Seeds at Risk

Global Struggles for Control over Food

AFSA ALLIANCE FOR FOOD SOVEREIGNTY IN AFRICA
APBREBES
ROSA LUXEMBURG STIFTUNG
SEARICE SOUTHEAST ASIA REGIONAL INITIATIVES FOR COMMUNITY EMPOWERMENT
SWISSAID

Contents

Authors
Simon Degelo
Refiloe Joala
Patricia Lizarraga
Imen Louati
Tauqueer Sabri
Jan Urhahn

Farmers' seeds

The foundation of all food systems

It has become clear that our current food system is not working. More than a quarter of all human beings – 2.22 billion people – face moderate to severe food insecurity, global biodiversity is rapidly shrinking, and the most vulnerable and marginalized communities, including farm workers and small-scale food producers, are hit hardest by ever more frequent environmental and economic shocks.

Seeds are at the heart of all food systems; they contain the genetic information that determines crop traits and yields. The diversity of seed varieties available today is the result of the collective efforts of farmers over thousands of years. Seeds are a common human resource passed down from generation to generation. For more than 10,000 years, farmers have selected, exchanged and stored seeds. However, our rich heritage of seeds is being lost.

Since the accelerated industrialization of agriculture after World War II, seed breeding has become a profitable business for specialized companies. Many countries in Europe and North America have begun to regulate their seed sectors and are applying intellectual property laws to seed production. This approach is ill-suited to the contexts in many countries in the Global South, where up to 90 percent of seeds are farm-saved. Notwithstanding this, many countries in the Global South have introduced seed regulations identical to or even stricter than those imposed in the Global North. For instance, in 2020, Ghana passed its Plant Variety Protection Act, which prescribes a severe fine or a minimum prison sentence of 10 years for the unauthorized sale of "propagating material of a [plant] variety protected in Ghana". This goes far beyond how similar offenses are punished in Europe or North America.

Corporations are trying to gain more power over seeds and food through intellectual property rights. Plant variety protection laws and patents are oftentimes enforced via trade agreements. Many farmers have been forced into dependency on multinational seed corporations that determine which seeds and with which traits are marketed and, ultimately, which crops are grown.

Such developments make it difficult to safeguard the right to food and to eliminate hunger. Dependency on a few international seed companies leads to monocultures that undermine and threaten biodiversity. Humankind's treasure of seed diversity is best managed and conserved through continuous cultivation and selection by farmers. Farmers' rights to use, save, exchange and sell farm-saved seeds should be a standard principle of seed regulation rather than an exception. To challenge the growing threats to farmers' rights and our collective food sovereignty, we must find ways to protect farmers' seed systems. In the words of Michael Fakhri, the United Nations Special Rapporteur on the Right to Food, "Farmers' seed systems allow farmers to grow food in a way that responds and adapts to change, making communities stronger and food systems more resilient".

This dossier grapples with the potential and significance of seeds and their foundational role in our food systems. If we want to transform food systems, we must first change how we perceive and interact with seeds. Farmers and activists who defend farmers' rights are exposed to a variety of threats and their work is often criminalized. This dossier is dedicated to them – and to all who work tirelessly to protect farmers' seeds and defend seed sovereignty.

Author

Silvia Ribeiro is a journalist, researcher, and the Latin America Director of the international civil society organization ETC Group (Action Group on Erosion, Technology and Concentration).

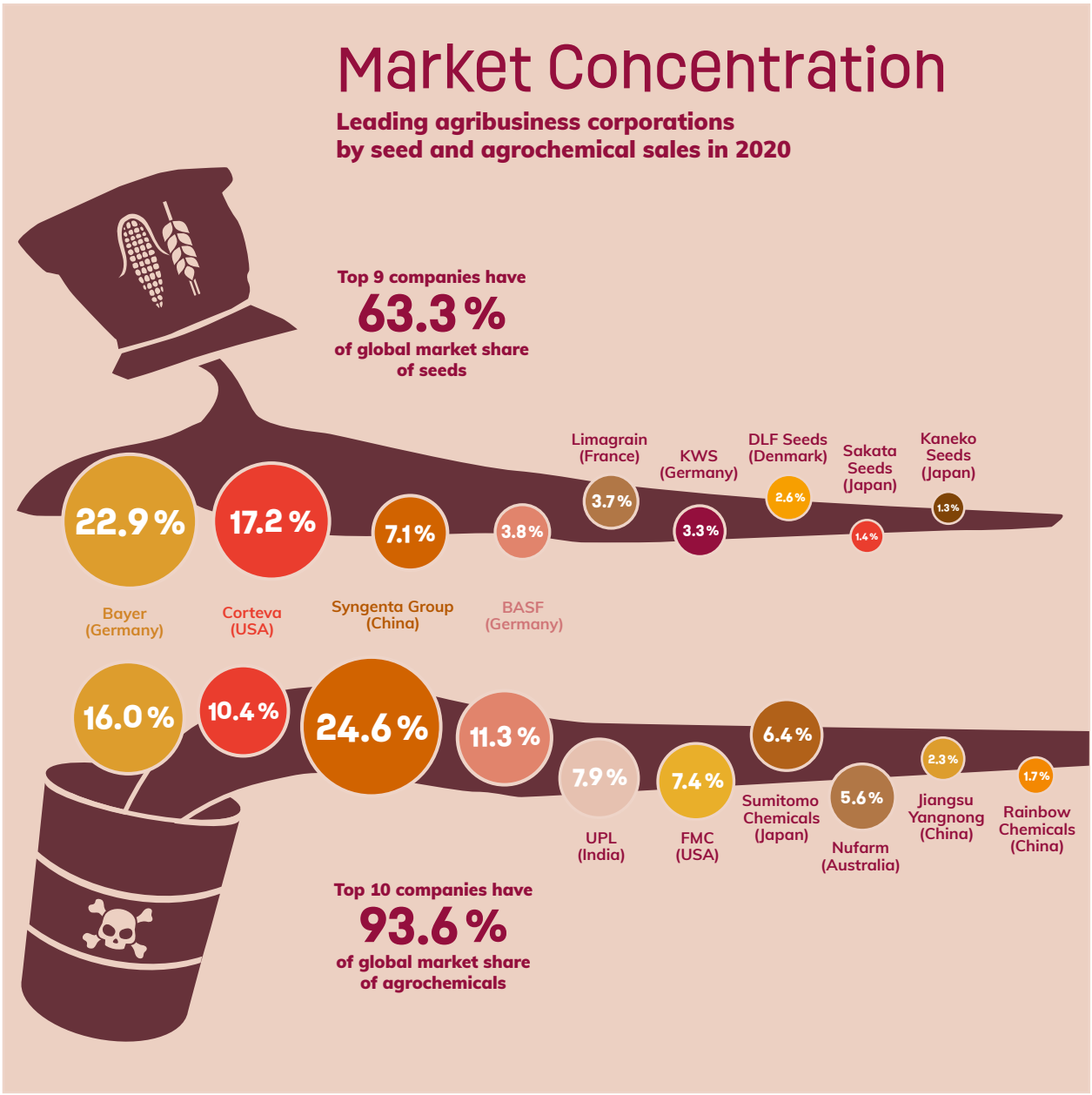
Market Power

Corporate concentration and control of global food and agriculture

Although the industrial model has come to dominate global agriculture, most of the world's population is still fed by networks of peasant farmers, gardeners and artisanal fishers. These small-scale food producers and agricultural communities hold more than 80 percent of the seeds we rely on for food. The industrial food system uses nearly 70 percent of the resources required for food production (land, water, fuels, etc.) but only feeds approximately 30 percent of the world's population.[1, 2]

Industrial agriculture is controlled by large global corporations that produce enormous volumes of a few crops, mainly for export (commodity) markets. Yet, a significant share of the output of large agricultural facilities is wasted in the fields. Approximately a third is sold but lacks nutritional value, causing obesity, diabetes, and other diseases, along with serious environmental impacts. For every US dollar spent globally on industrial food products, an additional two US dollars are spent on health and environmental damages caused by those same products. Moreover, most mega-farms do not even produce food for human consumption, but rather fodder, agrofuels and other industrial products.

For centuries, food systems were decentralized, did not use chemical pesticides or heavy machinery, and were based on a wide variety of freely exchanged seeds. In the mid-twentieth century, the so-called Green Revolution saw the gradual introduction of hybrid seeds, facilitating the expansion of monocultures based on a limited number of species and varieties, accompanied by the intensive use of synthetic fertilizers, agrochemicals and heavy machinery. This technological transformation enabled the entry of large corporations into the initial links of the agri-food chain, particularly into the markets for seeds, synthetic fertilizers and chemical pesticides.



Source: ETC Group (2022). *Food Barons 2022. Crisis Profiteering, Digitalization and Shifting Power*

The growing dominance of agribusiness companies is supported by three complementary pillars: a) market control; b) the introduction of new technologies (genetic engineering, automation, digitalization); and c) regulations that favour these two factors, such as intellectual property and trade laws.

Corporate concentration is extreme in the initial links of the industrial food chain. In less than three decades, the largest pesticide manufacturers have bought or displaced thousands of small and medium-sized seed companies, none of which controlled even one percent of the market. Following an aggressive process of concentration, just four global agrochemical corporations (Syngenta Group, Bayer, BASF and Corteva) now control 62 percent of the global agrochemical market. These same four companies, plus Limagrain and KWS, control almost two-thirds of all commercial seeds and 99 percent of genetically modified crops. In the last decade, several companies that were emblematic of market dominance in seeds, genetically modified organisms and agrochemicals, such as Monsanto and Dow Agrosciences, merged with or were swallowed up by one of the four giants. Market concentration – measured by the share of industry revenue held by the largest firms – is extremely high in commercial seed markets, especially in the USA. In the period 2018–2020, Bayer and Corteva accounted for 72 percent of planted maize and 66 percent of planted soybean in the USA. The pattern of market concentration is repeated in each link of the agri-food chain – fertilizers, machinery, wholesalers and retail – resulting in oligopolies in each sector.[3]

Grain trading, which plays a key role in controlling purchases from farmers, storage and global grain supply, is another highly concentrated sector. Here, too, four giant corporations have dominated the sector, known by the acronym ABCD (representing ADM, Bunge, Cargill and Dreyfus). Recently, these have been joined by COFCO Group, a Chinese holding. Following Bunge's recent acquisition of Viterra (formerly part of Glencore), these five companies now control between 70 and 90 percent of the global grain trade.[4] Between them, they have created digital blockchain platforms for global trade, such as Covantis. The impact of this powerful oligopoly has become especially evident during the food price crisis that was cumulatively caused by the COVID-19 pandemic and the war in Ukraine. These companies store enormous volumes of grain, more than the reserves of entire countries. They can then use these stores to create scarcity and push up prices. In 2022, their profits tripled compared to the period from 2016 to 2020; together, they generated net profits of more than USD 17 billion in 2022.

These companies form alliances or mergers not only within their sector but also vertically, giving them even greater control. For example, Cargill, currently the largest grain trader, is also the third-largest company in the global meat industry. Cargill insists on importing certain grains – such as genetically modified soy and maize – to supply its own concentrated animal feeding operations (CAFO), even when this type of import may not be necessary in the countries where the facilities are located.

Despite corporations dominating the agri-food chain through technology, legislation and market control, there are still tools available to oppose them. These involve questioning mergers and market shares, reinforcing and applying antitrust laws, challenging intellectual property laws and trade agreements, demanding transparency on the activities of agribusiness transnationals in order to uncover monopolistic practices such as speculative storage and distribution agreements, and fighting to establish public policies that recognize and support the contribution of small-scale farmers and peasant networks.

1 ETC Group (2022). *Small-scale Farmers and Peasants Still Feed the World.* Available online at: https://www.etcgroup.org/content/backgrounder-small-scale-farmers-and-peasants-still-feed-world.
2 Jacobs, N. (2021). *Six months to prevent a hostile takeover of food systems, and 25 years to transform them.* Available online at: https://ipes-food.org/six-months-to-prevent-a-hostile-takeover-of-food-systems-and-25-years-to-transform-them/.
3 ETC Group (2022). *Food Barons 2022: Crisis Profiteering, Digitalization and Shifting Power.* Available online at: https://www.etcgroup.org/content/food-barons-2022.
4 SOMO (2024). *Hungry for profits. How monopoly power tripled the profits of global agricultural commodity traders in the last three years.* Available online at: https://www.somo.nl/hungry-for-profits/.

Further reading

ETC Group (2022). ***Food Barons. Crisis Profiteering, Digitalization and Shifting Power.***
Available online at: https://www.etcgroup.org/content/food-barons-2022.

SOMO (2024). ***Hungry for profits. How monopoly power tripled the profits of global agricultural commodity traders in the last three years.***
Available online at: https://www.somo.nl/hungry-for-profits/.

Author

Mamadou Goïta is the Executive Director of the Institute for Research and Promotion of Alternatives in Development (IRPAD) in Mali, a member of the International Panel of Experts on Sustainable Food Systems (IPES-Food), a founding member of COPAGEN, the coalition to protect African genetic heritage, and a development socio-economist and specialist in education and training systems. He works closely with farmers' organizations in Africa and other continents.

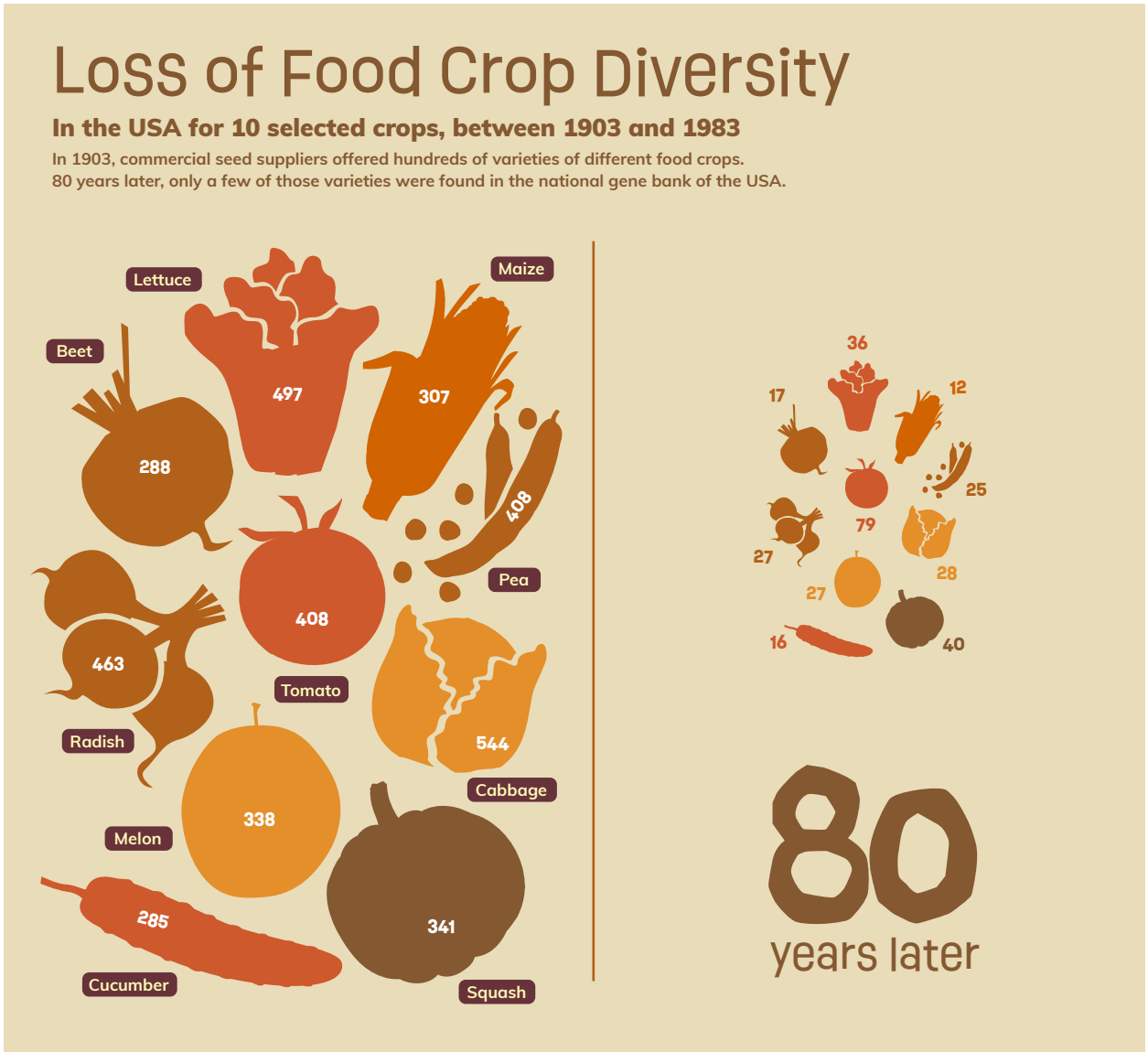
Monotony

The commercial seed market and the loss of seed diversity

The commercial seed market is highly concentrated and dominated by a few multinational corporations. These include Bayer (which acquired Monsanto), a leading producer of genetically modified seeds and pesticides; Corteva (formed through a merger of Dow and DuPont), which focuses on agricultural chemicals and seeds; Syngenta Group (owned by Sinochem); and the German agrochemical giant BASF. These four firms control more than 50 percent of the commercial seed market worldwide.

Marketing and lobbying efforts by seed companies have enforced the idea that so-called modern and improved seeds are superior to traditional farmers' varieties. Focusing on a few varieties is economically advantageous for companies because it allows for the standardization of production processes and, thus, reduces costs. A limited number of products is easier to market and distribute on a large scale. In addition, large-scale commercial agriculture lends itself more readily to mechanization, input efficiency and optimized logistics. Therefore, companies develop varieties that are genetically uniform and perform consistently across diverse environments. This leads to the neglect and decline of traditional, locally adapted farmers' plant varieties that are more resilient and diverse in their traits.

