Briefing

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Agrobiodiversity — the way to save earth's skin

Humans depend on a thin planetary 'skin' made up of life in all its diversity: biodiversity. Agriculture now covers the largest portion (46%) of the global land surface area; its ecological health and resilience in the face of changing climate is therefore critical to human survival. The biodiversity found within agricultural and wild systems is what sustains us. But this agrobiodiversity is being rapidly eroded by a spiralling cycle of inequality driven by economic forces and power politics. Smallholders and Indigenous Peoples maintain most of the world's remaining agrobiodiversity. Forest and farm producer organisations (FFPOs) and Indigenous Peoples and local community groups have developed at least five strategies and 18 tactics to incentivise and sustain agrobiodiversity conservation. It is time that governments and official development partners offer them greater recognition, finance and policy support.

Policy pointers

International development donors should recognise that smallholder FFPO and Indigenous Peoples and local community (IPs and LC) groups steward the world's remaining agrobiodiversity in situ, which is critical to human survival.

Climate and nature finance mechanisms should increase representation of FFPO and IPs and LC groups on steering committees to help direct money to activities that enhance productive, agrobiodiverse biocultural heritage systems.

Finance mechanism priorities must support local groups to promote nutritional diversity, manage diverse community seedbanks and agroforestry systems, diversify enterprises, and mobilise internal finance to fund agrobiodiversity-rich landscapes.

Government policies should protect Indigenous and peasant seed systems and give precedence to UN declarations on human rights (UNDRIP and UNDROP) over commercial plant breeder rights or trade agreements.

Humans are dependent on a fragile layer of life that covers planet earth, within an atmosphere that mostly lies between just 8km and15km above sea level. This planetary 'skin' moderates global temperatures, sea levels, weather patterns, water supplies, food production, energy sources, construction materials and so much more. Life in all its diversity — 'biodiversity' — is vital to the functioning of ecosystems that provide these services.

As human populations have grown, so too has the proportion of habitable global land surface area devoted to agriculture, which now accounts for 46% (48 million km^2) of the total (106 million km^2) and exceeds the remaining area of forests (40 million km^2 or 38%).[1] Put another way, the largest portion of the earth's skin is now agricultural land, so ensuring that agricultural land is healthy is a planetary concern.

Ecological health is in part defined by its diversity. Agrobiodiversity — the subset of biodiversity within agricultural systems — includes all the varieties and variability of animals and plants and micro-organisms that allow farms to function, as well as wild foods; it is what feeds us. Maintaining this agrobiodiversity has many benefits. It is critical to agricultural productivity, food security, livelihood resilience, nutritional and health benefits, the provision of biomass energy and household materials, the preservation of Indigenous Peoples' identity and biocultural heritage;[2] and the provision of ecosystem services including climate change mitigation and adaptation. But agrobiodiversity, like all biodiversity, is in decline.

Industrial economics and power politics threaten agrobiodiversity

Since the Neolithic Revolution 12,000 years ago, when many humans started to transition from hunter-gathering to sedentary agriculture, there has been an accelerating decline in agrobiodiversity. This decline has been most rapid in the period since the Green Revolution of the 1960s, when so-called modern or new varieties of high-yielding crops, such as maize, rice and wheat, replaced locally adapted, nutrient-dense crops such

Ensuring agricultural land is healthy is a planetary concern

as millets and pulses on more fertile sites especially in some regions such as South Asia.[3] The approach is now spreading to more marginal risk-prone areas. Of 6,190 breeds of mammal historically domesticated for food and agriculture, 559 have become extinct and 1,000 more are threatened. Of the 7,000 plant species cultivated historically for food, just 9 now contribute 66% of global crop production and 3 — rice, maize and wheat — account for half of all the plant-based calories we consume.[4]

Agrobiodiversity loss is the outcome of a cycle of growing inequality driven by economic scale efficiencies and power politics, illustrated (in generalised terms) in Figure 1. Large-scale land acquisitions by powerful actors have concentrated land tenure, sweeping aside local people and with them their knowledge of locally adapted landraces. In search of profit, these larger farms favour monoculture systems, which tend to be more commercially profitable than agrobiodiverse systems per unit area, albeit at the expense of overall ecological productivity.[5] Higher profitability means that incomes and labour costs rise on those farms, introducing the need for cost-saving mechanisation that is only suited to, and thereby locks in, monocultures. Profits increase further, concentrating economic power in favour of more land acquisitions, and so on.

