

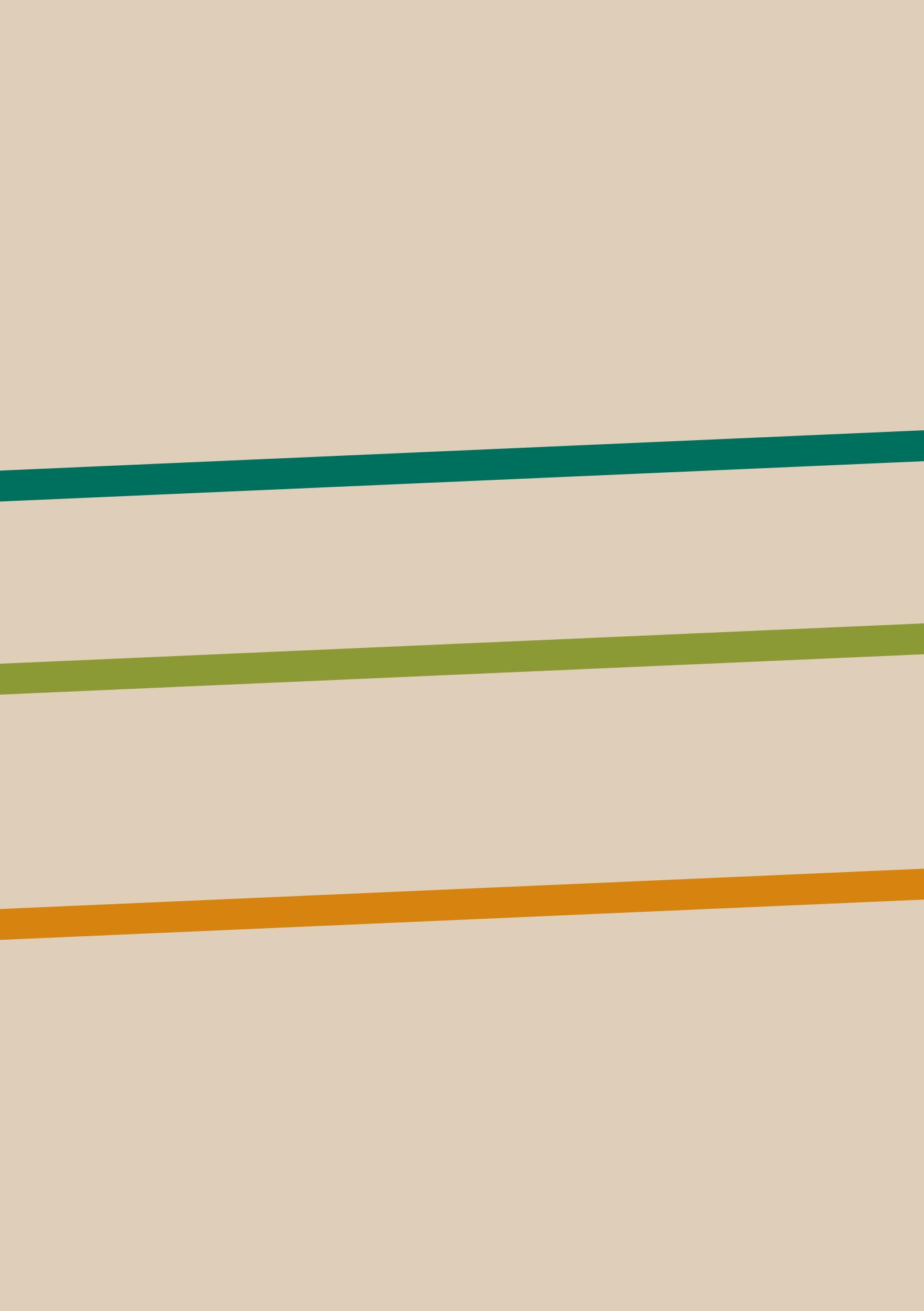
# BETTER AND DIFFERENT!