Until the 1970s, public plant breeding played a dominant role in commercial agriculture but has declined thereafter. Following the wave of market liberalization and privatization in the 1980s, governments worldwide increasingly viewed plant breeding and agricultural research as areas where private-sector efficiency and innovation were more effective than state-run programmes.[1] Over time, the private sector captured and replaced many public plant breeding programmes. As public funding for agricultural research and breeding has declined, public institutions increasingly rely on private sector partnerships and funding. This dependence leads to a loss of autonomy and to priorities being determined by commercial rather than public interests. Moreover, corporations often collaborate with public research institutions by entering



Source: Tomanio, J. (2011). National Geographic Magazine

into licensing agreements for patented technologies. This allows them to leverage public sector expertise while retaining control over the commercialization of seeds.

All of this has contributed to a massive loss of crop diversity in agriculture. Of the 300,000 documented plant species, roughly 30,000 are edible, yet just 30 plant species feed the world today. According to the United Nations Food and Agriculture Organization (FAO), an estimated 75 percent of crop genetic diversity has been lost since the beginning of the twentieth century.[2] Today, just three crops – maize, rice and wheat – account for half of the calories consumed by humans. The decrease in crop diversity makes agricultural ecosystems more vulnerable to pests, diseases and environmental changes. For example, before the so-called Green Revolution in Asia that started in the 1960s, about 110,000 varieties of rice were planted by Indian farmers. Today, just 6,000 local rice varieties are available, and not all are under cultivation. This represents a decline in diversity of roughly 95 percent in just a few decades.[3] Relying on a limited number of crop varieties can lead to food shortages if these crops fail due to disease or climate change. By contrast, traditional, local or farmers' varieties typically are adapted to local environmental conditions, including soil types, climate variations and availability of water. The access to diverse seeds offers alternatives when certain crops fail due to disease outbreaks or environmental stresses.

Small-scale and resource-poor farmers who cultivate modern high-yielding varieties are obliged to purchase commercial seeds annually. This dependence on seed companies reduces the farmers' autonomy and financial resilience, especially in regions where access to seeds is controlled by a few large corporations. Many small-scale food producers in Africa face higher seed prices and fewer locally adapted options for maize, cotton, and, increasingly, beans and peanuts.

Furthermore, seeds cannot be reduced simply to their genetic and technological aspects. They are deeply intertwined with human cultures, embodying the heritage, traditions, and practices of the communities that cultivate them. Many farmers' seeds have been passed down through generations within specific communities. They often carry stories, rituals, and historical significance that connect people to their land and ancestry. Preserving and using these seeds help maintain cultural identity and continuity. Different plant varieties contribute to culinary diversity by offering unique flavours, textures and nutritional profiles. They form the basis of traditional dishes and culinary practices that reflect local preferences, customs and celebrations.[4]

As more farmers' seeds are abandoned and replaced by commercial seeds, knowledge about their cultivation and usage may be lost. A wide genetic pool is essential for developing new plant varieties that can withstand future challenges. Farmers often develop intricate knowledge and practices related to specific plant varieties, including planting, seed saving and pest management techniques. This traditional ecological knowledge is deeply embedded in cultural practices and contributes to sustainable agriculture.[5]

Revitalizing local seed systems and farmers' seeds empowers communities to maintain control over their food supply, preserve biodiversity and strengthen local economies. It also promotes sustainable agricultural practices that align with cultural values and priorities.

1 World Bank (2020). *Harvesting Prosperity. Technology and Productivity Growth in Agriculture.* Available online at: https://openknowledge.worldbank.org/server/api/core/bitstreams/3621191c-15f3-5ede-a89c-f7190d7e1dba/content.
2 United Nations (2010). *Conserving plant genetic diversity crucial for future food security.* Available online at: https://news.un.org/en/story/2010/10/357072.
3 The Hindu (2012). *"From 110,000 varieties of rice to only 6,000 now. Debal Deb, a rice conservationist is working to prepare a seed bank of 700 varieties of traditional rice."* Available online at: https://www.thehindu.com/news/national/karnataka/from-110000-varieties-of-rice-to-only-6000-now/article3284453.ece.
4 Fakhri, M. (2022). *Seeds: central to peoples' food systems, cultures and human rights.* Available online at: https://www.ohchr.org/en/stories/2022/03/seeds-central-peoples-food-systems-cultures-and-human-rights.
5 FAO (2022). *Seed biodiversity: The life insurance of our food production. Protecting and preserving food biodiversity for resilient food systems.* Available online at: https://www.fao.org/newsroom/story/Seed-biodiversity-The-life-insurance-of-our-food-production/en.

Further reading

Alliance for Food Sovereignty in Africa (2021). *Stories of seed activism: Journalists from 14 countries reporting people's solution to corporate control of Africa's life.*
Available online at: https://afsafrica.org/wp-content/uploads/2021/09/seed-stories-final-print-en.pdf.

Global Network for the Right to Food and Nutrition (2018). *Business profits or diverse food systems? Threats to peasant seeds and implications in West Africa.*
Available online at: https://www.righttofoodandnutrition.org/business-profit-or-diverse-food-systems.html.

Author

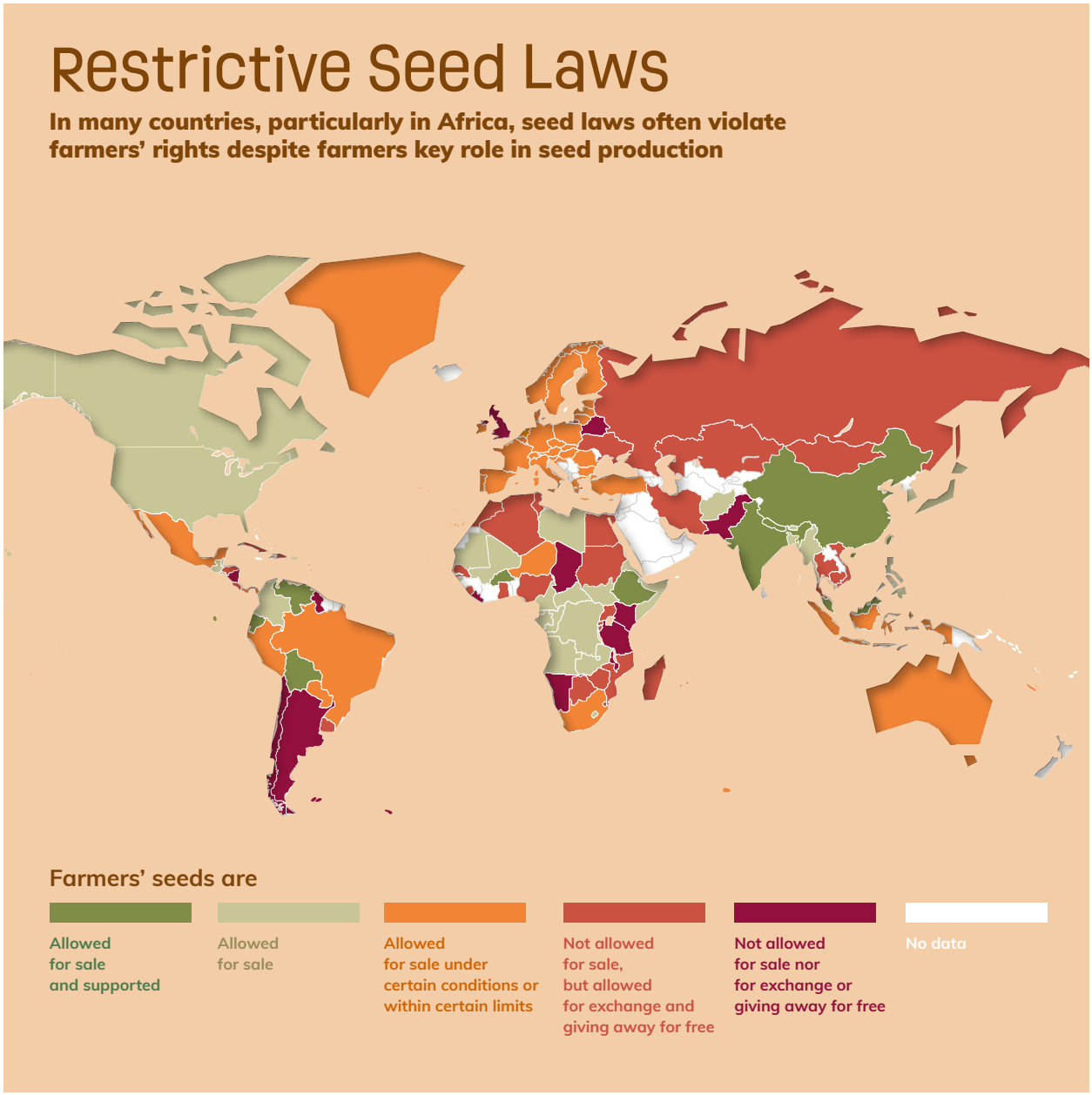
Fulya Batur is a lawyer who has worked on human rights, environmental law, agricultural policies and seed regulation for 20 years. In collaboration with farmers' organizations, seed guardians, organic breeders and researchers, she conducts and publishes research aimed at ensuring that EU seed regulation becomes more protective of farmers' rights and more conducive to seed diversity.

Seed marketing laws

Contrived market access in the name of seed quality

Seeds, the foundation of our food systems, are a highly regulated resource. Most countries have passed legislation to regulate the conditions under which seeds can be marketed. Depending on the definition used in the national regulation, the term "marketing" might also include the sale and exchange or donation of seeds, thereby turning a farmer's rights to save, use, exchange and sell farm-saved seeds into an illegal practice. In some countries, exceptions exist for small quantities of seeds, such as for "subsistence farmers" or for seeds sold to amateur gardeners. In other countries, the sale of seeds by farmers is tolerated in practice even though it is forbidden by law.

The supporting premise behind seed laws is the asymmetry of information that exists between those selling and buying seeds.[1] Purportedly to protect farmers from poor quality seeds, European states began regulating how seeds are marketed, and this example was followed by many other countries around the globe. Despite their stated purpose of providing truthful information and quality seeds to farmers, seed marketing laws embraced additional objectives, responding to the concerns of industrial producers. Influenced by international trade agreements and intertwined with the adoption of laws awarding intellectual property rights to breeders,[2] seed laws have supported the professionalization of plant breeding as an activity separate from farming and, thus, fosters the growth of a seed industry that caters to the needs of large-scale agriculture. In a context of under-production following World War II, seed laws also aimed to increase agricultural productivity. The preambles of the earliest European Economic Community (EEC, precursor to the EU) Directives on seed marketing from the 1960s onwards endorse the idea that such productivity would be best achieved if the market were restricted to high-quality seeds of permitted types and varieties.[3]



Source: SWISSAID (2025). *Farmers' Rights in Seed Laws*

In most countries, seed marketing legislation is based on two pillars: (1) registration of the variety in regional or national public catalogues and (2) certification of seed lots. Both of these pillars heavily involve public authorities. In many countries, the companies selling the seeds, sometimes even the resellers, need to register prior to marketing activities to ensure traceability and facilitate controls. The criteria for registration and seed production can vary widely across the globe, but some major similarities can be identified.

To be registered, a given plant variety needs to be tested and assessed against two sets of criteria:

- Each variety needs to be distinct, uniform and stable (DUS), meaning that it needs to be distinguishable from other varieties, with only minor differences between individuals of the same variety. Its properties cannot change over generations. The DUS criteria are the same as those applied for the grant of plant variety protection and are of some value for highly mechanized food systems. However, they are not compatible with farmers' varieties. Neither are they desirable, as the heterogeneity of farmers' varieties increases their resilience to pests and diseases and their ability to adapt to changing climatic conditions.
- In some species, varieties also need to pass value for cultivation and use (VCU) tests, which examine how the variety performs in the field and are conducted by public authorities following national protocols. They examine aspects such as yield, water use, disease resistance and other elements of interest to farmers and seed users. A variety can only be registered if it offers a clear improvement over those already registered.

Seed laws also regulate the production and sale of seeds from registered varieties. Generally, only the sale of seeds certified through official controls is allowed, with certain exceptions permitted depending on national provisions. International schemes and standards, such as the Organisation for Economic Cooperation and Development (OECD) seed schemes, have been developed in this area.

Designed to meet the perceived needs of large-scale industrial and commercial crop production, seed laws rarely if ever cater to the needs of smaller agroecological farms that use lower inputs, especially those in marginal areas or with highly diversified production.

Seed marketing legislation may criminalize seed exchanges and the sale of seeds between farmers and constrain farmers' seed systems to strict rules that are neither proportionate nor adapted to their needs.[4] Given that farmers' rights to seeds have been formally recognized by the United Nations, reforms are urgently needed to protect and support farmers' seed systems in seed laws.[5]

Opening space for heterogeneous seeds in EU seed and organic farming regulations

The original European Union (EU) seed laws allowed very little space for farmers' seeds and varieties, which do not comply with the strict criteria of DUS (distinctness, uniformity and stability) and VCU (value for cultivation and use). Some limited space was opened through the registration of so-called conservation varieties and amateur varieties from the 1990s.[6] While these exceptions opened some space for farmers' varieties in the seed market, they did not disentangle DUS requirements or seed certification obligations and only allowed their sale within narrow quantitative and geographic limits.

In parallel, farmers, breeders and public researchers began to engage in large-scale publicly funded research projects for participatory breeding that developed promising population varieties. Population varieties refer to a group of plants that share certain genetic traits but are not as uniform as industrially bred varieties. Such varieties often have a range of genetic diversity within the population, which can be advantageous for resilience and adaptation to environmental changes. However, these populations could not be marketed as they did not comply with strict seed marketing rules. As these projects were financed by the EU and interest in populations started to grow, the results could not easily be ignored, and in 2014, the EU launched a temporary experiment to test how "heterogenous cross-composite populations"[7]

could be marketed. It allowed their circulation for seven years in certain species with obligations to report.[8]

Building on that experiment, the EU Organic Regulation was revised in 2018,[9] and an alliance of farmers, seed savers and organic breeders managed to include progressive provisions on seed marketing to help address the scarcity of seeds adapted to organic agriculture. These provisions overrule the current seed regulations and allow the sale of organic seeds without variety registration and seed certification. "Organic heterogeneous material" can be notified free of charge to public authorities, accompanied by information on the material's characteristics, breeding or production history rather than the results of official DUS tests. Its seeds can then be sold without complying with certification schemes but following labelling and traceability rules (strengthened due to regular controls for organic certification).

The EU Commission published a proposal for a new regulation for seed marketing in 2023, which would replace existing directives.[10] The main objectives of the reform are to simplify the system for greater cost-efficiency and harmonization across the EU. However, alongside the influence of the European Green Deal and civil society demands, the proposal frees up more space for non-DUS varieties in the seed market. This proposal is a mixed bag. On the one hand, it contains very positive aspects that allow for the diversification of seed markets, and farmers gain the right to exchange and sell seeds to other farmers. On the other hand, certain worrying restrictions remain. The draft regulation defines not only the sale, but also the exchange and donation of seeds as "marketing" and obliges operators who produce or multiply seeds – even if only for use on their own farm – to register as "seed operators". With civil society actors and the seed industry both trying hard to influence the process, it is unclear what the final text will look like. Still under discussion in the European Parliament and the Council of the EU, the proposal is expected to be adopted by the end of 2025 at the earliest.

1 Louwaars, N. P. (2002). *Seed Policy, Legislation and Law: Widening a Narrow Focus.*
2 Winge, T. (2015). *Seed Legislation in Europe and Crop Genetic Diversity.* Available online at: https://fni.brage.unit.no/fni-xmlui/bitstream/handle/11250/2485905/2015-TOW-SAR-Seed+Legislation+in+Europe+and+Crop+Genetic+Diversity.pdf?sequence=1.
3 Council Directive 66/400/EEC of 14 June 1966 on the marketing of beet seed, which has been amended multiple times but is still in force. Available online at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31966L0400&qid=1724247943666.
4 Batur, F., Bocci, R. and B. Bartha (2021). *Marketing Farmers' Varieties in Europe: Encouraging Pathways with Missing Links for the Recognition and Support of Farmer Seed Systems.* Available online at: https://www.mdpi.com/2073-4395/11/11/2159.
5 Geneva Academy (2021). *Practical Manual on the Right to Seeds in Europe.* Available online at: https://www.geneva-academy.ch/joomlatools-files/docman-files/Briefing%2019.pdf.
6 Commission Directive 2008/62/EC of 20 June 2008 providing for certain derogations for acceptance of agricultural landraces and varieties which are naturally adapted to the local and regional conditions and threatened by genetic erosion and for marketing of seed and seed potatoes of those landraces and varieties, and Commission Directive 2009/145/EC of 26 November 2009 for vegetables.
7 This refers to a type of plant breeding approach that combines multiple sources of genetic material to create a diverse and adaptable population.
8 Commission implementing decision 2014/150/EU of 18 March 2014 on the organization of a temporary experiment providing for certain derogations for the marketing of populations of the plant species wheat, barley, oats and maize pursuant to Council Directive 66/402/EEC.
9 Regulation (EU) 2018/848 of the European Parliament and of the Council on organic production, and Commission Delegated Regulation (EU) 2021/1189 of 7 May 2021 on the production and marketing of plant reproductive material of organic heterogeneous material of particular genera or species.
10 European Commission (2023). *Proposal for a regulation on the production and marketing of plant reproductive material.* COM (2023) 414. Available online at: https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:52023PC0414.

Further reading

Geneva Academy (2021). *Practical Manual on the Right to Seeds in Europe.*
Available online at: https://www.geneva-academy.ch/joomla-tools-files/docman-files/Briefing%2019.pdf.