Laws and policies are a key battleground

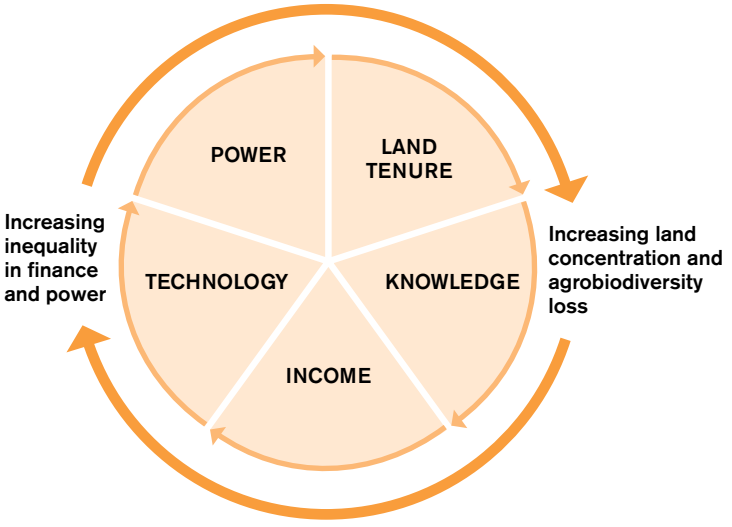
Economic power also shapes laws and policies that work against agrobiodiversity. This is seen most clearly in legislation to protect commercial plant breeders' rights (predominantly for modern varieties of high yielding crops) in the International Union for the Protection of New Varieties of Plants (UPOV) and in agreements on Trade-Related Aspects of Intellectual Property Rights (TRIPS) under the World Trade Organization. This legislation often favours the development and returns from large-scale corporate monocultures, incentivises the spread of new commercial crop varieties and restricts the rights of farmers to save, exchange and sell seeds.

On the other side, there is legislation that backs Indigenous and peasant seed systems and their rich source of biocultural innovation.[6] This includes the International Treaty on Plant Genetic Resources for Food and Agriculture ('the Plant Treaty') provisions on Farmers' Rights, the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP). Such legislation obliges states to recognise farmers' rights to freely use, exchange and sell farm-saved seed, which underpins their ability to maintain and enhance agrobiodiversity and related traditional knowledge and values (that is, biocultural heritage systems).[7]

Smallholders are the stewards of agrobiodiversity

Most of the world's remaining agrobiodiversity is maintained by smallholder farmers in traditional farming systems and Indigenous territories.[8] Smallholders often rely on farms for subsistence as well as cash income. Subsistence farming favours agrobiodiversity because smallholders personally enjoy — and value — the benefits and reduced risks of diverse crops for nutrition, energy, shelter, health, cultural uses, ecosystems services and income generation. In surveys of smallholder groups, asked what makes for a successful landscape, biodiversity emerged as a key priority alongside productivity, sustainability, livelihoods, forest restoration and others. The challenge to agrobiodiversity comes as smallholders wish to move beyond subsistence to enhanced income generation. How can they

Figure 1. The cycle of growing inequality that underlies agrobiodiversity loss



POWER: returns from monocultures enhance power to shape land distribution

LAND TENURE: unequal and increasingly concentrated land distribution

KNOWLEDGE: loss of Indigenous agrobiodiversity knowledge and spread of 'modern varieties' as land changes hands

INCOME: incomes and labour costs rise faster on larger farms

TECHNOLOGY: monoculture mechanisation to cut labour costs more attractive on larger farms

develop business scale efficiencies without putting all their farmland under monoculture?

The answer lies in the aggregating potential of forest and farm producer organisations (FFPOs) or more territorially focused Indigenous Peoples and local community (IPs and LC) groups. These groups can aggregate market-scale volumes of many different crops from many individually diverse smallholdings and wild resources. They can also work to secure tenure and rights that help maintain biocultural landscapes, share traditional knowledge on appropriate varieties and cultivation practices, manage seed to grow those crops, and diversify their enterprises to incentivise the cultivation and sale of more crops. As the work of those groups and their supporters has advanced, a range of useful manuals and online tools have been developed that help farmers and trainers to understand the benefits of agrobiodiversity, improve its practical management through cultivation and seed management approaches, and measure its conservation and impacts.

Smallholder and Indigenous organisations employ sophisticated tactics

IIED analysed six country case studies, alongside an academic literature review on agrobiodiversity conservation.[5] The case studies included FFPOs and IPs and LC groups from Ecuador, Ghana, Madagascar, Nepal, Tanzania and Zambia, selected because of their strong reputations for agrobiodiversity conservation. The case studies examined how these particular FFPOs and IPs and LC groups used tactics for managing knowledge, seed, and enterprises to incentivise and sustain agrobiodiversity.

There are five main strategies that the FFPO and IPs and LC groups studied routinely use to incentivise and sustain agrobiodiversity, namely to:

1. Promote agrobiodiverse products — marketing nutritional and health benefits
2. Cultivate agrobiodiverse crops — sharing knowledge and seed

Table 1. Five strategies and 18 tactics for agrobiodiversity conservation used by FFPO and IPs and LC groups