**Transforming Food Systems through Agroecology**

People develop food systems

Agroecological farming

Alternative markets



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# PREFACE

The 68th UN General Assembly declared 2016 the International Year of Pulses. That's right: pulses. Rarely has a UN international year caused such little stir; very few agricultural experts even took notice. Notwithstanding, pulses are important to many very different groups of people in the Global North and South. What other issue could link the interests of health-conscious vegans in the metropolises of the Global North to those of rural peasant farmers in the Global South? Pulses are to be cherished.

Whether it is a farmers' market in Peru, Zambia or India, the picture is always similar: piles of lentils, chickpeas, beans and peas everywhere. A colourful display ranging from light red, brown and bright-yellow lentils, to beige chickpeas and the black of dried beans. In Europe, we buy them packaged and consider them hip. Today we perceive what used to be considered poor man's food such as lentil soup or pea stew as delicacies. Thanks

to their high protein content, pulses can replace meat. Peasant farmers value them because they improve soil fertility and reduce the need for fertilisers. From the consumer point of view, pulses are healthy food products which, from a production point of view, they promote biodiversity and reduce the need for fossil resources: mixed cultivation including pulses exemplifies the agroecological approach.

Agroecology is also an attempt to slow rural-to-urban migration into the megacities and save agriculture from destruction through industrialisation. Let us look back. With its revolutions and massacres, Eric Hobsbawm, the British historian, termed the twentieth century the 'Age of Extremes'. Yet, what in his eyes distinguishes our modern world from the past is the global decline of peasant farming. It is the end of the millennia-old era, in which the majority of people lived off the land, growing crops, raising animals or fishing from the sea.

Europeans, US-Americans and the Japanese have all essentially stopped working the land. In large parts of Latin America, Asia and Africa agricultural labour, however, remains a characteristic trait of societies. In fact, over the course of fifty years, population dynamics have led the number of people employed in agriculture to increase from 1.5 billion to 2.5 billion. Nonetheless, should the current trend continue, it seems likely that peasant-farmer societies in the Global South will face impoverishment and decline.

For over half a century the struggle against poverty has been a focus of global rhetoric. Rarely, however, do people ask the most important question: Who is going to fight poverty? The World Bank and many governments have their answer: outside experts, donors and corporations will alleviate poverty. This perspective more or less reduces the struggle against poverty to an investment programme. Civil society organisations and social movements, in contrast, have a very different answer. In their

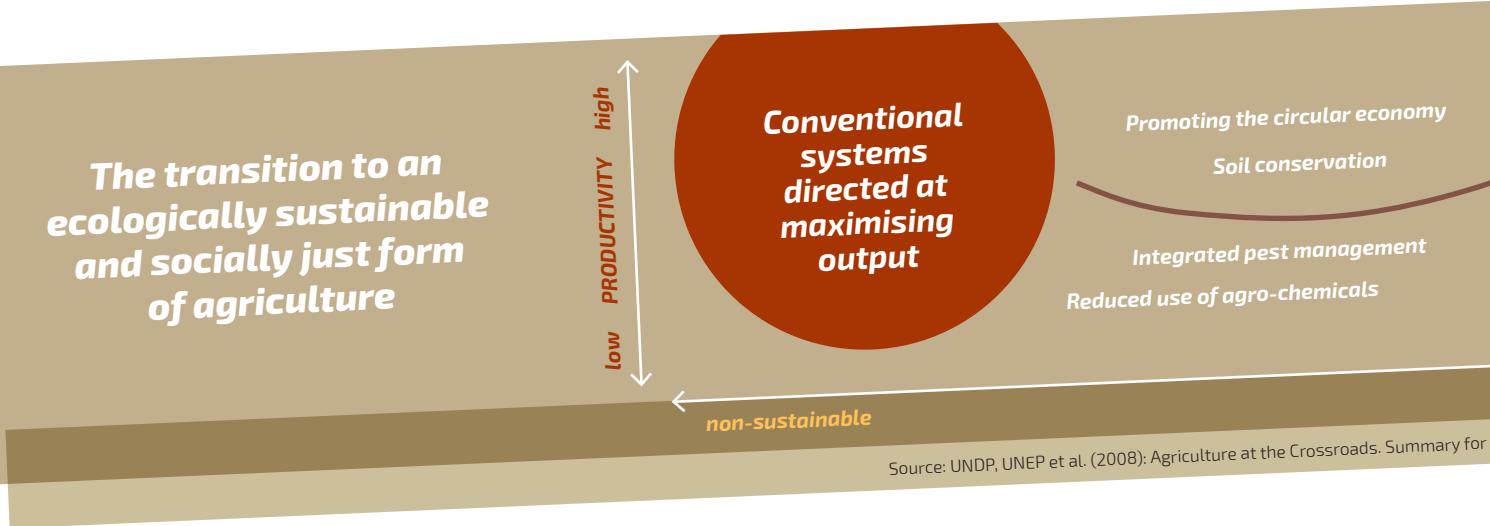
view, the poor need to free themselves from poverty. This will require broadening their scope for action and strengthening their rights, and involves a programme of empowerment aimed at both more encompassing as well as piecemeal shifts in the balance of power. The poor are not needy recipients of aid; they only have their hands bound.