ACT Alliance EU (2020). *Seed Markets for Agroecology. PCD Discussion Paper on Seeds and Food Security.*
Available online at: https://actalliance.eu/wp-content/uploads/2020/12/201221_seed-markets-agroecology.pdf.

Author

François Meienberg is the coordinator of the Association for Plant Breeding for the Benefit of Society (APBREBES) and works with the Pro Specie Rara network as expert for seed policies. He has 25 years of experience in issues related to intellectual property rights, access and benefit-sharing, and agriculture.

UPOV

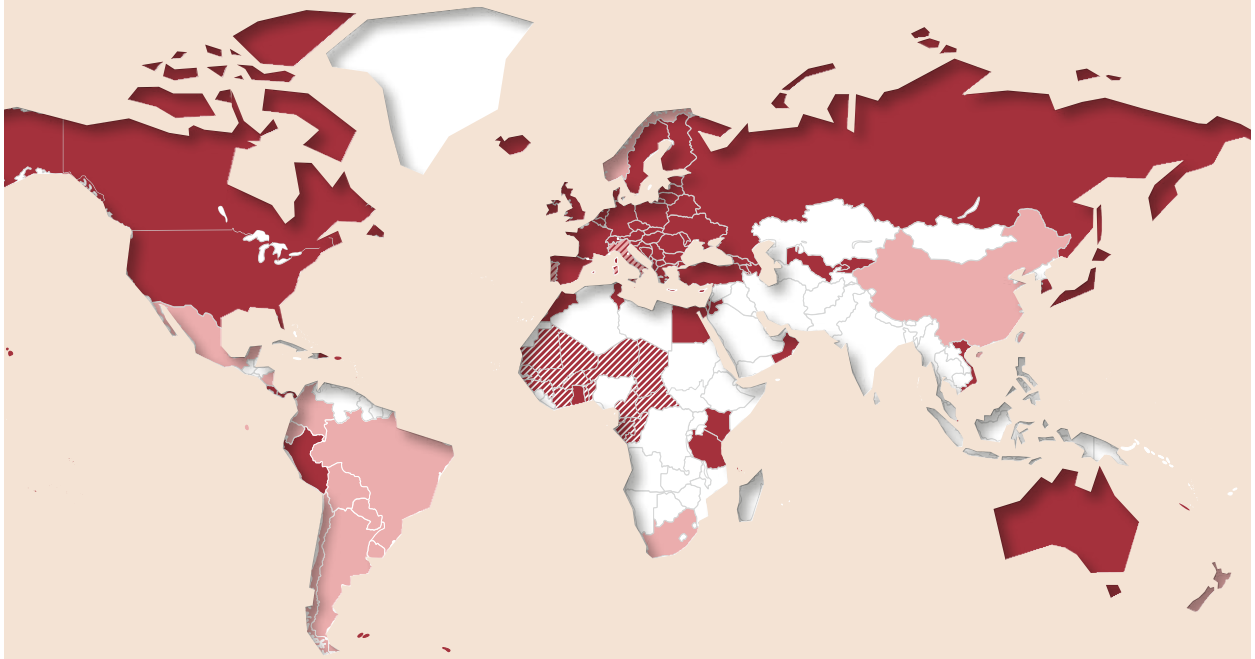
Intellectual property in conflict with farmers' rights

Plant variety rights are intellectual property rights granted to breeders of new commercial plant varieties. These rights are granted to breeders as legal protection, and they provide exclusive rights to produce, sell, and distribute propagation material of a new variety or to authorize others to do so. These rights are promoted worldwide by an international organization called UPOV (International Union for the Protection of New Varieties of Plants), which was founded in 1961 by a few European countries on the initiative of the seed industry. When the current UPOV Act was adopted in 1991 (thus UPOV 91), apart from 19 industrialized countries only Apartheid South Africa was present at the negotiating table.

This Act, which contains strict requirements for plant variety protection, primarily promotes the interests of industrialized nations and the seed industry. The needs and interests of countries in the Global South and small-scale food producers are completely disregarded. UPOV 91 is far stricter than other plant variety protection models and is ill-suited to farmers' varieties.

One of the main changes to be introduced with UPOV 91 was a broader scope of breeders' rights. The 1978 version (UPOV 78) covered only the production of propagation material (seeds, tubers, cuttings, etc.) for the purposes of commercial marketing. This followed the original idea of protecting one seed breeder from another, leaving farmers free to reproduce and exchange seeds as long as they did not sell them. However, under UPOV 91, any multiplication of the protected variety requires the authorization of the breeder and thus restricts the daily work of farmers. Under an optional exception, states can allow the multiplication of protected seeds within narrow limits (e. g., only for their own use, only for certain species, only for small-scale food producers or against payment of a fee). Farmers are not allowed to exchange or sell propagating material under any circumstances.

Members of the International Union for the Protection of New Varieties of Plants (UPOV)



UPOV 91

Party to the 1991 Act of UPOV

Countries subject to UPOV 91 through membership of the African Intellectual Property Organization (OAPI) or European Union (EU)

UPOV 78

Party to the 1978 Act of UPOV

Countries not party to UPOV

Source: UPOV (2024). *Members of the International Union for the Protection of New Varieties of Plants*, map adapted from APBREBES

While UPOV was originally designed to harmonize plant variety protection in industrialized countries, these countries are now imposing their rules on the entire world, even though they do not meet the needs or circumstances of the Global South. Pressure to implement strict models of intellectual property rights on seeds is exerted through multilateral or bilateral trade agreements and other means, even though many developing countries have set up their own, better-adapted systems in recent years.

Opposition to plant variety rights under UPOV 91 is growing worldwide for the following reasons:

- **UPOV restricts farmers' seed systems:** Farmers' seed systems account for a significant share of the seed supply in most countries in the Global South. A central pillar of these systems is a farmer's right to freely save, use, exchange and sell farm-saved seeds. However, UPOV 91 deprives farmers of the right to exchange and sell protected seeds or propagating material.

People's struggles against UPOV

by GRAIN

Globally, pressure is building on countries of the Global South to implement laws that privatize seeds along the lines of UPOV 91, the 1991 Act of the International Union for the Protection of New Varieties of Plants. However, farmers are fighting back, sometimes successfully.

In 2023, the Government of Benin tabled a proposal in parliament to join UPOV. However, this initiative was shelved due to a broad mobilization of farmers' organizations, women's associations and consumer groups.[1] In Zambia, the government also proposed a UPOV 91-style law for plant variety protection in order to be accepted as a member of UPOV, a condition set by the World Bank for funding a large development project. Farmers and civil society are resisting.[2]

In Latin America, similar dynamics can be observed. In Honduras, in 2021, after years of social struggle, the Supreme Court declared the country's UPOV 91-aligned plant variety protection law unconstitutional, as it infringed upon the rights of Indigenous peoples.[3] When Javier Milei came to power in Argentina, he proposed joining UPOV 91.[4] This was shot down by a massive social movement. In Guatemala, a new bill to adopt UPOV 91 standards has triggered widespread protests by Indigenous peoples since 2023.

Asian countries are facing increasing pressure to join UPOV 91 through trade agreements. Both Thailand and Indonesia are currently negotiating agreements with the European Union (EU). In both sets of negotiations, the EU is pushing for a clause requiring the countries to implement a law modelled on UPOV 91.[5] Similar pressure has been exerted by the European Free Trade Association (Iceland, Liechtenstein, Norway and Switzerland).[6] However, due to opposition from civil society, the UPOV clause was rejected by Thailand and the European Free Trade Association had to give way to a clause that is unproblematic for farmers. The Government of Indonesia maintains that it will not accede to UPOV 91 because this would undermine farmers' seed systems. These are victories for farmers and civil society that have been fighting against the privatization of seeds for over 20 years.

Today, many of these movements are working together under the Stop UPOV campaign. You can visit this online at: https://www.facebook.com/groups/904253430508472. Please join and support!

GRAIN is a small international non-profit organization that works to support small farmers and social movements in their struggles for community-controlled and biodiversity-based food systems.

Even saving and replanting seeds on their own fields is prohibited for most plant species and restricted for others. In this way, UPOV 91 not only jeopardizes the right to food and food sovereignty but is also a threat to agrobiodiversity and the genetic resources needed to sustain the food systems of the future.

- **UPOV violates farmers' rights:** The United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) both enshrine the rights of farmers to participate in decision-making processes relating to seeds. This right is often violated by the introduction of plant variety protection regulations in compliance with UPOV 91, as they are drafted behind closed doors with no opportunity for farmers to participate. The voices of those most affected by these laws have neither been heard in the various negotiations of the UPOV Acts, nor in the negotiations of trade agreements that impose UPOV on their countries.

- **UPOV restricts diversity:** According to UPOV, a variety must be uniform and stable in order to warrant protection. This rule creates an incentive to reduce genetic diversity in agriculture and discriminates against more diverse seed systems.[7] In doing so it puts the sustainability and resilience of agriculture at risk, particularly in the context of climate change.

- **UPOV facilitates biopiracy:** In many countries, the obligation to disclose the origin of genetic resources or traditional knowledge in applications for intellectual property rights is an important instrument for preventing biopiracy. However, UPOV prohibits such disclosure in plant variety protection law and thus facilitates biopiracy.

- **UPOV restricts national sovereignty:** UPOV provides stringent guidelines for the implementation of plant variety protection in national legislation. Only if the UPOV terms are followed to the letter is membership granted. No other international agreement requires such strict implementation of the agreement in national law as UPOV.[8]

Awareness of the problem has reached the highest level of the United Nations, with the Secretary-General stating in 2015, "An additional challenge that has advanced to the forefront is the pressures exerted on small-scale farming stemming from the provisions of the 1991 Act of UPOV. Restrictions on seed management systems can lead to a loss of biodiversity and, in turn, harm the livelihoods of small-scale farmers as well as weaken the genetic base on which we all depend for our future supply of food."[9] Unfortunately, UPOV and its backers haven't stopped pushing for strict plant variety models, but resistance from civil society and farmers is growing by the day.

UPOV in Latin America

by Tamara Perelmuter

There have been two phases of accession into the International Union for the Protection of New Varieties of Plants (UPOV) for countries in Latin America. The first phase was a consequence of the signing of multilateral trade agreements during the Uruguay Round in 1994.[10] The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) is one major outcome of this process. In compliance with TRIPS, Argentina (1994), Uruguay (1994), Chile (1996), Colombia (1996), Ecuador (1997), Mexico (1997), Paraguay (1997), Bolivia (1999) and Brazil (1999) ratified the 1978 UPOV Convention during this period. TRIPS requires all World Trade Organization (WTO) member states to adopt and enforce international standards for intellectual property protection, covering patents, copyrights, trademarks, and more. At the time of the Uruguay Round, only a few industrialized countries had plant variety protection (PVP) legislation in place, and UPOV initially had only a few members, mainly in Europe and North America.

The new obligations imposed by TRIPS marked a significant change. Industrialized countries, whose seed industries would benefit from strengthened PVP, promoted the extension of UPOV to enforce compliance with the TRIPS PVP requirement. While

TRIPS sets out the obligation to provide some form of intellectual property protection for plant varieties, it allows some flexibility in its implementation. However, by joining UPOV, countries effectively gave up the right to develop *sui generis*[11] legislation tailored to their own needs and interests.

As of April 1998, new applicant countries can no longer choose to join UPOV under the 1978 Act (UPOV 78) and are instead required to adhere to the 1991 Act, which is stricter and far more problematic for farmers.

The second phase was marked by the adoption of UPOV 91. Its implementation is mainly driven by provisions of trade agreements that oblige the signatory countries to adhere to UPOV 91. The four Latin American countries that have so far ratified UPOV 91 (the Dominican Republic in 2007, Costa Rica in 2009, Peru in 2011 and Panama in 2012) have done so in compliance with such obligations. It is important to note that despite commitments made in their trade agreements, Colombia and Chile have not adopted UPOV 91 due to resistance from civil society organizations defending farmers' rights to seeds.

Countries that were already members of UPOV 78 in 1998 were not required to join the 1991 version of the act. However, in practice, they face pressure to adhere to UPOV 91 from some countries and trade blocs like the USA and the European Union, which make adherence a condition for signing bilateral and multilateral trade and investment agreements. International seed and biotechnology companies benefit from these agreements because they ensure the protection of their commercial and technological interests in global markets.

Tamara Perelmuter is a member of the Latin American Social Movements Study Group of the Gino Germani Research Institute at the University of Buenos Aires. She is also a researcher at the Research Center for Family Agriculture (CIPAF) of Argentina's National Agricultural Technology Institute.

1 AFSA (2023). *Social movements call on Benin to reconsider membership in UPOV, urging protection of local seed systems and food sovereignty.* Available online at: https://afsafrica.org/social-movements-call-on-benin-to-reconsider-membership-in-upov-urging-protection-of-local-seed-systems-and-food-sovereignty/.
2 ZAAB (2024). *Plant Breeders' Rights Bill. Where are we?* Available online at: https://zambianagroecology.org/plant-breeders-rights-bill-where-are-we/.
3 APBREBES (2022). *The Supreme Court of Honduras declares the plant variety protection law based on UPOV unconstitutional.* Available online at: https://www.apbrebes.org/news/updates-plant-variety-protection-51.
4 Seed World (2024). *Lessons Learned from Argentina's UPOV 91 Debate.* Available online at: https://www.seedworld.com/latam/2024/06/13/lessons-learned-from-argentinas-upov-91-debate/.
5 CIRCABC (2023). *EU-Thailand FTA. Intellectual Property. EU text proposal.* Available online at: https://circabc.europa.eu/ui/group/09242a36-a438-40fd-a7af-fe32e36cbd0e/library/ed30e3c7-a2f4-46c0-86ed-d33790eb1210/details?download=true.
6 APBREBES, Indonesia for Global Justice, Both ENDS, Third World Network (2022). *The reasons why Indonesia should not (be forced to) join UPOV.* Available online at: https://www.apbrebes.org/why_Indonesia_should_not_join_UPOV.
7 Correa, C. M. (2015). *Plant Variety Protection in Developing Countries. A Tool to Design a Sui Generis Plant Variety Protection System: An Alternative to UPOV 1991.* Available online at: https://www.apbrebes.org/files/seeds/files/ToolEnglishcomplete.pdf.
8 South Centre and APBREBES (2023). *The UPOV accession process: Preventing appropriate PVP laws for new members.* Available online at: https://www.southcentre.int/wp-content/uploads/2023/02/SC_Apbrebes_UPOV-accession-process_EN_2-23_fin.pdf.
9 United Nations (2015). *Agriculture development, food security and nutrition: Report of the Secretary-General.* Available online at: https://digitallibrary.un.org/record/802335?ln=en&v=pdf.
10 The Uruguay Round refers to the eighth round of multilateral trade negotiations under the General Agreement on Tariffs and Trade (GATT), which concluded in 1994. This round was significant for its scope and impact on global trade. One of the most influential outcomes was the creation of the World Trade Organization (WTO), which officially came into being on 1 January 1995.
11 A sui generis system for plant variety protection is a legal framework designed to protect new plant varieties in a manner distinct from traditional intellectual property rights such as patents. This system acknowledges the unique characteristics of plant breeding and the need for specialized protection mechanisms. A sui generis system can be adapted to local agricultural practices, environmental conditions, and development priorities. Furthermore, it can balance the rights of breeders against those of farmers, especially regarding seed saving and traditional practices.

Further reading

APBREBES (2020). *Focus on Plant Variety Protection: A Compilation of Selected Literature on the Impact of the UPOV Convention, Alternative sui generis PVP Laws and the Effect on Farmers' Rights.*
Available online at: https://www.apbrebes.org/node/323.

APBREBES (2021). *The EU's push for intellectual property rights on seeds and its impact on developing countries.*
Available online at: https://www.apbrebes.org/news/eus-push-intellectual-property-rights-seeds-and-its-impact-developing-countries.

Author

Mariam Mayet is the founder and Executive Director of the African Centre for Biodiversity (ACB), a research and advocacy organization working to achieve food sovereignty and agroecology in Africa, focusing on biosafety, seed systems and agricultural biodiversity. She holds BA, LLB and LLM degrees, which she obtained from the University of the Witwatersrand, Johannesburg, South Africa.

Harmonization of seed regulation in Africa

Paving the way for commercial seeds*

The African seed landscape is diverse and complex, with a range of seed types and crops produced and traded across the continent. Small-scale food producers account for most seed consumption and production and rely heavily on farmers' seed systems, where they, rather than the commercial seed sector, act as primary agents of breeding, selection and distribution.

There is also a long history in Africa of cultivating commercial plant varieties, particularly maize, in the former settler economies of the east and south. Large multinational seed companies have also long established a presence and further consolidated their positions through the purchase of local seed companies.

Beginning in the early 2000s, several Green Revolution actors ushered in dramatic changes to the seed systems of African countries. A theory of change emerged: low agricultural productivity and the need to feed an increasing African (and global) population in an era of climate change would require the adoption of certified commercial seeds. The private sector was posited as the primary agent for achieving this, necessitating harmonized legal frameworks across regional economic blocs that would ensure and protect private ownership over germplasm, the genetic material of plants or animals used for breeding. Further, such legal frameworks would have to ensure that the propagation, multiplication and distribution of seeds for commercial use were owned and managed privately for gain, with further explicit aims of:

- Recouping investments and maximizing profits by stopping farmers from saving, sharing, or selling seed;
- Stopping competing seed producers from using the seed for commercial purposes;
- Ensuring African governments adopt the 1991 Act of the International Union for the Protection of Plant Varieties (UPOV 91).

