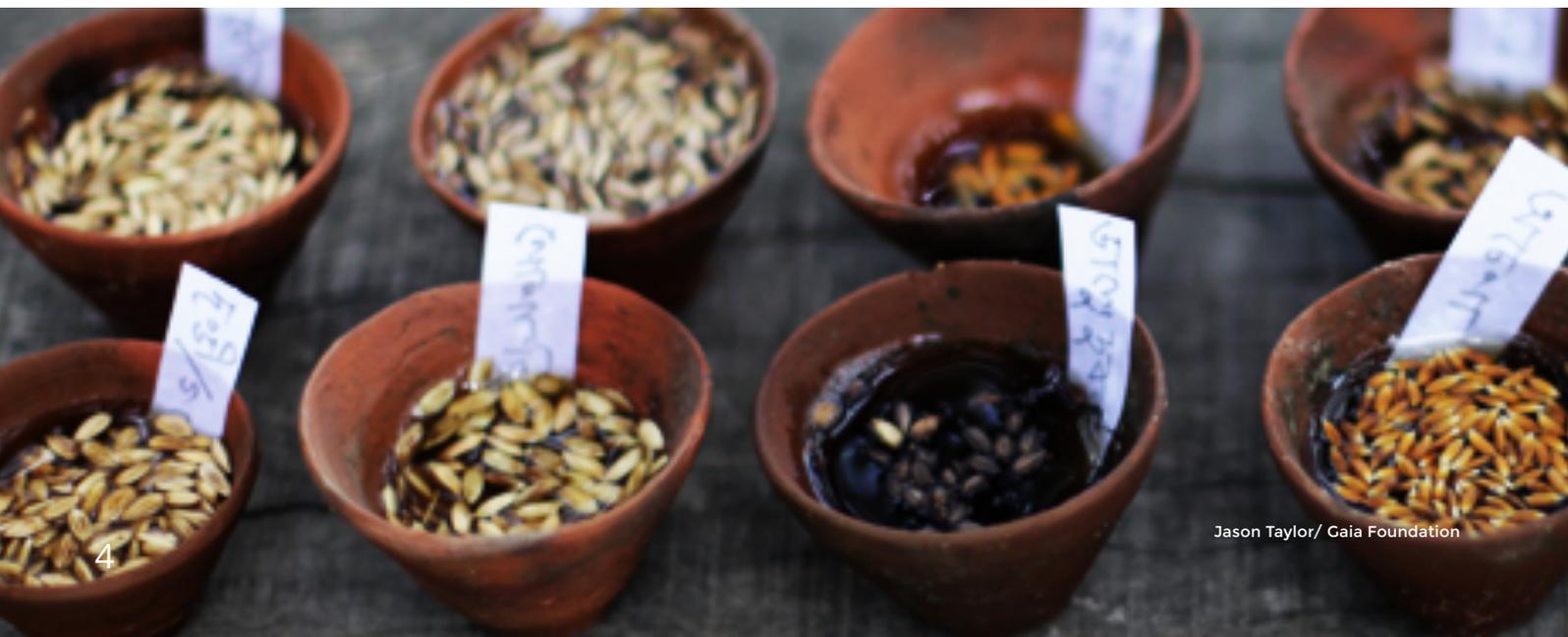
### UPOV/ Plant Breeders’ Rights

- ◆ This international convention requires any seed sold to be “Distinct, Uniform and Stable” (DUS). The DUS testing is extensive and expensive, and farmers generally do not have the means to get their own seed approved for sale. The DUS requirements therefore contribute to growing

corporate control over the entire seed market. Relatively few developing countries are signatories to UPOV (first agreed in 1961 and revised in ‘68, ‘78 and ‘91). However many are bound by UPOV standards through bilateral trade agreements or domestic laws. There is currently a strong push to encourage developing countries to sign up to the most restrictive version, UPOV’91.