This is where the concept of agroecology, the focus of this brochure, plays in. We are sceptical of agroindustrial corporations and, instead, call for agriculture based on peasant farming systems. Our approach defends diversity against monoculture and gives local markets priority over the global market. We argue against the oil and chemicals dependency of today's agriculture and advocate the use of worms, insects and animals. Agroecological approaches not only mimic nature; they are also better for people – as diverse workers, self-employed producers, and market participants and buyers of processed goods. At its best, agroecology reveals what Old Latin always knew: that a secret connection exists between *humus* and *humanum*.

Wolfgang Sachs (Wuppertal Institute for Climate, Environment and Energy)

# AGROECOLOGY:

## An innovative, solidarity-based and trans



**A**groecology is not merely an agricultural approach that reduces the need for pesticides and fertilisers, recycles plant remains and harnesses biological processes to grow food. Rather, agroecology emphasises a particular perspective vis-à-vis our relationship to nature. Around this perspective, a social movement is growing, which encourages peer-to-peer exchanges of information between farmers. The chief goal being to develop locally adapted solutions for peasant farmers that work with the available resources.

The agroecological perspective invites us to embrace the complexity of nature and to see this complexity not as a liability, but as an asset. Farmers are discoverer: he or she proceeds experimentally, by trial and error, observing what consequences follow from which

combinations, and learning from what works best in their local context. So-called 'modern' agriculture did the exact opposite. It sought to simplify nature and too often the path from research to practice was unidirectional. Solutions based on scientific findings were often considered universally applicable, whereas the experiential knowledge of farmers was seen as irrelevant at best; at worst, it was treated as "prejudice" and seldom taken into account.