Strategies and tactics to sustain agrobiodiversity	Case study examples					
	Ecuador	Ghana	Madagascar	Nepal	Tanzania	Zambia
Promote agrobiodiverse products — marketing nutritional and health benefits						
1. Promoting nutritional diversity	X	X	X	X	X	
2. Promoting natural medicines	X			X		X
3. Promoting organic and agroecological production systems	X	X	X	X	X	X
4. Communication to both rural and urban audiences	X		X	X		
Cultivate agrobiodiverse crops — sharing knowledge and seed						
5. Training farmers in agroecological methods	X	X	X	X	X	
6. Encouraging crop diversity, tree planting and agroforestry	X	X	X	X	X	X
7. Organising seed fairs to share planting material	X			X	X	
8. Managing seed or community seed banks	X	X			X	X
Organise agrobiodiverse businesses — aggregating baskets of quality products						
9. Organising market fairs to enhance sales of diverse products	X		X	X	X	
10. Building collective businesses that reinforce cultural identity	X	X			X	X
11. Using business infrastructure to market baskets of product	X	X		X		X
12. Developing shared labels that make agrobiodiversity claims				X		
Mobilise internal finance — reshaping savings and loans to finance complexity						
13. Normalising savings and loans groups	X	X			X	
14. Evolving towards larger financial cooperatives	X				X	
15. Attracting inward investment from nature-friendly partners			X	X	X	X
Bolster political will — shaping policies that enable agrobiodiversity						
16. Promoting the benefits of agricultural heritage systems	X			X		
17. Fighting for laws that support peasant seed systems		X			X	
18. Promoting tenure security and smallholder investment funds	X		X			X
Total number of tactics used	**15**	**9**	**8**	**12**	**12**	**8**

X = clear example of that tactic described in the case study; Ecuador = Union of Peasant and Indigenous Organizations of Cotacachi (UNORCAC);[10] Ghana = Abrono Organic Farmers Association (ABOFA);[11] Madagascar = Analamanga Regional Branch of the National Platform for Women, Sustainable Development, and Food Security (ARFDDSA);[12] Nepal = Chabeli Farmer Group within the National Farmer Group Federation (NFGF);[13] Tanzania = Mtandao wa Vikundi vya Wakulima na Wafugaji Mkoa wa Arusha (MVIWAARUSHA);[14] Zambia = Choma District Tree Nursery and Growers Association (CDTNA)[15]

3. Organise agrobiodiverse businesses — aggregating baskets of quality products
4. Mobilise internal finance — reshaping savings and loans to finance complexity
5. Bolster political will — shaping policies that enable agrobiodiversity

Table 1 displays the more detailed tactics under each of those strategies — and in which case study examples those tactics were observed. In one or two cases, the tactics were primarily described from the broader academic literature review or drawn from FFF's support work to many hundreds of FFPOs but were not seen in the limited case study subset.

What is striking is that in each case study example, all five strategies were being deployed in some way. Furthermore, each FFPO or IPs and LC group was deploying at least eight and sometimes as many as 15 specific tactics for incentivising and sustaining agrobiodiversity. In other words, the maintenance of agrobiodiversity on smallholder farms is not just a function of the subsistence needs of individual farmers in terms of nutritional diversity (although this undoubtedly contributes to that diversity). Instead, agrobiodiversity is often a strategic ambition of the organisations that smallholders themselves have set up to pursue their own wellbeing.

Agrobiodiversity stewards need recognition and support

Peer-reviewed evidence confirms the correlation between decreasing farm size and increasing agrobiodiversity.[9] This requires a different approach to agricultural development. It requires first that international development donors recognise smallholder FFPO and IPs and LC groups as the stewards of the world's remaining agrobiodiversity that will enhance productivity, food security, climate resilience, nutritional diversity and health. Donors should also recognise that agrobiodiversity-rich farming systems and landscapes of Indigenous Peoples and local communities often also help to sustain wild biodiversity and ecosystem services.

Mainstream funding from major streams of climate and nature finance, such as the Green Climate Fund (GCF) and Global Environmental Facility (GEF), barely reach FFPO and IPs and LC groups, and more dedicated agrobiodiversity funds like the Food and Agriculture Organization's Treaty Benefit-Sharing Fund mostly serve large research organisations. The steering committees and councils of these mechanisms should look to improve the meaningful representation of FFPO and IPs and LC groups and increase the targets for and quantity of funds that reach these groups.

If such mechanisms truly desire positive climate and nature outcomes, they could do worse than prioritise the five strategies that FFPO and IPs and LC groups use. Not only do these strategies help to incentivise and sustain agrobiodiversity, but they often also enhance tree- and soil-based carbon sequestration.

More too could be done to develop supportive market mechanisms. Conservation payment schemes to reward smallholder farmers for agrobiodiversity conservation are still only being piloted; more established schemes — such as 'biocredits' or biodiversity offsets — apply only to the preservation or conservation of natural areas of biodiversity (not on-farm agrobiodiversity). Innovations are emerging, however, in second-party certification like Participatory Guarantee Schemes (PGS), which could allow producers to claim products as maintaining on-farm diversity.

Rethinking international policies so as to favour Indigenous and peasant seed systems built around locally adapted landraces and Indigenous crops, giving precedence to UN declarations on human rights (UNDRIP and UNDROP), rather than commercial plant breeder rights or corporate trade laws — would also be an important step.

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Knowledge Products

The International Institute for Environment and Development (IIED) promotes sustainable development, linking local priorities to global challenges.

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Notes

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