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Save seeds, save life

Agriculture, biodiversity and communities: does it add up?

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In 1905, Einstein published the world's most famous equation: $E=mc^2$, which has since become a fundamental principle. A hundred years on, it's time to propose another equation as a fundamental principle of the 21st century: $A=bc$. Agriculture (A) equals biodiversity (b) multiplied by communities (c) squared – including both rural communities and the global community at large. While agrobiodiversity holds great promise for the future, unleashing its potential will require a deep transformation in agricultural policy, practice and knowledge sharing.

Agrobiodiversity encompasses crop, livestock and fish species, varieties and breeds, soil biodiversity and pollinators and the diversity of farming systems and agricultural landscapes. It is the basis of the food we eat. Agricultural biodiversity is also about how, over generations, people have drawn on their accumulated skills and knowledge, building on the natural environment and all its diversity, to utilise, develop and conserve these natural resources and their products – the seeds that grow into our food crops, the livestock and fish, the wild biodiversity that supports key functions of the agro-ecosystem, the diversity of landscapes, farmers and knowledge systems.

Agriculture depends on biodiversity. It is the DNA of the agricultural landscape, both literally and metaphorically, and the cornerstone of food and nutrition security, climate change adaptation, conservation and sustainable livelihoods. However, in practice the vast majority of the world's agriculture and food systems are destroying the very biodiversity on which they rely at a very fast pace. Control over genetic resources is increasingly being placed in the hands of transnational corporations. Farmers' access to these resources is at risk.

Industrial biodiversity

One of the big debates around agrobiodiversity centres around "land-sparing" versus "land-sharing": either the separation or integration of farming and natural ecosystems.

Proponents of *land-sparing* advocate intensive industrialised agriculture. They argue that this leads to more productivity per hectare, and leaves land for nature and biodiversity conservation. This approach has failed to nourish the majority of the world's rural people, has polluted and depleted vast amounts of natural resources and biodiversity and displaced local communities. Moreover, the homogenisation of agricultural systems has resulted in the increased vulnerability of crops and livestock to the effects of climate change and to pests and diseases. The recent avian and swine flu epidemics are a clear reminder of the latter.

A *land-sharing* approach does not separate biodiversity from agriculture but acknowledges the intrinsic linkages between the two. This approach builds on the productive potential of agrobiodiversity combined with farmer knowledge, cultures and skills. A *land-sharing* approach, translated into policy and support for scaling up, could safeguard the biodiversity base of our food and agricultural system and reduce the risk of (further) surpassing our planetary boundaries and risking the future of farming.

Scaling up in India

In January 2014, G.V. Ramanjaneyulu and his team at the Centre for Sustainable Agriculture (CSA) in India received the Best Innovation Award for their work on sustainable agriculture, especially on ecological practices to reduce pesticide use. Many farmers have reported on the effectiveness of these practices, their economic viability and how they have increased their self-confidence. Women farmer organisations have even demanded that the programme be initiated in their villages. CSA's goal to mainstream an alternative to pesticides overlapped well with the government's aim to improve livelihoods through cost reduction in farming. Bringing other actors on board scaled up individual islands of success. CSA is currently working in over 11,000 villages! The Maharashtra State Rural Livelihoods Mission award holds further promise for the future, as the state aims to collaborate to scale up the experience in ten districts. Just one week later, CSA received another award, this time in Bihar. Their work clearly is convincing people and changing attitudes.

Small farmers, huge potential

According to the FAO, over 1.5 billion people in Asia and sub-Saharan Africa alone live on smallholder family farms. These farmers have the right to a sustainable livelihood in the areas they currently live in and agro-ecological practices building on biodiversity can provide them with a strategy to claim that right.

Family farmers are, often by default, custodians of biodiversity. This especially holds true for those living in poverty, as building resilient farming systems is the most logical choice for them. This is seen in the Deccan region of India. Many family farmers who live on marginal land where climate change impacts and selection pressures are greatest, have become local experts in identifying crop species and varieties resilient to shocks and stresses. Particularly women and older farmers are active breeders of plants and livestock, conserving local landraces and traditional breeds, drawing on wild species and selecting their preferred and adaptive characteristics over generations. Building on the natural capacities of a diverse agro-ecosystem makes these family farmers less dependent on external (chemical) inputs. Agro-ecological practices are also well suited to the smallholder context, as labour use is flexible and used to optimise livelihoods rather than to maximise production.