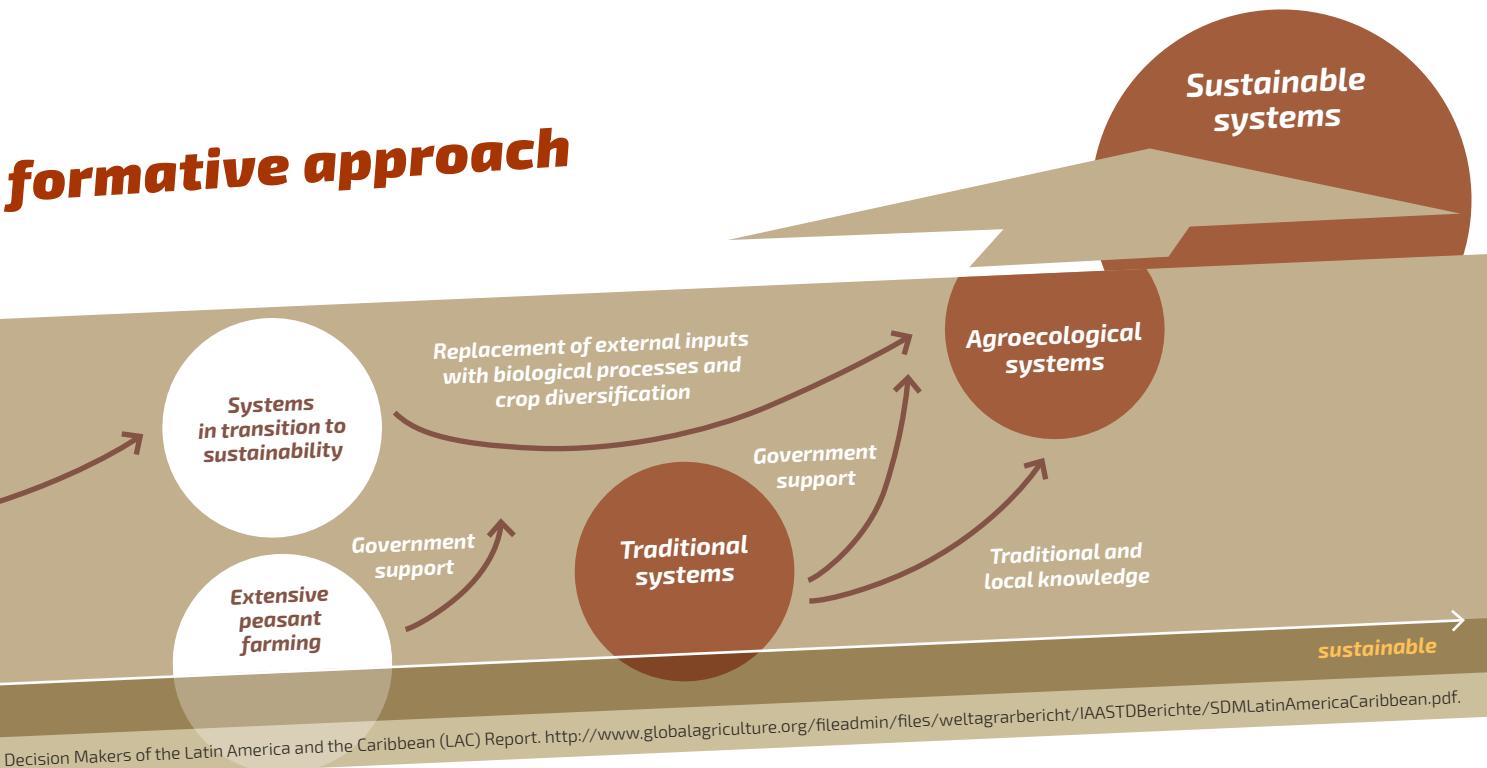
### Agroecology offers numerous advantages

Agroecology favors a gradual transition away from the fossil-energy-based farming. The approach seeks to preserve soil health and to reduce soil erosion. In fact, it is mostly because of its environmental benefits that it is now considered with

interest by governments and international agencies. Although agroecology can be practiced on a large scale, the use of intercropping techniques, and of various combinations between plants, trees and animals makes it especially suitable when practiced on relatively smaller farms. As such, increased support to agroecology shall contribute to re-balancing a competition between large, industrial-size farms, and smaller farms, that is for the moment significantly skewed in favor of the former. New forms of a solidarity-based economy generate fair incomes for peasant farmers, and locally supported networks further bolster peasant farming.

Agroecology favors better nutrition, because the greater diversity on the farm results in greater diversity in the plates for communities who produce their own food. Organic foods for example are higher in key antioxidants and much lower in pesticide residues and of toxic

# formative approach



heavy metals such as cadmium. Most importantly, agroecology represents a shift away from the quasi exclusive focus on growing large cereals in monocultures. Over the past thirty years this approach has in fact reduced the diversity of the plants on which our diets are based. We have become increasingly reliant on heavily processed foods rich in saturated fats and in added sugars and salt. An agroecological revolution therefore offers substantial health benefits.