### Genetically Modified Organisms (GMOs)

- ◆ A small handful of corporations sell GM seeds with genes transferred from different species. North American patent law enables them to claim patents over these seeds, and even to claim ownership over any seed where their GM gene occurs. They are therefore infamous for suing farmers who have unknowingly saved seed that has been accidentally cross-pollinated with GM. Although only two traits have ever been successfully commercialized (conferring resistance to pests and herbicides), the patent system and threat of legal action has enabled Monsanto to gain a 93% share of the US soybean market. Similarly, GM crops in Canada, Argentina and India have led to a dramatic loss of agricultural diversity.



## REVIVING RESILIENCE

### Targeting African Agriculture

- ◆ A number of new and overlapping developments are focused on Africa with the aim of criminalizing the saving and exchange of seed, and creating new markets for corporate seed and chemicals. Their strategies include:
  - i) **Harmonization of African Seed Laws:** Working through African regional blocs such as COMESA, SADC and ARIPO5 to promote the regional “harmonization” of seed trade laws and plant variety protection (PVP) based on UPOV91, while failing to hold consultations on these critical issues at national level.
  - ii) **Alliance for a Green Revolution in Africa (AGRA):** Encouraging farmers to take on loans to purchase specific brands of seed and fertilizer.
  - iii) **The G8 New Alliance for Food Security and Nutrition:** Requiring African countries to change their land laws, trade laws and seed laws, in order to facilitate corporate access and control. The New Alliance also claims to want to address malnutrition in Africa. However it is promoting corporate strategies of “fortification” of food and crops, instead of improving diets by working with women and other small-scale farmers to revive a diversity of nutritious crops and wild species.