The international seed lobby has created a vast network of well-funded initiatives, institutions and agreements designed to pressure African governments into adopting harmonized seed and plant variety protection laws based on UPOV 91. These include African research institutions such as the Association for Strengthening Agricultural Research in Eastern and Central Africa, and partnerships with very influential multilateral institutions such as the Food and Agriculture Organization of the United Nations (FAO)[1] or the Consultative Group on International Agricultural Research.

UPOV 91 is a one-size-fits-all international regime focused solely on protecting the intellectual property rights of industrial seed breeders, and is an essential part of the legal and institutional architecture of the Green Revolution. It prohibits centuries-old African farmers' practices of freely using, exchanging and selling seeds or propagating material.

Efforts to harmonize seed marketing and trade laws in Africa began in earnest around 15 years ago via Regional Economic Communities (RECs) such as the Economic Community of West African States (ECOWAS), the Common Market for Eastern and Southern Africa (COMESA), the Southern African Development Community (SADC), and the East African Community (EAC).

World Bank: Funding the African seed industry

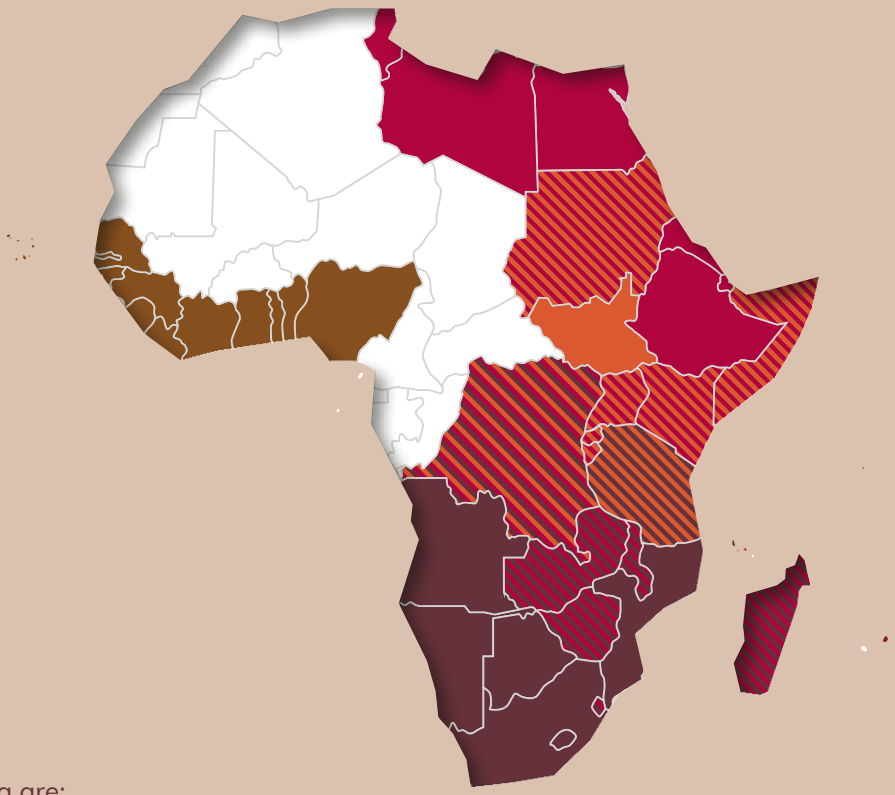
The World Bank has argued that Africa is the "new frontier" of wealth accumulation, provided that policies and laws are implemented to facilitate foreign investment by agribusiness and has spent millions of US dollars achieving this. Together with the United States Agency for International Development (USAID) and the African Seed Trade Association (ASTA), which was set up with World Bank funding, it has helped to develop via its Sub-Saharan Africa Seed Initiative (SSASI), a private African seed industry. It has worked towards the harmonization of seed and plant variety laws and has been imposing seed laws that limit small-scale food producers' ability to grow, save, share and sell seeds as a precondition to African countries receiving agricultural loans. Debt and credit are engineered to be non-repayable and entrench Africa's subordinate role in the world economy.

These were instituted to ensure seamless trade in certified seeds between countries. Most countries belonging to these RECs have changed their seed laws to only allow certified seeds that meet international standards to be marketed. Consequently, these countries criminalize the sale and exchange of farmers' seeds, thereby also criminalizing farmers' seed systems. Efforts to harmonize laws based on UPOV 91 and to govern intellectual property over new plant varieties have been spearheaded by SADC, the African Intellectual Property Organization (OAPI), and the EAC.

More recently, the African Union Commission began developing harmonized continental seed guidelines for adoption by member states of the African Continental Free Trade Area (AfCFTA), which is inextricably linked to the African Union's "Agenda 2063: The Africa We Want" and entrenches the industrialization of African agriculture. Taken together, these agreements aim to create the political, legal, and institutional architecture to facilitate a regional seed trade.

Harmonization of Seed Regulation in Africa

There are several **Regional Economic Communities (RECs)** on the African continent, most of which include **intellectual property rights agendas** and the **harmonization of seed marketing regulations**.



The main RECs in Africa are:

ECOWAS

Economic Community of West African States

After Burkina Faso, Mali and Niger withdrew in 2024, 12 states remain in ECOWAS. In 2008, ECOWAS adopted the Regional Seed Regulation. This stipulates that only certified seeds from varieties registered in the West African Catalogue of Plant Species and Varieties can be marketed. The definition of marketing includes "offering without remuneration", thus criminalizing the sale, exchange or donation of farm-saved seeds.

EAC

East African Community

The eight EAC member states have committed to the 2019 draft Seed and Plant Varieties Bill, which is awaiting approval by the EAC Council of Ministers. Once approved it will harmonize seed certification and establish a regional variety catalogue. Furthermore, it provides for strict plant variety protection in line with UPOV 91. Like other EAC laws and regulations, the Seed and Plant Varieties Bill will be directly applicable in the EAC member states.

SADC

Southern African Development Community

In 2008, the 16 member states of the SADC agreed to the Harmonized Seed Regulatory System. However, as this agreement is only in the form of a memorandum of understanding it is not binding and depends on implementation by member states. It provides for harmonized processes for seed certification and variety release, and creates a common variety catalogue. Remarkably, it also foresees the registration of farmers' seed varieties. In 2014 SADC established a separate protocol on plant variety protection, based on UPOV 91, which has since been signed by nine member states.

COMESA

Common Market for Eastern and Southern Africa

The 21 member states of COMESA are governed by the COMESA Seed Trade Harmonization Regulations of 2014. It is binding for all member states and must be implemented through national legislation. New varieties that have been tested in two member states over a period of two seasons are included in the regional variety catalogue and can be released in all member states.

Source: Peschard, K., Golay, C. and L. Araya (2023). *The Right to Seeds in Africa.* Academy Briefing No. 22. Geneva Academy of International Humanitarian Law and Human Rights; African Centre for Biodiversity (2018). *Status report on the SADC, COMESA and EAC harmonised seed trade regulations*; AFSA (2017). *Resisting corporate takeover of African seed systems and building farmer managed seed systems for food sovereignty in Africa*; SADC (2020). *Botswana Signs the SADC Protocol for Protection of New Plant Variety and The Charter Establishing the SADC Seed Centre*; ISSD (2018). *The support for farmer-led seed systems in African seed laws*; and Kuhlmann, K. (2015). *Harmonizing Regional Seed Regulations in Sub-Saharan Africa: A Comparative Assessment*

The Alliance for a Green Revolution in Africa (AGRA): Push to assimilate seed laws in Africa

by Anne Maina and Mariam Mayet

The establishment of the Alliance for a Green Revolution in Africa (AGRA) in 2006 by the Bill and Melinda Gates Foundation and the Rockefeller Foundation cemented the narrative that low adoption rates of certified seed from the commercial seed sector in Sub-Saharan Africa (SSA) is a major reason for low agricultural productivity. The potential role of farmers in seed production or distribution was not even considered; rather, they were viewed merely as passive consumers of seed produced elsewhere. AGRA's Programme for Africa's Seed Systems (PASS) lay at the heart of an initiative to replace existing seed systems with high-input hybrid seeds. AGRA's agro-dealer programme – a distribution system for these new seeds and fertilizers – and its Policy and Partnerships Programme were used to lobby African governments directly and through regional bodies to fast-track legislation that would protect and reward seed companies for being "partners" in this venture, including and especially via regionally harmonized seed laws and regulations. One of these influential initiatives supported by AGRA is the Africa Seed and Biotechnology Partnership Platform (ASBPP). ASBPP, which was approved in 2007 by the African Union, aims to create a conducive environment for competitive seed systems in Africa. This process requires the formalization and commercialization of seed systems with strict rules and standards for the distribution of seeds. Farmers' seeds do not typically meet these standards and are at risk of being completely neglected. AGRA has provided funding and resources to support the activities of the ASBPP. This funding is often directed towards the objectives of the ASBPP, such as improving seed quality and advancing biotechnology in agriculture. AGRA has also played a role in fostering partnerships and networks that support the goals of the ASBPP.

Anne Wanjiku Maina is the National Coordinator of the Biodiversity and Biosafety Association of Kenya (BIBA Kenya) and a member of the Alliance for Food Sovereignty in Africa (AFSA). With over 15 years of experience as a development practitioner, Anne has been actively working with communities and challenging the false agricultural solutions being pushed in Africa.

None of these regulations contain any measures to safeguard on-farm seed diversity and continued maintenance of heterogeneous crop varieties, which are vital to resilient food systems. What has emerged, instead, is the corporate occupation of the seed sector. As multinational seed giants amass vast profits, farmers' seed and local seed systems and the agricultural biodiversity they support are being steadily and systematically eroded and criminalized. Currently, the SADC and COMESA regional seed catalogues are dominated by varieties relating to only a few commercial crops (such as barley, common beans, cotton, maize, pearl millet, potatoes, sorghum, soybean and wheat), owned by large multinational corporations.

* This article relies extensively on the huge body of research produced by the African Centre for Biodiversity (ACB) under its seed sovereignty programme, which can be found at: https://acbio.org.za/.

1 FAO and Africa Seeds (2018). *Seeds Toolkit. Module 4: Seed Sector Regulatory Framework*. Available online at: https://openknowledge.fao.org/server/api/core/bitstreams/f7185dd1-d821-4b6e-bb34-48550d5a8941/content.

Further reading

African Centre for Biodiversity (2023). *Seed Harmonisation in Eastern and Southern Africa: Failures, neo-colonial agendas, and the rise of digitalised seed trade: dire implications for farmer managed seed and food systems in Africa.*

Available online at: https://acbio.org.za/wp-content/uploads/2023/08/Seed-Harmonisation-in-Eastern-and-Southern-Africa_August2023_fin.pdf.

African Centre for Biodiversity (2018). *Status report on the SADC, COMESA, and EAC harmonised seed trade regulations: Where does this leave the regions' smallholder farmers?*

Available online at: https://acbio.org.za/wp-content/uploads/2022/04/Harmonisation_report.pdf.

Author

Christoph Then coordinates the European network No Patents on Seeds and is the Director of Test Biotech. He has been analysing the consequences of biotechnology and patents on plants and animals for a quarter of a century.

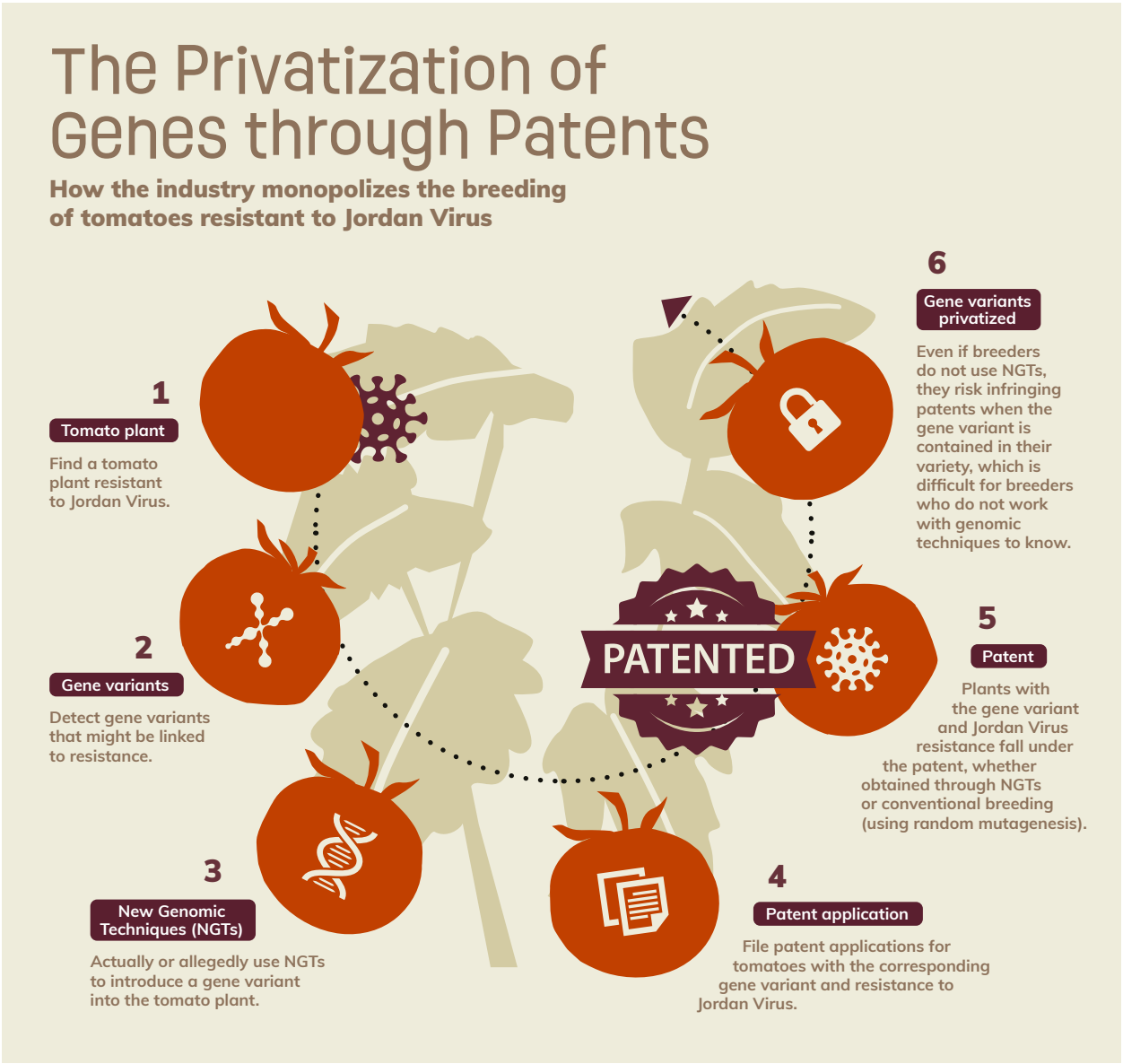
Patents on seeds

The privatization of biodiversity in Europe and the USA

The USA first introduced the idea of patenting living materials in the 1980s, and most Western countries soon followed its lead. The number of patents issued on plants worldwide increased one hundredfold in a 25-year period, from just under 120 in 1990 to 12,000 in 2015.[1] Patents are guarantees of intellectual property rights, allowing the owner the exclusive right to commercialize an invention for a limited time – typically 20 years. Plants that are subject to patents cannot be used to breed new varieties without the permission of the patent holder and the payment of license fees. Such patents are a problem for other breeders and farmers as well as for society as a whole, as the plant materials concerned are monopolized by the patent holder who can dictate the conditions for their use.

Conventionally bred plants cannot be considered inventions, since methods such as cross-breeding have been used for millennia to create new varieties. Therefore, most countries do not allow plant varieties to be patented. However, some countries, including the USA, allow the patenting of plant varieties, which has had drastic impacts on seed markets. Over the last 30 years, the seed market in the USA has rapidly consolidated and is now largely in the hands of four corporations: Bayer, Corteva, Syngenta Group, and BASF. These four companies own 97 percent of the intellectual property rights for oilseed rape (canola), 95 percent for maize and 84 percent for soybean.[2] The patentability of plant varieties and the dominance of genetically engineered crops and industrial agriculture are major factors in this consolidation.[3]

In Europe, the prohibition on plant patents has notable flaws. The European Patent Office (EPO), which issues patents for contracting states of the European Patent Convention (EPC), explicitly excludes patents on plant varieties.[4, 5] Initially, this provision was interpreted to exclude patents on plants in general.[6] However, with the emergence of genetically engineered plants in the late 1990s, the EPO began granting patents on plants – not only genetically engineered plants but also conventionally bred plants. To obtain such patents, companies would frequently introduce specific wording into patent applications to suggest the use of technical methods and an inventive step. However, a closer look at the patents shows that, in most cases, these technical methods were not applied or were not necessary to develop the desired plants.



Source: No Patents on Seeds (2024). *How patents block the breeding of tomatoes resistant to the harmful Tomato Brown Rugose Fruit Virus*

Due to public and political pressure, the administrative council of EPO issued a new rule in 2017[7] excluding from patentability plants created through "an essentially biological process", meaning traditional breeding methods. However, the EPO only applies this rule to patent applications submitted after 2017, not to those submitted before that date and still under examination.[8] Moreover, it did not include random mutagenesis in its definition of "essentially biological processes",[9] even though the use of random mutations induced by sunlight or chemical substances is a classic method of conventional plant breeding.