Another advantage of an agroecological approach is that it is based on locally produced inputs. Many African soils are nutrient-poor and heavily degraded. However, to increase soil nutrients, farmers do not have to rely on mineral fertilisers; they can also apply livestock manure or grow green manure. Farmers can establish 'a fertilizer factory in the fields' by planting trees that take nitrogen out of

the air and 'fix' it in their leaves, which are subsequently incorporated into the soil.

## Overcoming resistance – implementing agroecology

Why is it, then, that despite all these benefits it may provide, agroecology remains marginalized? There are four main reasons. First, infrastructures and technologies are biased in favor of achieving economies of scale through the reliance on large-scale, mechanised monoculture production. Second, the dominant agri-food corporations are better positioned to provide to supply markets with low-priced foodstuffs: More sustainable producers are unable to compete until industrial farming methods will be obliged to fully internalize the social and environmental costs. Third, industrial food

production has changed our lifestyles. People have less time to cook, many have lost even basic cooking skills and food today generally plays a less important role in their lives. Fourth, political obstacles remain. Large agribusiness actors veto any significant change that would threaten their position in the system and that would question, in particular, the relegation of the farmer to the position of a captive buyer of inputs, and a provider of raw materials to the food processing industry.

Attempts to implement and promote agroecology meet with the fierce resistance of corporations and governments. This is why food democracy – the ability for people to make real choices about how to produce food, what to produce, and how to eat – is key to unlock the system. Agroecological approaches will only succeed if we overcome the political economy obstacles to change.

Dr Olivier De Schutter (former United Nations Special Rapporteur on the right to food)

# FARMERS ARE THE KEY:

## Peasant-farming approaches to

In Europe and globally, farms are in crisis. Mainly in the industrialised nations, the stance of agroindustrial corporations and the direction of agricultural policies evidences a conviction that salvation lies in the expansion into new export markets, a step that is beneficial solely to the industry and a burden for countless farmers in the Global North and South. Farmers globally resist these attempts and promote sustainable forms of agriculture through political intervention, autonomous organisation and by developing their own marketing strategies. This includes efforts to preserve seeds, the selling of food products through cooperatives as well as networking and joint action with civil society groups. Below are some examples from the Global North and South.

### Farmers unite

A successful example is the Upländer Bauernmolkerei founded in 1995 in the German state of Hessen. Today, 110 organic farmers not only deliver milk, they also process this milk in their own dairies and market their regional and quality products themselves. Their products are organic and they sell them predominantly at the regional level. Currently, the price of organic milk is decoupled from the price of conventional milk and therefore comparatively high. This could change should the amount of organic milk exceed demand. Upländer farmers have therefore agreed on a quota of milk that each farm can produce. Quota increases require the approval of the dairy cooperative's board. This grants farmers a certain amount of control over the market and allows them

to flexibly adapt the amounts they produce based on actual demand.

In the Indian state of Andhra Pradesh, in 2012, a network of civil society and consumer organisations founded the Sri Gopi Rythu Paraspura Sahakara Sangam cooperative together with farmers in response to the low milk prices caused by private (including European) dairy factories as well as neoliberal Indian policies. The cooperative currently unites 85 peasant-farming families. It forms part of the Indian Food Sovereignty Alliance, an umbrella organisation that spans indigenous communities, peasant farmers and many others, and acts as a political platform for a critical dialogue on India's food system with scientists and politicians. The cooperative sells its milk to an ice cream shop, schools and directly to families, whereby consumers help set the price.

### La Via Campesina – the farmer's way

Counting roughly 200 million members, La Via Campesina (LVC) is the largest association of peasant farmers, farmworkers, the landless and indigenous communities.



Founded in 1993,  
LVC today unites  
**164 organi-**  
**sations**  
from 73 countries  
that collaborate  
closely.

# sustainable agriculture

Each day they produce 750 litres of milk and farmers receive the equivalent of 34 cents per litre. Private dairies pay only between 24 and 30 cents per litre. Peasant farmers in India actually produce sufficient milk to satisfy demand and supply the country with high quality dairy products. Imported milk cannot do this, with its low prices threatening the livelihoods of Indian producers.

