



Section IX

Sustainable food systems and global environmental change

*Special Issue: Mapping the Global Food Landscape***Peasant agriculture, seeds, and biodiversity**

Faris Ahmed

Director of Policy and Campaigns, USC Canada

Seeds hold a special place in the struggle for food sovereignty. These small grains are the basis for the future. They shape, at each life cycle, the type of food people eat, how it is grown, and who grows it. Seeds are also a vessel that carries the past, the accumulated vision, and knowledge and practices of peasant and farming communities worldwide.

—La Via Campesina, *Our Seeds, Our Future* (2013)

Farmers and food providers have created and maintained the knowledge and biodiversity that is the basis for the planet's food supply for thousands of years. Yet seeds and biodiversity have been at the margins of the mainstream discourses on food security. New thinking and global events are rapidly changing as seeds, biodiversity, and peasant agriculture are now front and centre in the discourses promoting food sovereignty, food system resilience, and sustainability.¹ This paper argues for a central place for this discourse, examines the state of peasant agriculture, and outlines the policies and measures needed to support it.

These new dynamics are fed by both crisis and opportunity. The current crisis is related to post-2008 questions of how to feed a billion hungry people on a planet seriously endangered by climate change, and in the context of market volatility, unrestrained speculation and investment in land and food commodities. The opportunity, on the other hand, stems from heightened awareness and action on food justice, seeds, and biodiversity at all levels: states,

¹ These reflections are based on the work of USC Canada (Unitarian Service Committee) with social movements, farmers' organizations, and networks working on seeds and biodiverse agriculture over the past decade.

institutions, civil society, and the general public. The push for change is being led by food sovereignty movements, farmers and food providers, students, environmental activists, food enthusiasts, gardeners, and health-conscious parents, nutrition professionals, and others. And at the public level, the demand for heirloom crop varieties, seed exchanges, organically produced foods, and connecting with those who produce our food, all indicate a tremendous rising interest in food and seeds.

These shifts also coincide with renewed interest in the potential of small-scale food producers at the level of global food governance in Rome. Reforms of the Committee on World Food Security (CFS) have given diverse networks of peasant farmers, fishers, pastoralists, indigenous peoples, landless, agricultural workers, young farmers, and social movements a seat at the table in Rome, and the opportunity to influence this agenda. Consequently, the recent FAO conference on agroecology heeded the call by farmers' movements and civil society to make agroecology and biodiverse agriculture an essential model to realize the human right to food (as has been articulated earlier in several reports by Olivier de Schutter, former UN Special Rapporteur on the Right to Food) (de Schutter, 2010).

These trends have all led to the same resounding conclusion: the current dominant food systems are not serving us, and need a major rethink. Debates on agriculture are vibrant but many still contain numerous reality gaps, particularly those related to the starting point of agriculture, and the first link in the food chain: seeds.

The state of peasant agriculture, seeds and biodiversity

What do we need to know about peasant agriculture and food systems? "Peasant agriculture" is used by La Via Campesina and other food sovereignty networks to reclaim the space for and respect the roles of the smallholder farmers and food producers who are at the heart of food systems. ETC Group sees peasant agriculture as a "food web," in contrast to the industrial "food chain," and portrays it as a complex and interconnected web of relationships between people, communities, and ecosystems. Contrasting the two food systems reveals a great imbalance in the contribution of each one to food security, and the resources that each takes (ETC Group, 2013; Mooney and ETC Group, this issue). Peasant agriculture plays a significant role in feeding the world, with some arguing that it produces up to 80 percent of the food consumed in the non-industrialized countries (de Schutter, 2010). Using less than a quarter of the world's farmland, peasant agriculture grows about 7,000 different crops. In contrast, the industrial food chain produces about 150 crops, using 70 percent of the world's agricultural resources (ETC Group, 2013).²

² The Peasant Food Chain, according to ETC Group (2010, p. 3), provides 30 percent of all food consumed (crops, fish, etc.) but uses about 70 to 80 percent of world's arable land to grow 30 to 40 percent of crop-derived food, while accounting for 70 percent of water used in agriculture (ETC Group, 2010, p. 3).