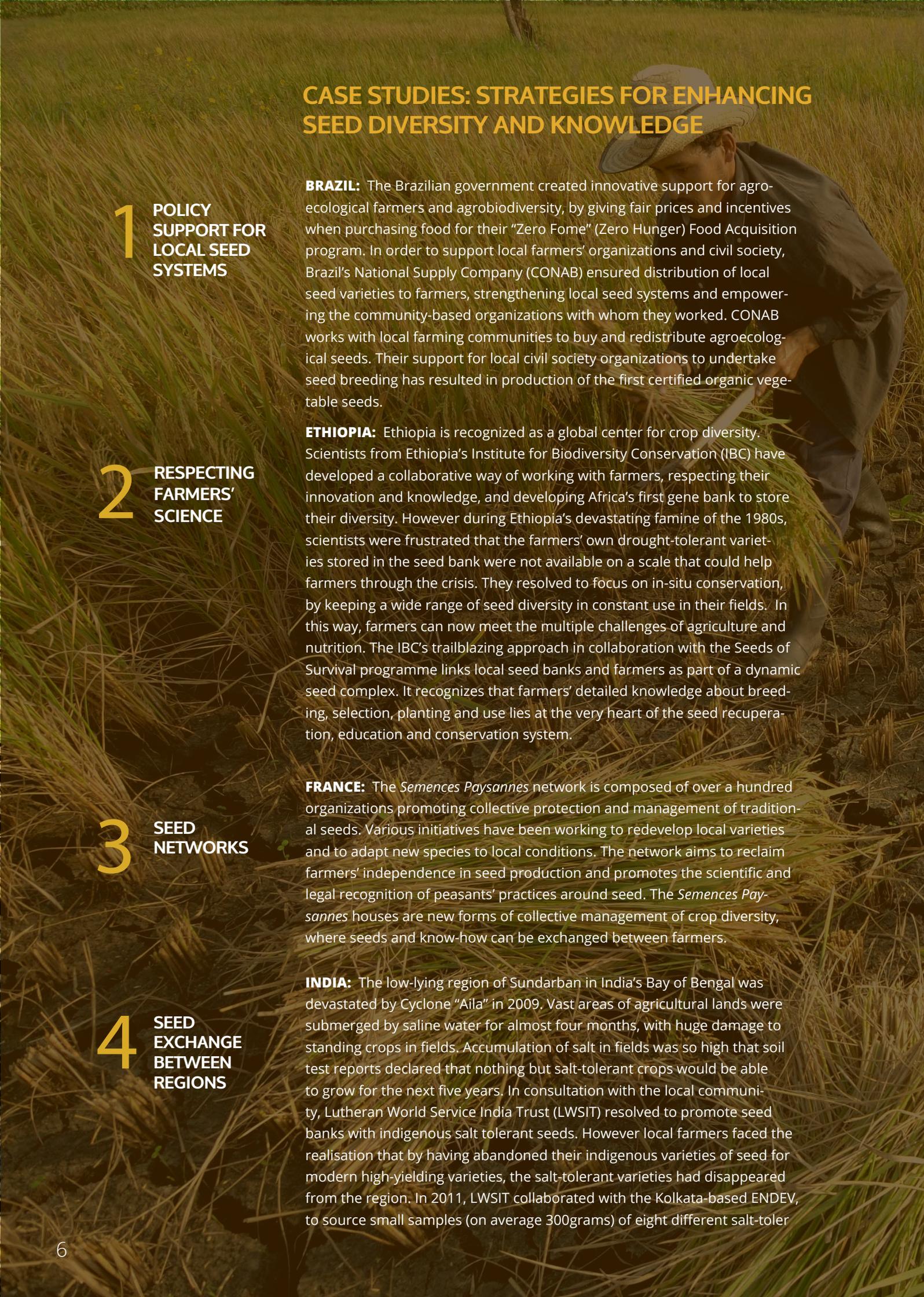
To ensure that farmers and our food systems have the capacity to adapt to climate change, we urgently need strategies and policies that support them to revive their seed diversity and related knowledge. These strategies not only support climate resilience; by enhancing diversity they also confer resistance to pests and diseases, and they mean accessible nutrition for rural communities. Re-investing in knowledge exchange can also enable farmers to understand and respond to their local ecosystems. By saving, selecting and exchanging seed that requires only the Earth’s free gifts of water, sunshine and healthy soil to grow, farmers do not need to purchase costly seed, fertilizers and pesticides every season. Instead, agroecological farming practices improve the health, ecology and natural fertility of soil. Building up soil carbon in this way could reduce current global greenhouse gas emissions by 24-30%6. Healthier soils also benefit from increased water-holding capacity and resilience to drought and flooding. Any serious response to climate change must therefore support agroecological practices, seed diversity, and farmers’ knowledge systems. Ultimately, reclaiming seed diversity underpins an ecologically sane food system that puts farmers, their knowledge and dignity at the heart of farming7.

<sup>5</sup> Common Market for Eastern & Southern Africa (COMESA), the Southern African Development Community (SADC) and the African Regional Intellectual Property Organisation (ARIPO).

<sup>6</sup> GRAIN “Food and Climate Change: the forgotten link”, 2011.

<sup>7</sup> To see an interactive map of case studies, stories and resources visit [seedmap.org](http://seedmap.org), launching in October 2013.





## CASE STUDIES: STRATEGIES FOR ENHANCING SEED DIVERSITY AND KNOWLEDGE

### 1 POLICY SUPPORT FOR LOCAL SEED SYSTEMS

**BRAZIL:** The Brazilian government created innovative support for agro-ecological farmers and agrobiodiversity, by giving fair prices and incentives when purchasing food for their “Zero Fome” (Zero Hunger) Food Acquisition program. In order to support local farmers’ organizations and civil society, Brazil’s National Supply Company (CONAB) ensured distribution of local seed varieties to farmers, strengthening local seed systems and empowering the community-based organizations with whom they worked. CONAB works with local farming communities to buy and redistribute agroecological seeds. Their support for local civil society organizations to undertake seed breeding has resulted in production of the first certified organic vegetable seeds.