Sustainable agricultural practices depend on peasant farmers' capacity to preserve seed diversity. La Via Campesina (LVC), the largest international movement of peasant farmers with a global membership of 200 million, therefore organises campaigns to preserve traditional seeds. The Palestinian member organisation Union of Agriculture Workers Committee (UAWC), for example, founded a seed bank in 2010. Each year, UAWC provides

associated farmers with enough seeds to sow 100 square metres of soil free of charge. Farmers commit to returning the same amount after harvest for sowing the coming year. They thus stay independent of in many cases genetically modified commercial seeds. Moreover, local seeds, produced by peasant farmers, are better adapted to local environmental and climatic conditions, and they are more resistant to local pests and diseases. These seeds also do better during droughts than their commercial counterparts and require less irrigation. The UAWC's seed bank plays an essential role in ensuring the food sovereignty of Palestinian farmers.

Preserving peasant farming as a viable form of agriculture, ensuring farmers a decent livelihood and protecting

the environment and the climate will require political framework conditions that promote agroecology and food sovereignty. Reality, however, shows that it is dangerous to rely solely on politics to achieve this. Far too often agroindustrial corporations impose their own interests. Changing this will require the combined efforts of numerous (farmer) initiatives to actively develop markets and strike a better deal for producers and free them from the price pressures imposed by middlemen (such as dairies). Farmers need to be able to decide – freely and independently – over their seeds, instead of letting the industry tell them what they have to do. This requires the knowledge, responsibility and active participation of farmers, consumers and civil society with a will to establish a different agricultural model and food system. Practice shows we can do better – by putting things into the hands of peasant farmers!

Berit Thomsen (*Arbeitsgemeinschaft bäuerliche Landwirtschaft, AbL*) and Paula Gioia (*Arbeitsgemeinschaft bäuerliche Landwirtschaft, AbL/La Via Campesina, LVC*)



During these 20 years, LVC and other social movements have developed true alternatives to the neoliberal globalisation of agriculture and the food system driven by corporations.

LVC promotes the strengthening of peasant farming that bases its production on agroecological methods. The organisation has been key in developing the concept of food sovereignty.

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# A PEOPLE'S FOOD POLICY:

## Establishing food policy councils to

What food policy councils can achieve.



Develop food strategies  
for a city



Bolster regional  
agriculture and  
processing



Secure land  
for regional  
food production



Promote  
urban  
agriculture



Emphasize  
diversity  
in the food  
system



Organise  
events  
and conferences

Source:

Evidently, our current food system is heading towards a dead end. To transform this system fundamentally, however, we will need to regain control over the system as a whole – at best with a focus on the regional level, because the complex networks of interdependencies are easier to manage at this level and the potential to exert influence greater. We will need to create spaces where we can draw up food policies and assert our right to adequate food – for example in food councils.

### Tools for transforming food and agricultural policy

Food policy councils offer people from civil society, local businesses, academics,

politics and administration a shared space to concentrate their expertise and resources. Such councils develop visions, strategies and demands for a social and ecological re-orientation of agriculture at the local level. The concrete structure of a food policy council will depend on its membership base, structures and tasks, and thereby reflect the specific conditions and needs of the relevant cities and municipalities. The focus can be on developing closed regional food cycles or on putting food onto city and municipal agendas. Food policy councils have played a more prominent role in the English-speaking world for some time now, particularly in the US, Canada and the UK. Similar initiatives also exist in the Global South. Groups in Brazil founded a national council for food sovereignty in 1993. In Mexico

City, the Rural Council advises on policies to promote sustainable urban and regional agriculture.

### Food policy councils in Germany

The spring of 2016 saw the founding of Germany's first two food policy councils: in Berlin and Cologne. Berlin's food policy council is a broad alliance of producers, urban gardening initiatives, the local food industry, restaurants, civil society organisations, academics and consumers. It includes actors from the city and the surrounding rural areas.