The EPO has granted several hundred patents on conventionally bred plants, covering more than 1,000 varieties.[10] This situation is likely to worsen with New Genomic Techniques (NGT) such as CRISPR/Cas, which are used by the seed industry to blur the distinction between conventional breeding and genetic engineering and to thus create additional loopholes for seed patenting. Often, the "invention" begins with the detection of a naturally occurring gene variant associated with desired properties such as resistance to certain plant diseases.[11] This gene variant is then reproduced using tools such as the CRISPR/Cas "gene scissors" to create the impression of a technical invention, although it could also have been introduced by simple crossbreeding. The scope of such patents is formulated so as to cover plants with the corresponding gene variants and the associated properties, regardless of whether they were bred by conventional methods or through genetic engineering. For instance, there have been numerous patent applications for tomatoes resistant to a recently identified disease known as Tomato Brown Rugose Fruit Virus or Jordan Virus. Within just a few years of the first occurrence of this virus, Syngenta Group and other seed companies submitted more than 20 patents based on naturally occurring resistance genes using genetic engineering to make them patentable.[12] This makes breeding for resistance against this virus nearly impossible for small and medium-sized plant breeders. To avoid infringing on patents, they would need to analyse all relevant patent applications and screen for all the genetic variations described in them. Yet, even if they had the resources and know-how to do so, they would still run the risk of new patent applications appearing during a breeding project.

Amid the dark scenario of further monopolization of seed production through patents, there are also glimmers of hope. Austria recently revised its patent regulations to exclude conventionally bred plants from patentability and to ensure that patents on genetically engineered plants are not applied to conventionally bred plants.[13] This does not prevent the EPO from issuing such patents but at least it limits the reach of those patents within Austria. The European "No Patents on Seeds" network continues its efforts to inform the public and politicians. The goal is to encourage other countries to follow Austria's example, potentially leading the EU to change its patent directive[14] and finally put an end to the illicit monopolization of seeds through patents.

1 Sherkow, J. S. and H. T. Greely (2015). *The History of Patenting Genetic Material.* Available online at: https://law.stanford.edu/wp-content/uploads/2015/12/annurev-genet-112414-054731.pdf.
2 US Department of Agriculture (2023). *More and Better Choices for Farmers: Promoting Fair Competition and Innovation in Seeds and Other Agricultural Inputs.* Available online at: https://www.ams.usda.gov/sites/default/files/media/SeedsReport.pdf.
3 Kloppenburg, J. (2024). *Concentration and IPRs in the Seed Industry: A View From the USA.* Available online at: https://www.apbrebes.org/sites/default/files/2022-12/Apbrebes_Kloppenburg_OpinionPaper_12-22_fin.pdf.
4 Signatories to the EPC include all EU member states, Switzerland, Turkey, the UK, and others.
5 European Patent Office (n. d.). *Article 53 (b) of the European Patent Convention.* Available online at: https://www.epo.org/en/legal/epc/2020/a53.html.
6 Boards of Appeal of the European Patent Office (1995). *Decision T356/93*, from 21.02.1995. Available online at: https://www.epo.org/en/boards-of-appeal/decisions/t930356ex1.
7 European Patent Office (2017). *Rule 28. Exceptions to patentability.* Available online at: https://www.epo.org/en/legal/epc/2020/r28.html.
8 Boards of Appeal of the European Patent Office (2020). *Decision G 0003/19*, from 14.05.2020. Available online at: https://www.epo.org/en/boards-of-appeal/decisions/g190003ep1.
9 European Patent Office (n. d.). *5.4 Plant and animal varieties or essentially biological processes for the production of plants or animals.* Available online at: https://www.epo.org/en/legal/guidelines-epc/2024/g_ii_5_4.html.
10 No Patents on Seeds (2023). *The future of plant breeding is under threat in Europe. Current interpretation of patent law is insufficient to stop patents on conventional breeding.* Available online at: https://www.no-patents-on-seeds.org/sites/default/files/news/2023%20Report%20No%20patents%20on%20seeds!.pdf.
11 NPOS (2024). *How CRISPR patents block conventional breeding.* Available online at: https://www.no-patents-on-seeds.org/en/publications/CRISPR.
12 No Patents on Seeds (2024). *How patents block the breeding of tomatoes resistant to the harmful Tomato Brown Rugose Fruit Virus.* Available online at: https://www.no-patents-on-seeds.org/en/report-tomato.
13 No Patents on Seeds (2023). *New patent law in Austria sends a clear signal against patents on seeds.* Available online at: https://www.no-patents-on-seeds.org/sites/default/files/news/PR%20Patent%20law%20Austria.pdf.
14 Directive 98/44/EC of the European Parliament and of the Council of 6 July 1998 on the legal protection of biotechnological inventions. Available online at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31998L0044.

Further reading

No Patents on Seeds (2024). *Seed patents: A huge challenge for the European Union.*
Available online at: https://www.no-patents-on-seeds.org/en/report-2024.

Kloppenburg, J. (2024). *Concentration and IPRs in the Seed Industry: A View From the USA.*
Available online at: https://www.apbrebes.org/sites/default/files/2022-12/Apbrebes_Kloppenburg_OpinionPaper_12-22_fin.pdf.

Authors

Carlos M. Correa is the Executive Director of the South Centre. He has taught postgraduate courses at several universities and served as a consultant to UNCTAD, UNDP, WHO, World Bank, and other regional and international organizations.

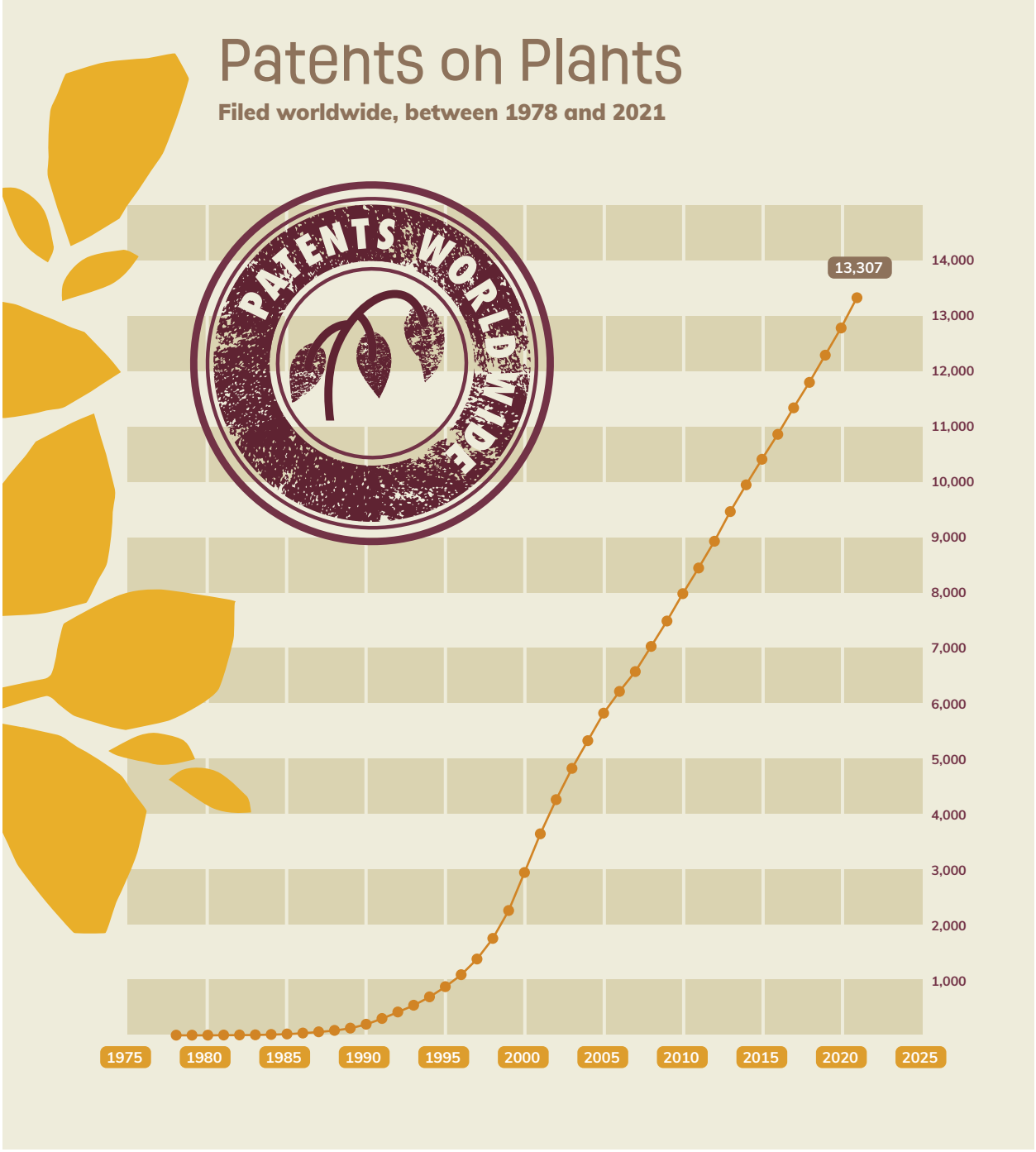
Juan Correa is an Affiliated Research Fellow at the Max Planck Institute for Innovation and Competition in Munich, Germany and the Smart IP Initiative for Latin America.

Patents in the Global South

A threat to cultural autonomy and food security

Recent decades have seen a dramatic increase in the number of patents registered on plants and plant components. Currently, patents are granted in many jurisdictions on the basis of phenotypic or genotypic characteristics such as resistance to diseases and pests, nutrient composition, the ability to cope with difficult environmental conditions, as well as specific gene sequences. Many of these claims are made in relation to genetically engineered plants.

The patenting of plants and plant materials has significant implications for access to and use of seeds and other propagating materials because the presence of a single patented component in a plant may create a barrier to research and breeding. Similarly, if a patent is granted on the processes used to grow a plant, the products obtained from that plant, such as food and feed, may also be patent-protected. This is highly problematic.[1] Patent laws typically prohibit farmers from saving, reusing or exchanging the seeds of a protected plant. This includes the production or commercialization of new varieties developed using patented plant materials.[2]



Source: Kein Patent auf Leben (n. d.). *Patentdatenbank – Anmeldungen und Erteilungen*

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) of the World Trade Organization (WTO) requires WTO member states (comprising most of the countries in the world) to make patents available for any kind of invention. An exception applies to so-called "least developed countries" and runs until 2034.[3] However, TRIPS allows members to exclude plants and animals from patentability. While requiring some form of intellectual property protection on plants, countries have the freedom to define their own models of plant variety protection based on national realities and needs. For some countries, however, this freedom is negated by bilateral trade agreements. For example, the USA has included an obligation to extend patent protection to plants in many trade agreements concluded with developing countries.

A systematic review of patent regulations worldwide reveals that plants are excluded from patentability in only 40 percent of the 126 developing countries for which legal information is available. In other words, 60 percent of countries have not taken advantage of the flexibility afforded by TRIPS on the patentability of plants and hence allow patents to be granted on plants and their components, including plant cells. Of these countries, 43 percent exclude the patentability of plant varieties and the biological processes used to obtain them while permitting patents on genetically modified plants. Plant varieties might also eventually be patentable in the remaining 17 percent due to the lack of an explicit exclusion.

The analysis of legal provisions, patent guidelines, court decisions (where they exist), and a sample of patents granted in Argentina, Brazil, China, India, Peru, South Africa, Uganda and Vietnam indicates that laws prohibiting the patenting of materials that exist in nature may prevent the registration of patents on unmodified plant materials. Isolated genes are not patentable in many of these countries. However, genetic constructs used to modify plants are generally deemed patentable. Provisions excluding the patentability of plants have been interpreted in some countries as excluding plant components such as seeds and cells.

There remains considerable diversity in the legal status of plant patents in countries of the Global South. Most have admitted at least some plant patents, either directly or by permitting patents on plant components, such as nucleic acid sequences. Developing countries that permit broad patenting of plant materials may eventually outlaw the ancestral practices of farmers, including those of saving and re-using seeds, thereby curtailing an essential farmers' right and putting food security at risk.

1 Bostyn, S. J. R. (2013). *Patentability of Plants: At the Crossroads between Monopolizing Nature and Protecting Technological Innovation?* Available online at: https://onlinelibrary.wiley.com/doi/abs/10.1002/jwip.12012.
2 Correa, C. M. (2014). *Patent protection for plants: Legal options for developing countries.* Research Paper 55. Available online at: https://www.southcentre.int/wp-content/uploads/2014/11/RP55_Patent-Protection-for-Plants_EN.pdf.
3 WTO (2021). *WTO members agree to extend TRIPS transition period for LDCs until 1 July 2034.* Available online at: https://www.wto.org/english/news_e/news21_e/trip_30jun21_e.htm.

Further reading

Oxfam Novib and South Centre (2018). *The Status of Patenting Plants in the Global South.*
Available online at: https://www.southcentre.int/wp-content/uploads/2019/03/SC_Oxfam_Research-Report_The-Status-of-Patenting-Plants-in-the-Global-South_2018.pdf.

No Patents on Seeds (2022). *Patents on genes and genetic variations block access to biological diversity for plant breeding: Patent research conducted in 2021 shows how industry is trying to patent genes, plants, seeds and food.*
Available online at: https://www.no-patents-on-seeds.org/sites/default/files/news/Report_Patents%20on%20Plant%20Genes_NPoS_2022.pdf.

Author

Angelika Hilbeck is a Swiss/German agroecologist who recently retired from ETH Zurich in Switzerland after a 30-year academic career researching and teaching about the environmental biosafety of genetically modified organisms and agro-ecology. She co-founded the European Network of Scientists for Social and Environmental Responsibility (ENSSER) and Critical Scientists Switzerland (CSS). Since 2000, she has worked at the Institute for Integrative Biology at ETH Zurich, where she headed the Environmental Biosafety and Agroecology Research Group.

Genetic engineering

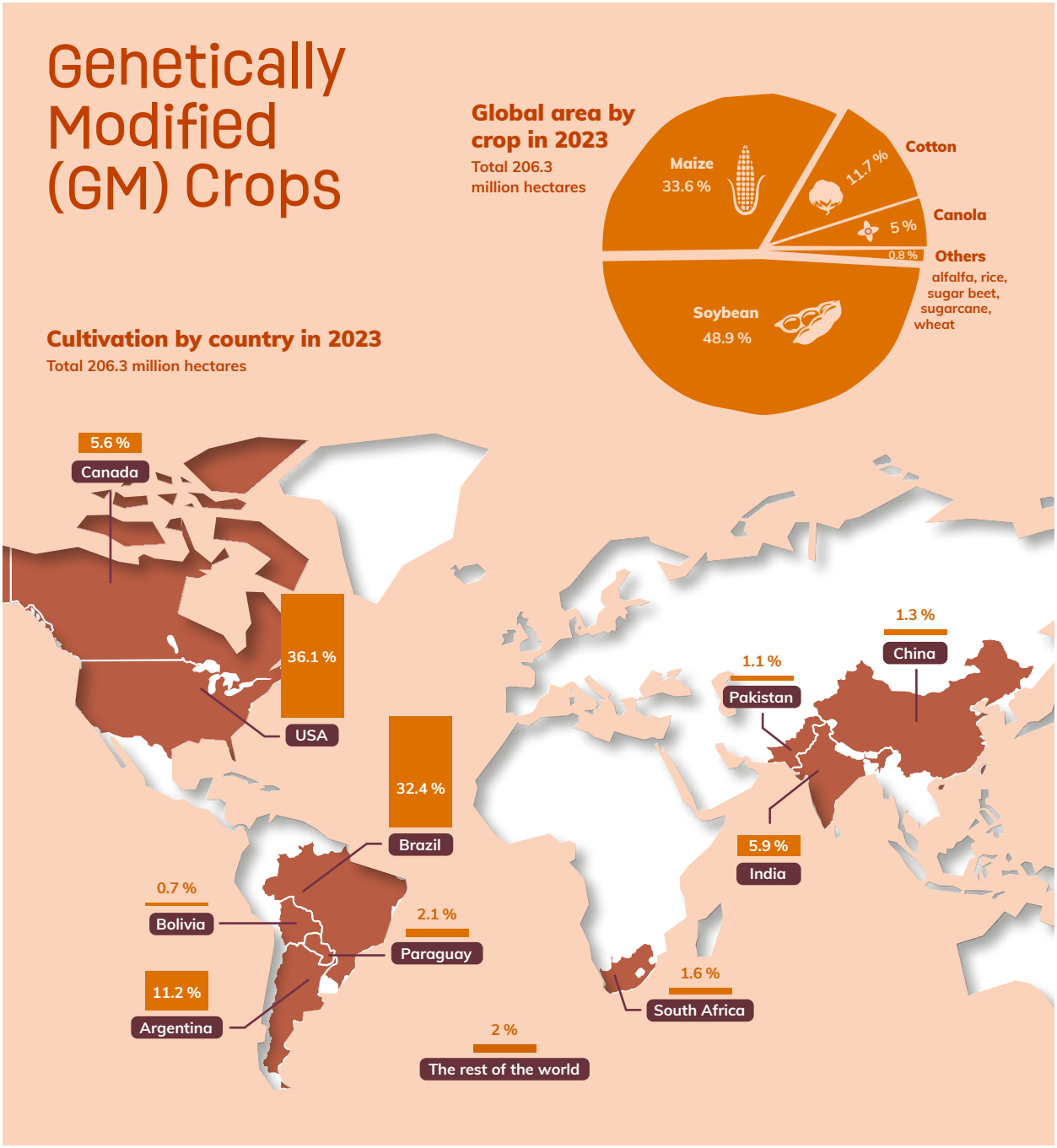
High hopes, low results

When James Watson and Francis Crick first described the three-dimensional structure of DNA as a double helix in the 1950s, they opened up the prospect that humans would one day engineer life. Since that discovery, DNA has come to be understood as the "master molecule" of life that forms genes, which in turn provide the instructions for all life forms. Genetic engineering finally began to gain traction roughly two decades later when the technical feasibility of transferring sequences of DNA between unrelated organisms (transgenesis) was first demonstrated.