Seed saving and plant breeding are essential starting points in the practice of agriculture. Peasant agriculture begins with farmer-saved seeds and the knowledge of how to breed them in a particular agro-ecosystem. As plant breeders, farmers are most interested in *intra-specific* diversity—diversity within a particular plant species—because the loss of intra-specific diversity weakens resilience to pests, diseases, and climate change. In breeding seeds and cultivating them sustainably, peasant farmers retain an ongoing library of information and knowledge about how seeds perform under different conditions, what traits express themselves when, and which are hidden. Peasant farmers also recognize and seek to cultivate the benefits of numerous varieties measured by criteria that include, among others: yield, nutrition, market value, hardiness, storability, disease tolerance, adaptability to changes in climate patterns, growing season, desirability, taste and colour, cultural value, etc. Meanwhile, industrial agriculture breeds for very few traits and conditions—relating mostly to yield and herbicide tolerance.

Peasant farmers depend on *in situ* or on-farm conservation of seed varieties as opposed to *ex situ* conservation, away from the fields. Seeds saved in farming communities constitute living seed banks, and these can enable the community to retain full access and control over their genetic resources for breeding, but also for use as food and for income if they wish. *Ex situ* conservation is a necessary backup in case of catastrophic crop failure.

Peasant agriculture through dynamic selection of plant varieties, development, and exchange of seeds, is actually *growing* biodiversity within species. For example, small-scale farmers (who for all intents and purposes should be called “farmer scientists”) working in the hillside regions of Honduras as part of USC Canada’s Seeds of Survival program bred 145 varieties of beans over the past decade (USC Canada, 2013). Peasant food systems work with a spectrum of agro-ecosystem variables, and make optimal use of soil, water, and seeds. Natural resources are constantly improved, through experimentation, innovation, and value creation. Unlike industrial agricultural thinking, there are no “externalities” in these systems; the various elements all work to enhance the whole. Peasant food systems aim to minimize losses, but when there are losses, they are due less to misuse or overuse of resources and technologies; instead, they are related to climate change or normally occurring weather patterns, or problems related to weak infrastructure (storage, transport, etc.) (van der Ploeg, 2013).

Finally, there is the question of productivity. The role of smaller, integrated farms in enhancing productivity, partly through resilience and diversity, is well documented.³ GRAIN calls this the “productivity paradox,” referring to an inverse relationship between farm size and productivity. For example, in Central America small farmers have 17 percent of the agricultural land, yet they account for 50 percent of all agricultural production. In Kenya, with just 37 percent of the land, small farms produced 73 percent of agricultural output in 2004 (GRAIN, 2014).

³ For example, see the work of Altieri et al. (2012), Koohafkan et al. (2011), McIntyre et al. (2009).

Policies that support peasant agriculture and biodiversity

In its landmark report, the International Assessment of Agricultural Science, Technology and Knowledge for Development (IAASTD; see McIntyre et al. 2009) spoke of the “multifunctionality of agriculture.” Today, food system analysis often uses the approach of food system resilience. Both take a broad systemic approach that considers the environmental, social, economic, and political dimensions. How can this broader framing help lead to transformation? How do we fit this “whole” systemic approach to food and farming into the fragmented world of decision-making policy? What policies could support a transition to a biodiverse, resilient, peasant food web? Some of the following connected and mutually reinforcing policy measures might work towards this goal.

1. Tackle the systemic barriers and drivers of biodiversity loss

Stronger policy and regulatory measures at the international and national levels are required to tackle the drivers of biodiversity loss that have led to a 75 percent loss in crop diversity in the last 100 years, and that have eroded the foundation of our food and agricultural systems. Trade and investment policies, speculation, and the financialization of food and agriculture, land, and commodities are significant drivers of this phenomenon. Also key is to address corporate concentration in the food and seed industry, to eliminate perverse incentives (such as subsidies to agrofuels), and re-assess the effectiveness of market-led solutions such as the UN Environment Programme’s initiatives under Reducing Emissions from Deforestation and Forest Degradation (REDD) and schemes involving biodiversity offsets.⁴

2. Enable seed policies

Around the world, there is surging interest in agroecological farming with diverse crop varieties, especially local varieties. Yet for those who want to practice low-input farming with biodiverse varieties, there is a significant shortage in the supply of high-quality, organic, locally adapted, diverse varieties of seeds that can be legally owned, saved, and replanted. This is a major shortcoming. However, policies can support the initiatives to produce more organic, diverse seeds, and facilitate (rather than prohibit) farmer-to-farmer seed exchange, creating a “protected commons” for farmers and seed breeders using open-source methodologies.