The council actively promotes a transformation of the food system in the Berlin and Brandenburg region towards greater sustainability. Its political work is based on the concept of food sovereignty. It aims

# exert influence over our food



**Fight against food-related social discrimination**



**Demand responsibility for global justice**



**Put food on the agenda of urban and regional planning**



**Promote healthy, regional food for kindergartens and schools**



**Expand nutritional education**



**Create exchange between urban and rural spaces**

INKOTA (2015): Unser Essen mitgestalten! Ein Handbuch zum Ernährungsrat. <http://www.inkota.de/aktuell/news/vom/21/jan/2016/unser-essen-mitgestalten-enaehrungsraete-ueberall>.

for a (re)democratisation of agriculture and food production to implement fundamental principles such as the human right to adequate food, the strengthening of local markets, fair pricing, living wages and a joint effort to preserve natural resources. To achieve this, the council is using a participative process to develop a blueprint for the regional food system that will include concrete goals, demands and measures.

## The local basis of global responsibility

A sustainable regional food system not only offers tasty, sustainable and fresh food products for people and safe and fair markets for farmers in the Berlin

and Brandenburg region, it is also a contribution to global responsibility. Whether in Berlin-Brandenburg, Europe or globally, people should not be exploited and their means of subsistence should not be destroyed. In autumn 2015 over 120 cities, among them Berlin, signed the Milan Urban Food Policy Pact, committing themselves to establishing a sustainable and just food system for their city. All other cities and regions in Germany and globally should feel obligated too, because the 2015 sustainable development goals (SDGs) contained in the 2030 Agenda for Sustainable Development apply to all countries and require them to ensure that programmes and policies contribute to ending hunger, promote sustainable agriculture and do not stand in way of such progress.

So far, strategies for sustainable food are hardly discussed at the regional and communal levels - it is high time to change this. Federal policies could develop programmes to support food initiatives or enhance the food and agriculture policy expertise of cities and municipalities. Local politicians could promote urban agriculture, develop a regional food strategy, eliminate food-related injustices and create space for political debate.

It is not only in Berlin and Cologne: in Hamburg, Kassel and Oldenburg, too, dedicated people have also met to establish food policy councils. It is up to all of us to build our food system and contribute our diverse backgrounds, experiences and knowledge. Let's do this together!

Jan Urhahn and Christine Pohl (INKOTA)

AVAILABLE ONLINE

INKOTA (2015): *Unser Essen mitgestalten! Ein Handbuch zum Ernährungsrat*.

AVAILABLE ONLINE

Food First (2009): *Food Policy Councils. Lessons Learned*.

# PIONEERING AGROECOLOGICAL SCIENCE

**A**round the globe, people are pioneering practices to make food and agriculture sustainable, informed by agroecological principles. The people involved, as well as their ideas and projects, are diverse. They have the courage and creativity to think beyond the dominant and destructive market logic of the food and agriculture industries.

## Solidarity-based, convenient and good: The CSA movement

Community supported agriculture (CSA) offers a good alternative to supermarkets. Food consumers and producers form a group and jointly plan a farm's yearly