However, farmers' rights to develop, save, exchange and sell their landraces and traditional varieties is threatened. Under pressure from international trade agreements and conventions such as UPOV (International Union for the Protection of New Varieties of Plants), many governments have started to provide intellectual property rights over seeds to transnational corporations. Legislation increasingly demands requirements of stability, uniformity, and distinctness on seeds that are sold and exchanged. Local varieties used by farmers often do not meet these conditions as they carry high genetic variability. This puts biodiversity, cultural heritage and farmers' rights at risk and stifles the very innovation and development such agreements claim to stimulate.

Knowledge for transformation

Globally, there is a rich mosaic of locally rooted practices and initiatives that promote and enhance agricultural biodiversity. Together, they make up the ingredients for a transformation of the current system to robust future-proof and farmer-centred agro-ecological systems based on agricultural biodiversity. But such a transformation will not happen by chance. Analysing case studies and learning from emerging successes of scaling up (see box) are essential for understanding the factors that could catalyse large-scale change. Many groundbreaking experiences are or can be the foundation for larger transformations.

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For the past two years, a network of organisations and individuals in the agrobiodiversity@knowledged programme has started to address some of the questions around the transformation of our food system and the role of generating, sharing and promoting the uptake of knowledge on agrobiodiversity at different levels. We found that there seems to be a “glass house” that prevents the many positive examples from around the world from taking hold at a larger scale. Scaling includes both horizontal scaling out (spreading of practices) as well as vertical scaling up (uptake in policy and by institutions). The network members identified five interlinked themes that constitute entry points for positive change: markets and trade; policies and governance; seeds, breeds and technology; information platforms, and community resilience.

Catalysing the process of scaling

Why does change lead to transformation in some regions or systems, but not in others? Social and cultural norms form some of the strongest barriers. Many experiences show that interaction between researchers and local communities plays a crucial role in understanding how landscape and system transformations take place. Scientists can contribute by, among other things, making models for analysing data aggregations, bringing in new germplasm from other areas and providing technological support. Communities naturally have a deeper knowledge and understanding of local conditions, including experience of historical events that have contributed to shaping the current system. And they outnumber the scientists. Their potential contribution to change is enormous. Such collaborations have shown to be effective in a number of experiences.

Furthermore, experience shows that with adequate support and investment from governments, agro-ecology can be efficiently scaled up. This requires political will and, ultimately, a real democratisation of agricultural and food governance. Political will can be created through positive experiences and pressure from civil society. In other places around the world, farmers, indigenous communities, citizens and non-governmental organisations are mobilising to protect the right to save, exchange and sell seeds. As this issue goes to print, farmers and citizens are contesting proposed seed legislation in Ghana and Brussels that would increase corporate control over seeds, threaten the sale of traditional and farmer varieties and, in the case of Ghana, allow the commercial sale of GMOs. Farmers and citizens point at the high cost of GM seeds and the failed promises of better yields and lower pesticide use in surrounding countries. Several months ago, Colombian farmer organisations successfully protested against a resolution that would have made it illegal for farmers to save seeds and handed all control over seed markets to private companies. At the international level, civil society pressure has led to the ambitious reform and significant democratisation of the decision making processes of the FAO’s Committee on Food Security.

We found that it is fundamentally important to invest in knowledge building and sharing among different stakeholder groups and to tailor your messages and means of communication to different audiences. The use of participatory approaches that bring different

knowledge systems together is particularly important, as is the building of partnerships based on trust and equality.

The road to success and scale cannot always be thoroughly planned in advance. Sometimes you need to grab an opportunity when it presents itself by making use of champions, or by recognising windows of opportunity. The Deccan Development Society celebrates successes among women farmers and the Centre for Sustainable Agriculture in India used the opportunity provided by a well-known talk show host to share its case.

The future holds promise

A transformation towards an agricultural system powered by biodiversity and farmer communities is possible and already happening. Its scaling requires inclusive, community-oriented and knowledge-based approaches that put farmers, rather than corporate interests, centre stage. It builds upon readily available resources: people, their labour, their knowledge and their local natural resources. Local and informal sector networks and initiatives are not only important for promoting biodiversity-based agro-ecological farming and sharing knowledge and skills. They also matter for enhancing farmers’ capacity to stand up for their rights at local, national and international fora. The International Year of Family Farming is an excellent opportunity to acknowledge, celebrate and support such networks and initiatives, and to put their successes in the spotlight.



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