However, all forms of genetic engineering are based on a reductionist interpretation of life. It likens DNA sequences to a code, similar to that of a computer programme. According to this logic, genes resemble commands that can be moved from one organism to another and will always execute the same function independent both of the cellular or metabolic context of the plant or animal it is placed into, and of the environmental context.

Genetic engineering in the Global North with predominantly industrialized farming systems

The first genetically modified (GM) crops were introduced into commercial agriculture in the USA in the mid-1990s with high hopes. But things turned out quite differently. To this day, the same two traits that were introduced 30 years ago, incorporated into the same four crops (cotton, maize, oilseed rape, and soybean) continue to



Source: GM AGbio Investor (2024). *Global GM Crop Area Review*

dominate the global GM seed market. These are various herbicide tolerances (HT), which allow these crops to be sprayed with herbicides that destroy any other plant, and insecticidal Bt-toxins whose genes were taken from the bacterium *Bacillus thuringiensis* (Bt) and engineered into plants that subsequently produce these toxins in all GM plant parts. Approximately 99 percent of all GM crops sold today contain traits from one or both of these two categories.[1]

During the first decade of the 2000s, due to the continued underperformance of GM products outside of the two described trait categories, it became clear that genetic engineering needed a PR makeover. As a new genetic engineering technology, CRISPR/Cas, reached technical maturity a decade ago, the industry finally attempted a revival, marketed with a new term: genome editing. However, like the older forms of transgenesis, genome editing also involves the technical manipulation of DNA, except often – but not always – without transferring new DNA. No matter how supposedly precise in scale or location, all DNA manipulations take place outside of the multidimensional choreography of evolution of life forms.

The European Union (EU), after several failed attempts to deregulate genome editing, has finally succeeded in setting an example: in concert with the European Food Safety Agency (EFSA), the European Commission has decided to virtually abolish regulatory requirements related to safety and efficacy for both transgenic and genome editing manipulations. Their hope is that once these regulatory "hurdles" have been removed, the EU will cash in on a biotech boom. However, to date, these New Genomic Techniques (NGT), especially the much-hyped CRISPR/Cas protocols, have performed even worse than the earlier iterations of transgenesis.[2] Until recently, just three or four [3] genome-edited crops have been available commercially in some markets in the world, predominantly in North and South America. Of these, just one plant was actually produced using CRISPR/Cas methods: a tomato with alleged blood pressure-lowering properties, whose performance has not yet been verified. However, the updates of that list indicate what the future holds if the deregulation plans of the EU succeed: nobody will know which GM crops are grown in the field, where they are grown and sold (no detection methods, no monitoring, and no trace-ability), and whether claims of efficacy and safety are true.[4]

"Golden Rice" in Asia: A futile experiment

"Golden Rice", which promised to solve Vitamin A deficiencies, began its journey over three decades ago. It was meant to be the first genetically modified crop specifically developed for the poor in the Global South. Attempts by Syngenta Group to outcross its "Golden Rice" trait into standard rice varieties have resulted in low yields or low fertility. As of 2024, researchers are still experimenting with outcrossing the "Golden Rice" trait into common rice cultivars. Some pilot production of "Golden Rice" varieties has been carried out in the Philippines with unclear or mixed outcomes for the end users, farmers and mothers of children in need of proper nutritious foods who suffer not only from Vitamin A deficiency. In April 2024, the pilot cultivation of "Golden Rice" was stopped by courts in the Philippines. The Philippine Court of Appeals directed the Philippine Rice Research Institute and the University of the Philippines Los Baños to cease from commercially propagating, field-testing and conducting activities related to "Golden Rice", citing the constitutional right to health and the duty to maintain environmental integrity. Despite this setback, the epic journey of "Golden Rice" is likely to continue as long as there are powerful funders keen to treat the symptoms but not the causes of malnutrition.[5]

Genetic engineering in African countries with predominantly smallholder farming systems

The same two traits – herbicide resistance and Bt-toxins – dominate GM crop research and development in Africa as in the rest of the world. The vast majority of GM crops were developed primarily by private entities outside of Africa and are marketed commercially on the African continent predominantly in South Africa.[6] A few notable public GM crop projects have been rolled out to small-scale food producers in the past. None of them succeeded and once funding for the significantly more expensive GM seeds and the required extension support ended so

did the projects. In Burkina Faso, Bt cotton production was discontinued after a few years because the lint quality was far inferior to the local cotton varieties, leading to significant losses for Burkinabé cotton growers and merchants. Similarly, despite its broad uptake on large, commercial farms, Bt maize in South Africa is grown by only a small percentage of small-scale food producers.

For more than a decade, a trend can be observed whereby underperforming genetically engineered products and traits have been passed on to African research laboratories along with funding from Western governments and foundations like the Bill and Melinda Gates Foundation. For example, the drought-tolerant maize developed by Monsanto (today part of the German company Bayer) was passed from the USA to African research labs to develop "water-efficient maize for Africa" (WEMA for short). However, South African authorities have already rejected varieties of this supposedly water-efficient maize because it did not produce a measurable yield increase and the claimed drought tolerance could not be documented, and some trials even showed lower yields than conventional maize.[7] In October 2024, the South African Supreme Court of Appeals issued a landmark ruling overturning the approval process for Monsanto's (now Bayer's) drought-tolerant GM maize (MON87460), restarting the commercial approval process. The Court upheld the African Centre for Biodiversity's call to prioritize the precautionary principle.[8] Yet, other GM varieties are still in the pipeline for approval. The expectation that the integration of a single transgene should confer drought tolerance has always been scientifically adventurous. Such traits are based on highly complex physiological processes involving hundreds of interacting genes.

Gene technologies: just another business model

Profitable business models with the newer gene technologies have shifted from products to processes that require even bolder promises to attract investment from venture capitalists. Many investors know or care little about the realistic prospects or whether products will have a measurable impact on the promised outcomes, such as alleviating hunger, eliminating disease in humans, animals or plants, or increasing biodiversity. In fact, it seems to have become a normalized business practice in this field to promise entirely unrealistic outcomes based on spurious evidence as a way of attracting investment.

Delivering on promises is not a necessary precondition to generate further funding. As long as this business practice is successful, we expect the hubris to continue, consuming funds that could be much more successfully invested in documented and proven agroecological practices.

1 ISAAA (2020). *Global Status of Commercialized Biotech/GM Crops: 2019*. Brief 55. Available online at: https://www.isaaa.org/resources/publications/briefs/55/.
2 Wilson, A. K. (2020). *Will gene-edited and other GM crops fail sustainable food systems?* Available online at: https://www.researchgate.net/publication/344956402_Will_gene-edited_and_other_GM_crops_fail_sustainable_food_systems.
3 Bundesamt für Umwelt (2016). *Tabellarische Übersichten.* Available online at: https://www.semnar.ch/pdfs/endbericht_semnar_gelinsky_2016.pdf.
4 Gelinsky, E. (2023). *Neue gentechnische Verfahren: Kommerzialisierungspipeline im Bereich Pflanzenzüchtung und Lizenzvereinbarungen.* Available online at: https://www.semnar.ch/pdfs/endbericht_semnar_gelinsky_2023.pdf.
5 Hilbeck, A. and H. Herren (2016). *Millions Spent, No One Served: Who Is to Blame for the Failure of GMO Golden Rice?* Available online at: https://theecologist.org/2016/aug/15/millions-spent-no-one-served-who-blame-failure-gmo-golden-rice; Stone, G.D. and D. Glover (2017). *Disembedding Grain: Golden Rice, the Green Revolution, and heirloom seeds in the Philippines.* Available online at: https://doi.org/10.1007/s10460-016-9696-1.
6 Dowd-Uribe, B. et al. (2024). *Bridging the gap? Public-private partnerships and genetically modified crop development for smallholder farmers in Africa.* Plants, People, Planet 6. Available online at: https://doi.org/10.1002/ppp3.10453.
7 Department of Agriculture, Land Reform and Rural Development (2019). *Minister's final decision on the appeal lodged by Monsanto South Africa (PTY) Limited under the GMO Act, 1997.* Available online at: https://old.dalrrd.gov.za/doc/Minister's%20final%20decision%20on%20Monsanto%20appeal.pdf.
8 African Centre for Biodiversity (2024). *Groundbreaking judgment of the Supreme Court of Appeal in ACB vs Monsanto/Bayer and the State.* Available online at: https://acbio.org.za/gm-biosafety/groundbreaking-judgment-of-the-supreme-court-of-appeal-in-acb-vs-monsanto-bayer/.

Further reading

Chapela, I. and A. Hilbeck (2023). *GMOs and Human and Environmental Safety.* Available online at: https://doi.org/10.1007/978-3-031-29451-8_39.

Wynberg, R. (2023). *African Perspectives on Agroecology. Why farmer-led seed and knowledge systems matter.* Available online at: https://practicalactionpublishing.com/book/2698/african-perspectives-on-agroecology.

Author

Normita Ignacio has worked for more than 20 years with the Southeast Asia Regional Initiatives for Community Empowerment (SEARICE), an NGO based in the Philippines that implements projects conserving plant diversity and strengthening farmers' rights in Southeast Asia. She is currently the Executive Director of SEARICE and actively participates in international norm-setting bodies such as the United Nations Convention on Biological Diversity (CBD) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

CBD, ITPGRFA and UNDROP

International frameworks to protect farmers' seeds

It was once internationally recognized and agreed that seeds are a common resource of humanity, one that must be shared and never monopolized. However, the privatization of agricultural research and the enforcement of intellectual property rights in the late twentieth century gradually led to the monopolization of seeds by corporations. By contrast, those who saved and conserved seeds over generations have not been compensated for their work.[1] Alongside the privatization of seeds, we have seen a steep decrease in biodiversity in general and seed diversity in particular. These developments have necessitated a series of international frameworks aiming at protecting biodiversity and crop diversity.

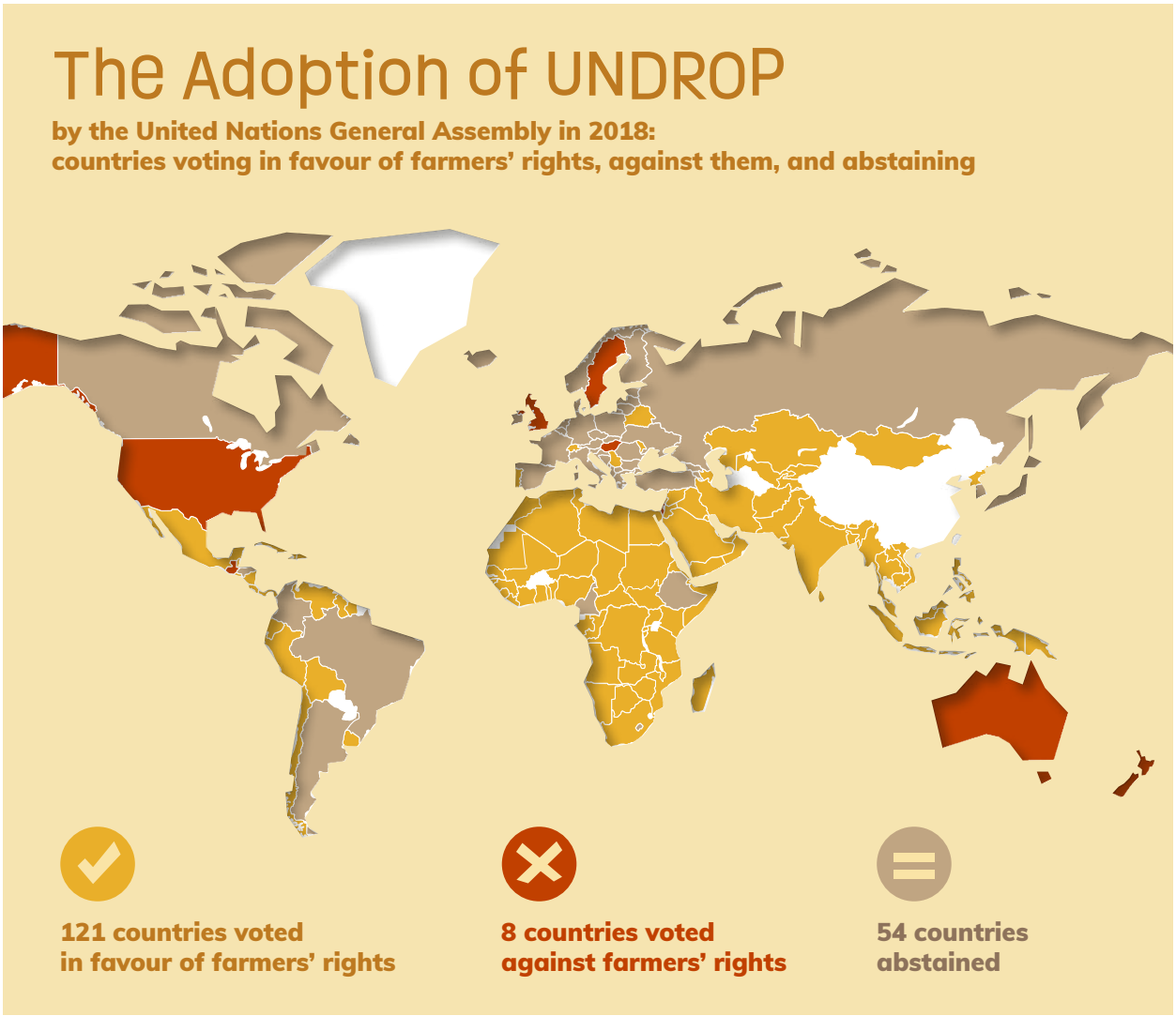
The Convention on Biological Diversity

The United Nations Convention on Biological Diversity (CBD) was one of the key outcomes of the 1992 United Nations Conference on Environment and Development, also known as the Rio Earth Summit.

The aim of the CBD is to protect the diversity of all living organisms. It obliges all signatory states to protect biodiversity in their territories while also recognizing states' sovereignty over these natural resources. It specifically recognizes the crucial role of countries (mostly in the Global South) with ecosystems rich in biodiversity.[2] To ensure that these countries benefit from the use of genetic resources from those ecosystems, the CBD contains an obligation to share benefits from the utilization of genetic resources. This is defined in the supplementary Nagoya Protocol governing access and benefit-sharing. The Protocol requires users such as seed, pharmaceutical, and biotech companies, as well as scientific researchers, to seek permission from the country providing these genetic resources and to negotiate terms for the sharing of benefits.[3] However, these rules only apply to activities undertaken after the CBD came into force. As many genetic resources had been collected and stored (e.g., in gene banks) before the Nagoya Protocol came into effect in 2014, this leaves a huge loophole for users unwilling to share benefits with the provider country. Furthermore, many provider countries, especially in the Global South, have difficulty controlling access to genetic resources and negotiating terms of access and benefit-sharing with users.

International Treaty on Plant Genetic Resources for Food and Agriculture

While the CBD covers biological diversity in general, the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA), often referred to as the Plant Treaty, focuses on crop diversity in particular. Adopted in 2001 as an international agreement, the Plant Treaty aims to ensure the conservation and sustainable use of plant genetic resources for food and agriculture (PGRFA) and to promote the fair and equitable sharing of benefits



Source: United Nations Digital Library (2018). *United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas: resolution / adopted by the General Assembly*

derived from their use. It recognizes the enormous contribution of farmers to the development and conservation of PGRFA.[4] Furthermore, it obliges its 154 contracting states to protect and promote farmers' rights, including the right to save, use, exchange and sell farm-saved seeds and planting materials. Like the CBD, the Plant Treaty includes a mechanism for access and benefit-sharing. However, unlike the bilateral system of the CBD, it follows a multilateral system, whereby payments from benefit-sharing are paid into a common fund, which is used to finance projects that support farmers' work to conserve crop diversity. Unfortunately, much like the Nagoya Protocol, the access and benefit-sharing mechanism of the Plant Treaty has proven ineffective and has generated few actual payments.[5] To achieve its objective to conserve crop diversity, the Plant Treaty coordinates with gene banks at national, regional and international levels – most prominently the Svalbard Global Seed Vault – where seeds are stored and made available to researchers and plant breeders. However, the Plant Treaty has done little to strengthen the conservation of crop diversity by farmers.

United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas

Adopted by the United Nations General Assembly in December 2018, the Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP), often referred to as the Peasants' Rights Declaration, defines a comprehensive set of rights for peasants.[6] Article 19, on the right to seeds, builds on the respective article of the ITPGRFA. It mandates that states "respect, protect and fulfil the right to seeds of peasants" and "shall ensure that seed policies, plant variety protection and other intellectual property laws, certification schemes and seed marketing laws respect and take into account the rights, needs and realities of peasants and other people working in rural areas." This makes the UNDROP a strong tool for the realisation of farmers' rights to seeds. In 2024, the United Nations Working Group on Peasants' Rights was established,[7] which provides a mechanism to oversee and facilitate the implementation of UNDROP.

Ongoing struggle to improve the functioning of international frameworks

Through frameworks like the CBD, ITPGRFA and UNDROP, farmers' rights to seeds have progressively been recognized by the international community. However, beyond paying lip service, most signatory states have been slow to fulfil their obligations to protect and promote farmers' rights. Moreover, the access and benefit-sharing mechanisms in the CBD and ITPGRFA have failed to generate significant payments to the providers of genetic resources while users often find ways to gain access without sharing benefits.

Since decisions in international agreements like the CBD and Plant Treaty can only be taken by consensus, and some states prioritize narrow self-interest over global food security and biodiversity protection, it is difficult to obtain agreement on effective provisions for the fair and equitable sharing of benefits. Furthermore, all of these international frameworks lack measures to monitor and enforce their implementation.

To facilitate the implementation of instruments strengthening farmers' rights and to counter those that undermine those rights, farmers' organizations and civil society need to engage more closely with one another. By creating awareness among the public, and by building alliances, participating in international negotiations, and engaging with policymakers, we can force them to fulfil their obligation to protect and promote farmers' rights.