### 2 RESPECTING FARMERS’ SCIENCE

**ETHIOPIA:** Ethiopia is recognized as a global center for crop diversity. Scientists from Ethiopia’s Institute for Biodiversity Conservation (IBC) have developed a collaborative way of working with farmers, respecting their innovation and knowledge, and developing Africa’s first gene bank to store their diversity. However during Ethiopia’s devastating famine of the 1980s, scientists were frustrated that the farmers’ own drought-tolerant varieties stored in the seed bank were not available on a scale that could help farmers through the crisis. They resolved to focus on in-situ conservation, by keeping a wide range of seed diversity in constant use in their fields. In this way, farmers can now meet the multiple challenges of agriculture and nutrition. The IBC’s trailblazing approach in collaboration with the Seeds of Survival programme links local seed banks and farmers as part of a dynamic seed complex. It recognizes that farmers’ detailed knowledge about breeding, selection, planting and use lies at the very heart of the seed recuperation, education and conservation system.

### 3 SEED NETWORKS

**FRANCE:** The *Semences Paysannes* network is composed of over a hundred organizations promoting collective protection and management of traditional seeds. Various initiatives have been working to redevelop local varieties and to adapt new species to local conditions. The network aims to reclaim farmers’ independence in seed production and promotes the scientific and legal recognition of peasants’ practices around seed. The *Semences Paysannes* houses are new forms of collective management of crop diversity, where seeds and know-how can be exchanged between farmers.

### 4 SEED EXCHANGE BETWEEN REGIONS

**INDIA:** The low-lying region of Sundarban in India’s Bay of Bengal was devastated by Cyclone “Aila” in 2009. Vast areas of agricultural lands were submerged by saline water for almost four months, with huge damage to standing crops in fields. Accumulation of salt in fields was so high that soil test reports declared that nothing but salt-tolerant crops would be able to grow for the next five years. In consultation with the local community, Lutheran World Service India Trust (LWSIT) resolved to promote seed banks with indigenous salt tolerant seeds. However local farmers faced the realisation that by having abandoned their indigenous varieties of seed for modern high-yielding varieties, the salt-tolerant varieties had disappeared from the region. In 2011, LWSIT collaborated with the Kolkata-based ENDEV, to source small samples (on average 300grams) of eight different salt-tolerant

## 5 SEED STORAGE STRATEGIES

ant indigenous rice varieties from around the country. thirteen farmers were selected for seed multiplication, and with close support from LWSIT around 831 kg in total of the rice varieties were harvested in 2012 and distributed to farmers for growing. Farmers were inspired to revive their seed-saving practices to ensure their food and livelihood security in challenging saline conditions.

**SRI LANKA:** There are many traditional and accessible strategies for storing seed that are effective and affordable, and which can keep seed preserved for years if necessary. Simple techniques include placing a burning candle on top of dried seeds in a glass jar, closing the lid and allowing the candle to die out to remove the oxygen. The jar is then sealed with silica gel, and the color then checked every few years. Traditional practices can also be used to dry seeds before storing. In Badulla district in Sri Lanka, farmers use many different techniques, including: traditional smoke plates called “Dumessas”, hanging seeds in an areca-nut leaf bag above the Dumessa; a clay pot method using charcoal and ash; storing seeds in a local variety of gourd fruit; and the “Dasa Pathra Kuda” (ten leaf bags) using a powdered combination of leaf species to enhance the conservation and viability of the seeds.

## 6 WOMEN AND ELDERS AS KNOWLEDGE HOLDERS

**KENYA:** In Kamburu, Kenya, a pioneering village is changing the way the African Biodiversity Network (ABN) understands and works with seed. A series of community dialogues opened the space for elders to recall the seed varieties and knowledge that they had used decades before, without fear of being judged “old fashioned” by the younger generation. It became clear that by shifting to modern varieties and approaches, the community had lost valuable strategies for resilience and their own food security. Fortunately, a number of grandmothers in the village had quietly continued saving their favorite varieties. These hidden pockets of resilience were revived and scaled-up by a community now newly appreciative of their own seed heritage. Within 18 months, even as Kenya faced two years of drought, Kamburu’s climate- resilient seed diversity gave them a surplus for the first time. The respected role of women as custodians of seed was revived, and women’s status in the community was restored.