Seed legislation and regulatory frameworks often favour corporate breeders over small farmers’ rights and practices of breeding their own plant varieties, saving, exchanging, and replanting their seeds. National level legislation derived from UPOV 91 is having this impact in many countries (including Canada, where recently tabled legislation based on UPOV 91 would revoke the privileges and exceptions given to farmers under UPOV 78) (National Farmers

⁴ For an explanation of biodiversity offsets and other financing mechanisms for ecosystems, see EcoNexus, *Business and Biodiversity: A Licence to Operate* (December 2012), <http://www.econexus.info/publication/business-and-biodiversity-licence-operate>

Union, 2013). In many countries, including Canada, state funded *public* plant breeding programs, which had been key features of national level crop research, must be re-instated.

Externally developed seed technologies such as genetic engineering and synthetic biology require strong, transparent, and inclusive technology assessment mechanisms and the application of the precautionary principle, since they marginalize peasants and their knowledge systems, extend corporate control, and undermine food sovereignty.

3. Support biodiverse peasant agriculture

Specific policies, programs, and funding are needed to support small-scale food producers in agriculturally biodiverse systems, and give priority to genetic resource conservation on-farm, through community seed banks, participatory plant breeding and seed sharing initiatives. Supporting farmers' access to land and to organic, local seeds, particularly for young farmers, is also key. Such policies and programs should go beyond farmers, taking into account the rights and knowledge systems of women, livestock keepers, forest communities, artisanal fishers, indigenous peoples, and local communities.

4. Make research on peasant agriculture and agroecology a priority

Huge imbalances exist between corporate research and breeding programs and research on peasant agriculture by small-scale farmers and civil society. Research priorities must be re-oriented, with priority placed on farmer-led research that is centred on the knowledge systems of peasant food producers, and which promotes knowledge exchange at the farmer and community level. An obvious area of study here is agroecology and its far-reaching social and economic benefits. Much of this can be accomplished through revitalized public research, and state-supported plant breeding programs that were instrumental in biodiversity research in the past, but which have disappeared in many countries as privately bred and patented seeds take over the market.

5. More inclusive and localized governance of food and seeds

As the Committee on World Food Security High Level Panel of Experts (CFS, 2013) points out, governance in agriculture and rural development needs to be (re)designed to support the multifunctional nature of smallholder farming. Today we have examples of visionary national, provincial, and municipal food policies put forward through inclusive deliberation processes, including some that are led by civil society (such as Food Secure Canada's *Peoples Food Policy*, 2011). Looking at food across its many aspects, the People's Food Policy suggests localizing food production and consumption, supporting a widespread shift to ecological food production, and addressing food insecurity through poverty, health, and child nutrition programs. When it comes to seeds and agricultural diversity, municipalities could capitalize on this new public interest and incorporate biodiversity into successful, integrated food policies and practices, creating dynamic local foodsheds and institutional support for connecting producers, eaters, and decision-makers through food. What might this look like? Some examples are seed diversity

gardens in cities, school nutrition programs with a biodiversity curriculum, and food procurement programs that source heritage crops.

6. Strengthen the voices of peasants and food producers

The reformed Committee on World Food Security represents a model of inclusive, representative governance that put farmers, fishers, pastoralists, and food providers at the policy table. We need to spread the CFS model of governance to other multilateral bodies governing climate change, trade and human rights—which have a direct impact on food security—and replicate the inclusive decision-making structures at the national, provincial, and municipal levels at which policies are implemented. At the same time, there is no more effective way of amplifying farmers’ voices than to strengthen farmers’ organizations themselves and support their efforts to build alliances with other organizations.

Areas of research

More research is needed in the area of biodiversity-based peasant agriculture for uptake by a wider range of policy makers and practitioners. This research should consolidate the existing national and subnational evidence on positive impacts of peasant agriculture while also examining the factors that are impeding the wider adoption of these approaches.

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