1 Deplazes-Zemp, A. (2018). *Genetic Resources, an analysis of a multifaceted concept.* Available online at: https://www.zora.uzh.ch/id/eprint/160845/1/Deplazes-Zemp_2018_conceptual_analysis.pdf.
2 Secretariat of the Convention on Biological Diversity (2011). *Convention on Biological Diversity: Text of the Convention.* Available online at: https://www.cbd.int/convention/text.
3 South Centre (2020). *The Nagoya Protocol International Access and Benefit Sharing Regime.* Policy Brief. Available online at: https://www.southcentre.int/wp-content/uploads/2020/11/PB-86.pdf.
4 FAO (2009). *Texts of the Treaty: Official versions.* Available online at: https://www.fao.org/plant-treaty/overview/texts-treaty/en/.
5 FAO and ITPGRFA (2023). *The Benefit-sharing Fund. 2022–2023 report.* Available online at: https://openknowledge.fao.org/items/d2198228-c42c-4be3-b01b-cfd195a1dee0.
6 UN General Assembly (2018). *Resolution adopted by the General Assembly on 17 December 2018: 73/165. United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas.* Available online at: https://digitallibrary.un.org/record/1661560?ln=en&v=pdf.
7 La Via Campesina (2024). *UN Human Rights Council appoints new Working Group on Peasants' Rights (UNDROP).* Available online at: https://viacampesina.org/en/press-release-un-human-rights-council-appoints-the-members-of-the-new-working-group-on-the-rights-of-peasants-and-other-people-working-in-rural-areas/.

Further reading

APBREBES and Geneva Academy (2021). *Implementing the ITPGRFA in light of the UNDROP.*
Available online at: https://www.apbrebes.org/sites/default/files/2022-09/Apbrebes_Briefing-Paper_9-22_final.pdf.

La Via Campesina (2021). *Peasants Rights Explained: An illustrated version of the UN Declaration (UNDROP).*
Available online at: https://viacampesina.org/en/undrop-illustrations/.

Author

Fernando Frank is an agronomist, farmer, teacher and researcher. He lives in Argentina.

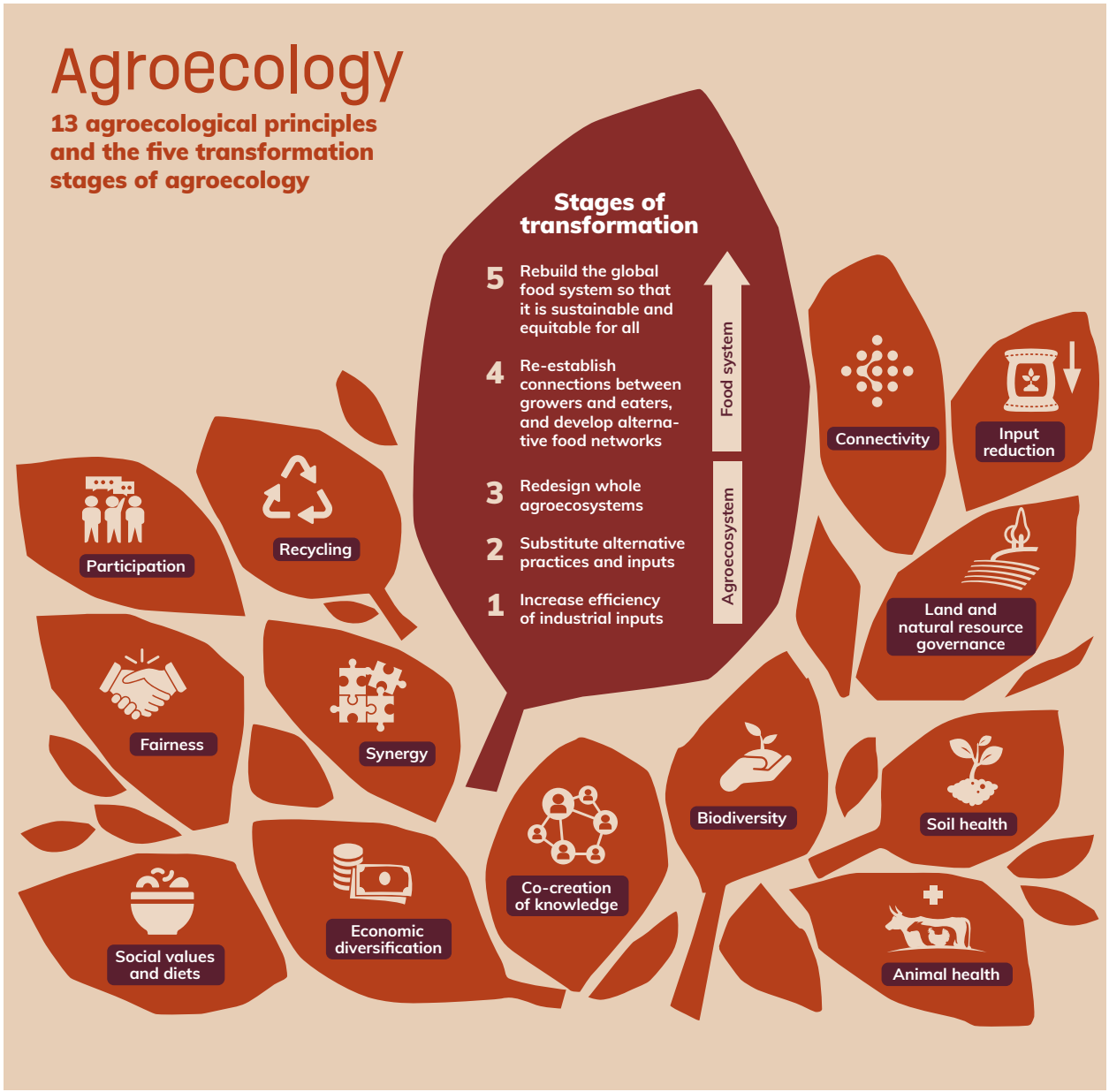
Agroecology

The basis for farmers' seeds and peasant food production systems

Agroecology is not merely another approach to growing food. Rather, it represents a unique perspective on our relationship to nature. A social movement is growing around this perspective, one that encourages peer-to-peer exchange of information between farmers. The chief goal of agroecology is to develop locally adapted solutions that work with available resources. Together with food sovereignty, agroecology seeks to transform food systems by restoring the vital link between agriculture and food, which has been severely disrupted by global industrial food systems.[1]

The industrial food system is responsible for about one third of global greenhouse gas emissions. It has caused widespread destruction of natural habitats, leading to massive species extinction, as well as the contamination of soils and waters worldwide through excessive use of chemical pesticides and synthetic fertilizers. We are currently in the midst of a major worldwide food crisis characterized by high levels of hunger and food insecurity within a context of increasing ecological fragility. This is just one part of a wider polycrisis, in which the climate emergency interacts with economic and debt crises, a health crisis, and various geopolitical crises.[2]

Agroecology offers a holistic solution to many problems. By promoting biodiversity, sustainable farming practices, and local food systems, agroecology helps to mitigate climate change, enhance food security, and foster resilience in rural communities. Peasant production systems for food and farmers' seeds are central to this vision, ensuring that agricultural practices are diverse,



Source: 13 agroecological principles according to HLPE (2019). *Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition*; five transformation stages of agroecology according to Gliessman, S. R. (2015). *Agroecology: The ecology of sustainable food systems*

adaptable, and grounded in the needs and knowledge of local communities worldwide.

Every region has its own unique soil, climate, biodiversity, as well as cultural and economic conditions. Agroecology values this diversity, in stark contrast to the homogenization promoted by industrial agriculture. Big agribusiness and some political decision-makers claim that agroecology cannot produce enough food to feed the world, a narrative rooted in the Green Revolution. The reality is that agroecology can produce yields that are competitive with conventional practices, especially when long-term sustainability and resilience are considered. In some cases, agroecological systems match or exceed the yields of conventional practices. A diverse harvest also leads to a better nutritional outcome for consumers. By using farmers' seeds instead of hybrid or genetically modified seeds, farmers reduce their reliance on synthetic fertilizers and chemical pesticides. In contrast, agroecological farming practices associated with farmers' seeds involve techniques that maintain or enhance soil structure and organic matter, such as crop rotation, cover cropping, and reduced tillage. These practices also prevent erosion. Diverse systems are also very efficient in their use of water. Thanks to biological conservation and agricultural diversity, local agroecological systems have a high potential for soil and ecosystem regeneration, water quality improvement, and climate change mitigation through carbon sequestration.[3]

If we hope to truly move towards agroecology, seeds must be in the hands of farmers. Agroecology prioritizes farmers' empowerment, enabling them to make informed decisions based on local conditions. It reduces reliance on external seed sources, allowing farmers to cultivate and improve their seeds through observation, testing, and adaptation. Each seed thus becomes a reservoir of knowledge, integrating years of information about the environment and enhancing resilience. By empowering farmers to take control of their seeds, agroecology represents a departure from dependency on corporate entities.

Agroecology and food sovereignty are paradigms that emerged from popular struggles. Social movements across the world have made the potential of agroecology known nationally and internationally. Science, civil society organizations, the United Nations, and governments have taken up the concept. Peasant farmers are the central actors of the food system and must therefore have a say in the development of food policies. Social movements that represent the interests of marginalized people, especially in rural areas, should receive support, and authorities should integrate these into political decision-making processes. Peasant farmers need markets where they can sell their produce at prices that enable them to earn a living income and actively define market conditions. Public authorities need to support these markets by providing the required public infrastructure. Public procurement to supply canteens, schools and other public institutions should favour local farmers, buying produce at reliable rates and volumes. This would both ensure the regional supply of high-quality produce and guarantee future earnings for peasant farmers.

Seed sovereignty is the basis of food sovereignty. Seed sovereignty epitomizes farmers' (and especially women farmers') autonomy, access and control over locally produced, culturally appropriate, increasingly diverse, seed and food. It safeguards the health of the ecosystem, on which everything else depends.

1 Borras, S. M. (2023). *La Via Campesina – transforming agrarian and knowledge politics, and co-constructing a field: a laudation.* Available online at: https://www.tandfonline.com/doi/full/10.1080/03066150.2023.2176760#d1e134.
2 Clapp, J. (2024). *The Global Food Crisis in the Age of Catastrophe. The contemporary food system is not built to withstand our age of polycrisis.* Available online at: https://www.rosalux.de/en/news/id/52208/the-global-food-crisis-in-the-age-of-catastrophe.
3 Gliessman, S. R., Ernesto Méndez, V., Izzo, V. M. and E. W. Engels (2023). *Agroecology. Leading the Transformation to a Just and Sustainable Food System.*

Further reading

CIDSE (2018). *The principles of agroecology. Towards just, resilient and sustainable food systems.*
Available online at: https://www.cidse.org/publications/just-food/food-and-climate/the-principles-of-agroecology.html.

FIAN International (2023).
A Just Transition to Agroecology. Briefing Note.
Available online at: https://www.fian.org/files/is/htdocs/wp11102127_GNIAANVR7U/www/files/AgroecologyJustTransition_en.pdf.

Authors
Simon Degelo
Refiloe Joala
Patricia Lizarraga
Imen Louati
Tauqueer Sabri
Jan Urhahn

A global movement emerging

Various initiatives to promote and protect farmers' seeds

Defending against seed privatization

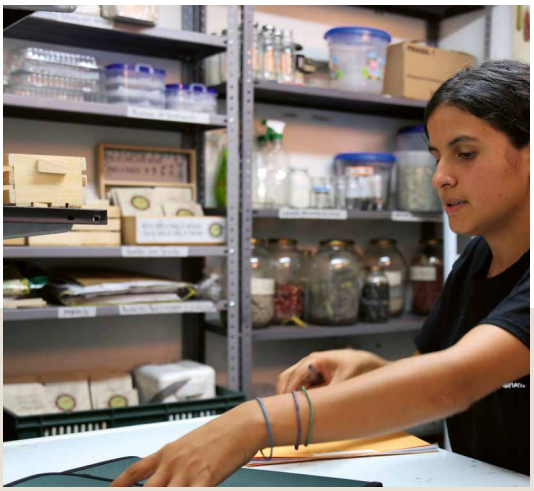
Open-source seeds

Open-source seed initiatives first emerged in the USA in 2012 and in Europe in 2017 as a means of pushing back against the encroaching privatization of seeds through intellectual property rights. Through the dissemination of traditional and newly bred varieties under an open-source license – similar to that used for software – seeds are secured and shared as a common resource and protected from appropriation by seed corporations. Anyone who acquires open-source seeds is free to plant and multiply them or to use them for further breeding. However, users are not allowed to patent them or restrict their use by others in any other way. Furthermore, when the user sells or shares their seeds, these must be passed on under the same license agreement. Hundreds of varieties have been licensed to date through various open-source seed initiatives worldwide.

Open-source seed initiatives in Argentina, Europe, India, Kenya, the Philippines, and the USA are now part of a growing global coalition that unites ten organizations in five continents.

More information about open-source seeds can be found at: https://www.opensourceseeds.org/en/gossi

© Open-source seeds



© Semillas de Identidad

Farmers organize to safeguard seed quality

Semillas de Identidad, Colombia

In Colombia, as in many other countries, farmers' seeds are not recognized by law. Therefore, Semillas de Identidad, a network of seed guardians, comprising 10,000 families organized into 500 seed banks, developed its own way to safeguard seed quality. The network adapted the model of participatory guarantee systems (PGS), which was already well established for other forms of agroecological produce, to seeds. PGS is a low-cost, community-based system of quality assurance with a strong emphasis on social control and knowledge building. Like third-party certification systems, PGS aims to provide a credible quality guarantee system for farmers. To qualify, the seeds must be cultivated without synthetic inputs like chemical pesticides and synthetic fertilizers, have a good germination rate, be free from diseases and contamination by genetically modified organisms, among other conditions. Seeds approved by PGS are allowed to use a specific label. This not only offers farmers the opportunity to generate additional income by selling these PGS-labelled seeds but also carries a political message: that farmers can produce high-quality seeds and can guarantee this quality themselves. This also contributes to the networks' political objectives: to increase recognition for farmers' seed systems and respect for farmers' rights in Colombia's seed regulations.

More information about Semillas de Identidad can be found at: https://swissaid.kinsta.cloud/wp-content/uploads/2020/03/2019-SWISSAID-Saatgut-Dokumentation_EN_DEF_web.pdf

Keeping diversity alive

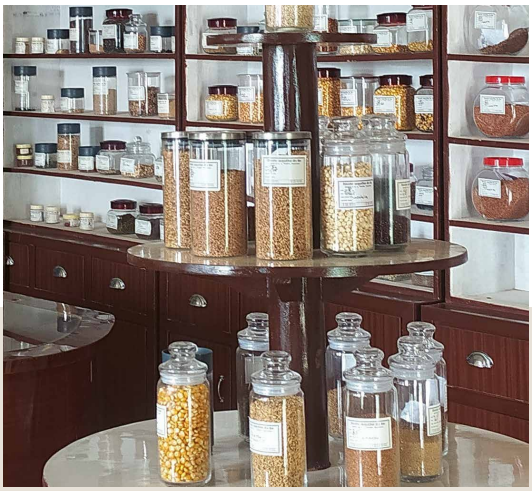
Pro Specie Rara, Switzerland

Pro Specie Rara is a network for agricultural biodiversity founded in Switzerland in 1982. It comprises roughly 4,400 activists who collaborate to conserve and sustainably use traditional plant varieties and animal breeds. The network includes amateur gardeners, livestock breeders, farmers, as well as professional nurseries and seed producers. Together they maintain 1,500 vegetable and crop varieties, over 2,400 varieties of fruit, over 400 varieties of berries, and 1,000 varieties of ornamental plants.

To promote agricultural biodiversity, Pro Specie Rara has created a label that can be used by producers and distributors to stimulate consumer interest in traditional breeds. The label can also be used by seed producers and nurseries, and it honours the voluntary work of guardians of plant varieties and animal breeds. To protect genetic diversity, Pro Specie Rara also conducts activities to sensitize the public and engages politically, for example against the privatization of seeds through patents on plants.

More information about Pro Specie Rara can be found at: https://www.prospecierara.ch/

© Pro Specie Rara



© LI-BIRD

Facilitating seed banks and creating policy space for farmers' seeds

LI-BIRD, Nepal

As early as 2003, the Nepalese NGO, LI-BIRD (Local Initiatives for Biodiversity, Research and Development) began helping farmers organize and establish community seed banks in Nepal, having realized that traditional varieties were becoming difficult for farmers to access. To date, LI-BIRD has facilitated the emergence of 28 community seed banks in collaboration with other civil society organizations and farmers. Furthermore, LI-BIRD engaged with researchers from government research institutes and convinced them to collaborate with farmers in participatory breeding and farmer-led research programmes in which farmers select traits and varieties that suit their needs and conditions. Building upon this work, LI-BIRD began advocating for the recognition of farmers' seed systems in Nepal's seed policies. As a result, the 1988 Seed Act was amended in 2008 and again in 2022. Today, it recognizes farmers as breeders and allows them to register farmers' varieties as "landraces". Once registered, a variety can legally be sold and collective ownership is granted to farmers' groups or communities, which then are eligible to receive technical and financial support from public agencies for maintaining the variety. By 2024, some 24 landraces of amaranth, bean, millet, vegetable and rice have been registered.

More information about LI-BIRD can be found at: https://libird.org/

© Vaca Bonsai

Community networks for the protection of seeds

Movimiento por las Semillas Campesinas de Misiones, Argentina

In northern Argentina, in the tri-border region with Brazil and Paraguay, the Movimiento por las Semillas Campesinas de Misiones (Movement for Farmers' Seeds of Misiones) has been holding seed fairs for more than 27 years. These fairs, which can be local or regional, allow for the exchange of seeds and knowledge in spaces and practices that are not governed by commercial transactions or money. More than 1,000 small-scale food producers have so far participated in these fairs. Crucially, they allow for the exchange and conservation of diverse seed varieties that might otherwise be lost due to industrial farming practices, extractive forestry, or the impacts of climate change.