## 7 CULTURAL SIGNIFICANCE OF SEED AS SACRED

**SOUTH AFRICA:** Indigenous communities have embedded the passing on of seed, knowledge and ecological governance into their cultural practices for generations. A number of clans in the Venda region of North-Eastern South Africa are using innovative and participatory methodologies to bring forgotten knowledge and seed back into the community. By developing “eco-cultural calendars” together, the community is able to collectively remember and restore their diversity of crops, practices and rituals, recognizing the sacredness of seed to mark every stage of growth and life. The eco-cultural calendars make the loss of diversity, knowledge and culture from past to present more visible to the community. This gives them a revived and passionate urgency to restore the cultural practices that can ensure seed diversity for the generations to come.



## SEED, SPIRITUALITY AND CHRISTIAN VALUES

**A**ll religions and spiritualities, including Christianity, recognize humanity's role as guardians of biodiversity and God's creation. Seed is at the heart of nature's biodiversity, and symbolizes the capacity of life to regenerate itself. Many indigenous communities handle their seed with particular care during its life cycle, conducting special rituals before planting and after harvest. Seed is often at the heart of community rituals performed to bring rains and healing to the land and territory, as well as thanksgiving after a good harvest. Indigenous communities value their seed as a means to relating to and connecting to their spiritual realm.

It is our responsibility to protect these seeds from extinction, and to revive their bountiful diversity. We recognize and give thanks to previous generations of farmers for enhancing and passing on their seed heritage and knowledge. We value the knowledge and skills of the world's small-scale farmers today. Reviving seed diversity is a strategy for ecological, economic and social justice for these farmers and for our own food security. Furthermore, we have a moral duty to remember the needs of the generations that will come after us, and to ensure that they too can farm and eat.

## KEY RECOMMENDATIONS FOR POLICY AND PRACTICE

In our advocacy and actions for a resilient food system and for food sovereignty, we should:

- ◆ Reform our food system towards supporting peasant farming, agroecology, seed diversity and local markets.
- ◆ Reject introduction and harmonization of seed laws based on UPOV restrictions or even more restrictive intellectual property standards.
- ◆ Reject nationalization of the recently-approved COMESA agreement to harmonize seed trade laws, as there has been no consultation on the issue at national level in any African country.
- ◆ Reject patents on seeds and living organisms.
- ◆ Reject GM technologies that impact negatively on biodiversity and the lives and livelihoods of farmers and consumers.
- ◆ Reject policy changes dictated by the G8 New Alliance on Food Security and Nutrition that undermine African farmers' land, seed and livelihoods.
- ◆ Revitalise the international Seed Treaty
- ◆ Nationalize the African Model Law on Farmers' Rights, which ensures farmers' continued access to and control over their plant genetic diversity, as well as the African Model Law on Biotechnology.
- ◆ Agree strategies for agriculture that prioritise farmer-controlled seed diversity and in-situ conservation for adaptation, e.g. in the UN negotiations on Climate Change.
- ◆ Nationalize policies that support farmer based seed breeding and free exchange and distribution of agroecological seeds
- ◆ Promote participatory plant breeding in collaboration with farmers, enabling them to further enhance seed diversity and use knowledge that meets their many different needs.
- ◆ Support networks of farmers and seed savers, and processes for them to share seed, knowledge and experiences.
- ◆ Support community seed banks that ensure seed is in constant use by farmers, enabling them to try out, develop and multiply many different varieties.
- ◆ Instigate community dialogues with all generations including elders, to remember, rediscover and revive seed and related knowledge.
- ◆ Celebrate and support communities' seed diversity and seed saving with seed festivals and fairs.
- ◆ Support revival of cultural practices around seed by using participatory methodologies that draw out knowledge and respect, while ensuring that this legacy is passed on to the generations to come.
- ◆ Become a gardener yourself. Use heritage and non-hybrid seeds, and/or become a seed guardian with an organization promoting seed diversity.



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