The fairs provide a forum for seed guardians from various places to come together, organize themselves in a network of seed banks that now includes more than 20 localities, and make seeds available to the rest of the community. These fairs and seed banks not only help preserve traditional and open-pollinated seed varieties but also foster community engagement and awareness of the importance of biodiversity in agriculture. These efforts ensure that future generations have access to a wide array of crops, which can be essential for adapting to changing environmental conditions and for maintaining food sovereignty.

More information about the experiences of seed guardians and seed banks in Argentina can be found at: https://rosalux-ba.org/escueladesemillas/

Community seed banks and the fight against draconian seed laws

Seed Savers Network Kenya

Seed Savers Network Kenya is a grassroots network working with small-scale food producers to establish community seed banks across Kenya. Since 2009, the Network has grown significantly and now has over 405,000 community members, with 75 community seed banks established across the country. It has also documented 148 local crop varieties. Community seed banks serve as vital repositories where seeds can be exchanged and preserved for future use.

In Kenya, the majority of seeds used by farmers and small-scale food producers are exchanged through informal systems. However, these systems have been put under pressure by the 2012 Seeds and Plant Varieties Act, which prohibits the selling of uncertified seeds, thereby locking farmers' seeds out of the official market. Furthermore, this law criminalizes farmers' age-old practices by threatening them with a prison sentence of up to two years or a fine of up to KES 1,000,000 (approx. EUR 7,000) or both if they share or sell their seeds. The law also prohibits seed banks from producing or multiplying seeds, allowing only certified seed companies to do so. Seed Savers Network Kenya supported small-scale food producers in filing a petition to the Kenyan High Court for this law to be reviewed, so that farmers can freely multiply, brand, package and sell their seeds through seed banks.

More information about the Seed Savers Network Kenya can be found at: https://seedsaverskenya.org

© Jan Urhahn

© Tauqueer Sabri

A strategy for seed sovereignty

MASIPAG, Philippines

MASIPAG is a farmer-led network of peoples' organizations, NGOs and scientists dedicated to food sovereignty and the empowerment of small-scale and resource-poor farmers in the Philippines. Founded in 1985, the network strives to bring back traditional seeds and reclaim the collective cultures that have been lost since the Green Revolution of the 1960s. Working with more than 500 farmers' groups today, MASIPAG has built the capacity of farmers and their organizations through farmer-to-farmer exchanges of knowledge and practices.

MASIPAG, along with farmers' groups, has initiated community seed banks and trial farms, which serve as a source of agroecological seeds that are available free of charge. The trial farms also challenge the dominant narrative that so-called high-yielding varieties can only be produced by agricultural institutes rather than by farmers themselves.

So far, the farmers and MASIPAG have collected and maintained more than 2,000 traditional rice varieties and bred 1,480 new rice varieties that are specifically adapted to local soils, local climate conditions, and meet the community's own needs and objectives. Each year, these varieties are grown and further developed on trial farms. The farmers learn how to assess the varieties, how to choose those that are best adapted to the natural conditions of their land, and how to identify which seeds can best be used for breeding new varieties. This makes the trial a living seed bank in their communities.

More information about MASIPAG can be found at: https://masipag.org/

Advocating for farmers' seeds and agroecological transition

TOAM and TABIO, Tanzania

In 2023, the Government of Tanzania adopted the National Ecological Organic Agriculture Strategy (NEOAS), becoming one of the first countries worldwide to establish a national strategic pathway to agroecological transition. The Strategy contains a specific chapter on seeds, which highlights the importance of supporting a farmers' seed system and indicates need for amending the 2003 Seeds Act, which prohibits the exchange and sale of farmers' seeds.

This success in protecting farmers' seeds is the result of 20 years of efforts by Tanzania's civil society, with two networks playing a key role: the Tanzania Organic Agriculture Movement (TOAM), uniting over 100 organizations; and the Tanzania Alliance for Biodiversity (TABIO), which comprises farmers' organizations as well as national and international NGOs that promote farmers' seeds.

Even with the adoption of the NEOAS, these networks will not rest. To ensure that the Strategy does not gather dust, they will work to ensure that agroecology is mainstreamed within the national food system and that sufficient funding is allocated to support it. The Government's commitment to a farmers' seed system still needs to result in the reform of the Seeds Act and other regulations on seeds.

The NEOAS can be found at: https://www.fao.org/agroecology/database/detail/en/c/1680645/

© Kiki & Miles Production

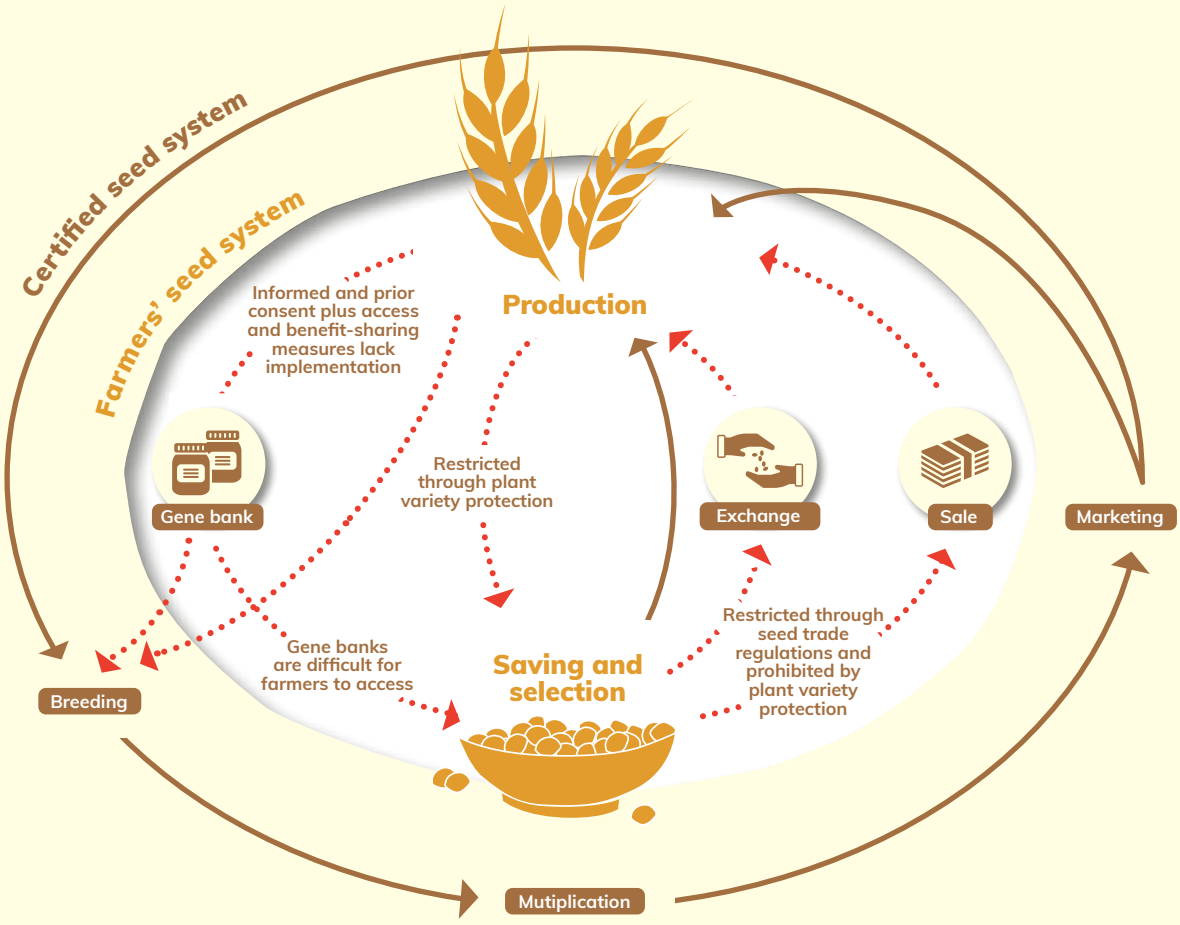
Authors
Simon Degelo
Refiloe Joala
Patricia Lizarraga
Imen Louati
Tauqueer Sabri
Jan Urhahn

Protecting global seed diversity

Recommendations for pluralistic seed systems

Regulatory Constraints for Farmers' Seed Systems

Seed regulations in most countries one-sidedly **promote commercial certified seed systems.** While **commercial breeders** can **easily access farmers' seeds** – often without following international rules to prevent biopiracy – **farmers** are **severely restricted** in what they can do **with farm-saved seeds.**



Source: CROPS4HD (2023). *Position paper on policies for pluralistic seed systems*

Principles for pluralistic seed systems

To safeguard seed diversity and food sovereignty in a world beset by climate change and multiple other crises, we need to overcome the dualism of two discrete seed systems: one for farmers' seeds and another for industrial, certified seeds. Instead, we should move towards pluralistic seed systems where farmers are free to save or acquire any seeds they wish to plant.

The following are some key principles for developing and supporting pluralistic seed systems and seed regulations that respect farmer's rights:

- Protecting and supporting farmers' seed systems for the production of seeds that are adapted to local agro-ecological conditions and support climate-resilient food production.
- Permitting a variety of models to assess seed quality. While mechanisms are needed to guarantee seed quality, the current model of variety registration and seed certification is incompatible with farmers' seeds. Alternative models must be farmer-led and must not rely on expensive third-party certification.
- Preserving seed diversity and supporting farmers in maintaining seed diversity in their fields, thereby conserving the basis for all plant breeding and food production.
- Safeguarding seed diversity as a common heritage which cannot be appropriated and monopolized through intellectual property regimes that violate farmers' rights to save, use, exchange, and sell their farm-saved seeds.
- Respecting farmers' seed sovereignty. Farmers should be free to choose whether they wish to save their own seeds, buy seeds produced and managed by other farmers, or purchase certified seeds. Each option has certain advantages and disadvantages, and farmers are best placed to make this decision.
- Recognizing and defending farmers' rights to save, exchange and sell farm-saved seeds.
- Acknowledging and supporting the role of women in the production of food as custodians of seeds and indigenous knowledge.

Recommendations for reforming policies and regulations with regards to seeds

To achieve pluralistic seed systems, we recommend the following reforms to policies and regulatory frameworks:

Policies, research institutions and gene banks

- Food, agriculture and seed policies should be revised to facilitate agroecological, resilient, sustainable, and biodiverse food systems.
- The efforts of farmers to maintain and develop seed diversity and associated knowledge, as well as agroecological and productive cropping systems should be recognized and supported by government policies.
- Farmers' organizations and particularly women farmers should play a key role in the formulation of seed and agricultural policies and in regulations related to seeds and intellectual property on plants.
- Research institutions should acknowledge and support farmers in creating and safeguarding seed diversity and locally adapted seeds as well as associated knowledge, and they should engage with farming communities in the co-creation of knowledge.
- National and international gene banks should give farmers' organizations low-threshold access to their collections.

Seed trade regulations

- Requirements for variety testing, registration and certification should only apply to commercial certified seeds. Farm-saved seeds and farmers' varieties should be sold freely without any formal variety testing and certification.
- Intermediate seed systems – between certified seed systems and farmers' seed systems – should be fostered, such as participatory guarantee systems or quality-declared seeds.

Biosafety and genetic engineering

- Genetic engineering (including newer genomic techniques such as CRISPR/Cas) should not be considered a legitimate method for creating varieties suitable for agroecological production. This technology is largely controlled by biotech companies rather than farmers and is heavily monopolized through patents. Genetic engineering inherently follows a linear, top-down approach rather than a circular one based on co-created knowledge. Moreover, experiences to date with genetically engineered crops show that they are detrimental rather than beneficial to farmers and the environment, and the health risks are still not fully understood.

- Where states decide to permit genetically engineered seeds, farmers' seeds must be protected against contamination. To safeguard consumers' and farmers' freedom of choice, all genetically engineered seeds and their products need to be labelled. States are responsible for instituting rules and regulations that ensure no contamination takes place from any seeds released into the market, nor from germinable grains distributed as food or feed. Any costs should be covered by the companies releasing or distributing genetically modified seeds/grains and not by communities that wish to keep their seeds free from contamination.

International agreements and obligations

- All policies and regulations linked to seeds, intellectual property and agriculture should respect and support international human rights obligations, including the United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP), as well as the obligation to maintain biodiversity, anchored in international treaties such as the United Nations Convention on Biological Diversity (CBD) and the International Plant Treaty (ITPGRFA). No intergovernmental, multilateral or bilateral agreements should be ratified that require the introduction of regulations limiting farmers' rights to freely save, use, exchange, and sell seeds. Existing agreements, in particular the International Union for the Protection of New Varieties of Plants (UPOV) and its acts, should be open to renegotiation or termination.

- States, in collaboration with farmers' organizations, should actively implement international agreements that protect farmers' rights and genetic resources, such as UNDROP, the CBD, and ITPGRFA.

Intellectual property rights: plant variety protection and patents

- Farmers should have the right to save, use, exchange and sell their farm-saved seeds and other propagating material. This right should supersede the intellectual property rights of breeders. Only the sale of labelled seeds for retail is reserved for the owner of the variety.

- The regulation of intellectual property should contain provisions to prevent biopiracy. Breeders should have to declare the origin of breeding material and prove that it was lawfully acquired.

- No patents should be granted on plants, whether based on varieties, traits, genes, or breeding methods.

Further reading

CROPS4HD (2023). *Position paper on policies for pluralistic seed systems.*
Available online at: https://crops4hd.org/wp-content/uploads/2023/10/2023_Position_pluralistic_seed_systems_and_seed_policies_ENG.pdf.

AFSA (2022). *FMSS Proposed legal framework for the recognition and promotion of farmer managed seed systems and the protection of biodiversity.*
Available online at: https://afsafrica.org/wp-content/uploads/2022/06/fmss-legal-framework-2022.pdf.

Imprint

Publisher
Alliance for Food Sovereignty in Africa (AFSA); Association for Plant Breeding for the Benefit of Society (APBREBES); Rosa-Luxemburg-Stiftung (RLS) Northern Africa, Southern Africa, South Asia, and Southern Cone; Southeast Asia Regional Initiatives for Community Empowerment (SEARICE); and SWISSAID

Project team: Simon Degelo (SWISSAID), Delia Hürlimann (SWISSAID), Refiloe Joala (RLS Southern Africa), Patricia Lizarraga (RLS Southern Cone), Imen Louati (RLS North Africa), Tauqueer Sabri (RLS South Asia), and Jan Urhahn (RLS Southern Africa)

Editorial team: Simon Degelo (SWISSAID), Famara Diédhiou (AFSA), Delia Hürlimann (SWISSAID), Normita Ignacio (SEARICE), Refiloe Joala (RLS Southern Africa), Patricia Lizarraga (RLS Southern Cone), Imen Louati (RLS North Africa), François Meienberg (APBRBES), Tauqueer Sabri (RLS South Asia), and Jan Urhahn (RLS Southern Africa)

Editorial deadline: January 2025

Copy editing: Stephen Roche, Alexis Conklin

Layout and illustrations: Marischka Lutz Grafikdesign (www.marischkalutz.de)

Bern | Buenos Aires | Johannesburg | Kampala | New Delhi | Quezon City | Tunis
April 2025

Legally responsible for content: Jan Urhahn, Rosa-Luxemburg-Stiftung

This publication was developed with financial assistance from the German Federal Ministry for Economic Cooperation and Development (BMZ), as well as the Swiss Agency for Development and Cooperation (SDC) through the project CROPS4HD.

Alliance for Food Sovereignty in Africa (AFSA)
Plot 1742 Kigobe Road, Ntinda
Kampala, Uganda
Telephone: +256 (0)70 13 59 92 5
Email: afsa@afsafrica.org
Website: https://afsafrica.org/

Association for Plant Breeding for the Benefit of Society (APBREBES)
c/o TWN, Rue de Lausanne 36
1201 Geneva, Switzerland
Email: contact@apbrebes.org
Website: https://www.apbrebes.org/

Rosa-Luxemburg-Stiftung Northern Africa
55 TER, Rue 1er Juin
Mutuelle Ville 1082 Tunis, Tunisia
Telephone: +216 (0) 71 84 63 46
Email: infotunis@rosalux.org
Website: https://rosaluxna.org/

Rosa-Luxemburg-Stiftung Southern Africa
237 Jan Smuts Avenue
2193 Johannesburg, South Africa
Telephone: +27 (0)11 44 75 22 2
Email: SouthernAfrica@rosalux.org
Website: www.rosalux.co.za

Rosa-Luxemburg-Stiftung South Asia
C-15, SDA Market
New Delhi, 110016, India
Telephone: +91 (0)11 49 20 46 00
Email: south-asia@rosalux.org
Website: www.rosalux.in

Rosa-Luxemburg-Stiftung Southern Cone
Santiago del Estero 1148
CP 1075 Buenos Aires, Argentina
Telephone: +54 (0)11 43 05 41 22
Email: info.buenosaires@rosalux.org
Website: https://rosalux-ba.org/

Southeast Asia Regional Initiatives for Community Empowerment (SEARICE)
14D Maalalahanin Street, Teachers Village West, Diliman
Quezon City, 1101, Philippines
Telephone: +63 (0)2 89 22 67 10
Email: searice@searice.org.ph
Website: https://www.searice.org.ph/

SWISSAID
Lorystrasse 6a
3008 Bern, Switzerland
Telephone: +41 (0)31 35 05 35 3
Email: info@swissaid.ch
Website: https://www.swissaid.ch/en/