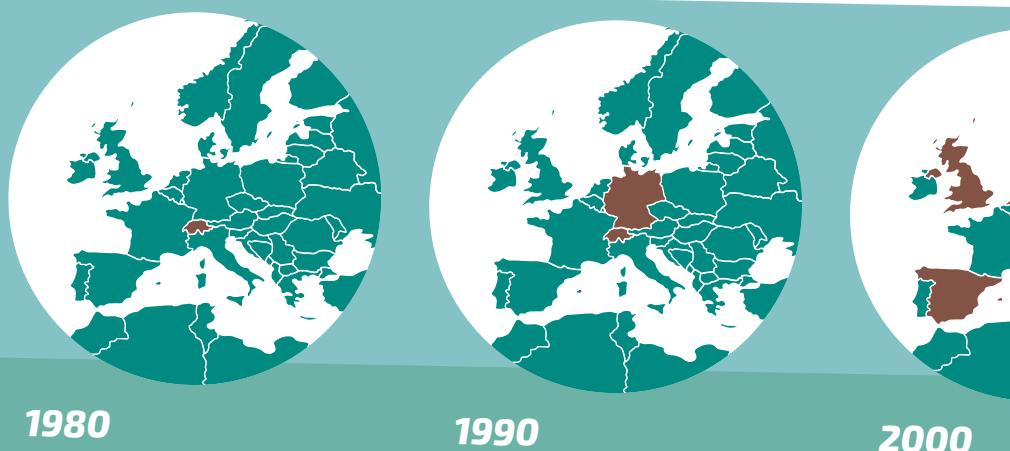
cycles. Consumers share the costs of the farm and in turn receive a regular share of the crop. This fact situates CSAs firmly outside of the food system's dominant market logic. The concept has many further advantages. There is no need for farm products to be transported long distances. Consumers also receive fresh, organically grown food and farms are better equipped to weather economic risks. CSAs are true to their name. In many of these initiatives, a community-oriented and solidarity-based approach underlies how production costs are divided between members. Each member pays for his or her share of the crop, whatever he or she can afford to pay. In Europe alone during 2015, around 2,800 CSAs provided food for half a million people. In Germany, the number of CSA

farms has grown from 5 to around 100 over the last seven years and a further 100 farms are currently in formation.

## Community supported agriculture in Freiburg, Germany – the GartenCoop

The GartenCoop Freiburg consists of a farm and a 300-member association, which finances vegetable production. Each member pays what he or she can afford, actively participates in the work and finally gets a share of the harvest. Collective ownership and self-management are the two core principles of this initiative, which was founded in 2009. This involves members working at the farm on a weekly basis and taking care of the tools and machines. A shared vehicle and cargo bicycles transport the harvest from the farm to the town, where each member

## The spread of Community Supported Agriculture (CSA) in Europe



Source: European CSA Research

## Further reading

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# AND PRACTICE

receives his or her share. By only using 100 per cent heirloom seeds, the association can guarantee efficient seed saving, which, besides yielding tasty vegetables in all shapes and colours, grants them independence from the agroindustry.

## Knowledge is power; power is knowledge: Promoting agroecological research

Science and research play a key role in promoting and spreading agroecology. The 2008 International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), which was compiled by four hundred scientists, highlights this fact. Globally, however, only very few publicly financed agricultural research projects actually focus on creating a viable basis for an agroecological transition. In the US, for example, such projects captured less than one per cent

of the 2014 agricultural research budget. Hands-on agroecological practices and innovation by (peasant) farmers spread more easily if research is driven by the needs of producers and consumers rather than private-sector profit interests. Participatory research approaches that build on the rich and localised knowledge of peasant farmers is key here.

## Creating knowledge through participatory approaches in Burkina Faso

In Burkina Faso, for example, the NGO DIOBASS combines action research with participatory innovation development. Together with farmers, the NGO first collects and describes initiatives and innovative approaches to crop cultivation and livestock farming. A committee consisting of an equal number of NGO and farmer representatives then analyses these cases and selects a number of examples. Farmers then volunteer to join groups, which test innovations in field trials. They can

contribute questions and propose changes to the test setting or methodology. Peasant farms, scientists, public agriculture counsellors and DIOBASS jointly implement these field trials. Over the last two decades, farmers have developed over 100 innovations with the support of DIOBASS. One successful example is an innovation that allows farmers in Noungou to store their onions for up to ten months. Because they no longer depend on selling their onions immediately after harvest, they can wait until the prices for onions on the market rise again, meaning they can take full benefit of their proximity to the capital Ouagadougou.

Developing veterinary drugs for livestock has been another area of successful cooperation between peasant farmers and scientists. Poultry farmers in Burkina Faso have developed a plant-based drug against the parasites that affect their stock. The INERA research institute in Burkina Faso tested the drug for effectiveness, toxicity and tolerability. The institute now aims to develop other dosage forms, for example a spray, which would make the drug useful also for larger poultry flocks.

Alessa Heuser (MISEREOR)

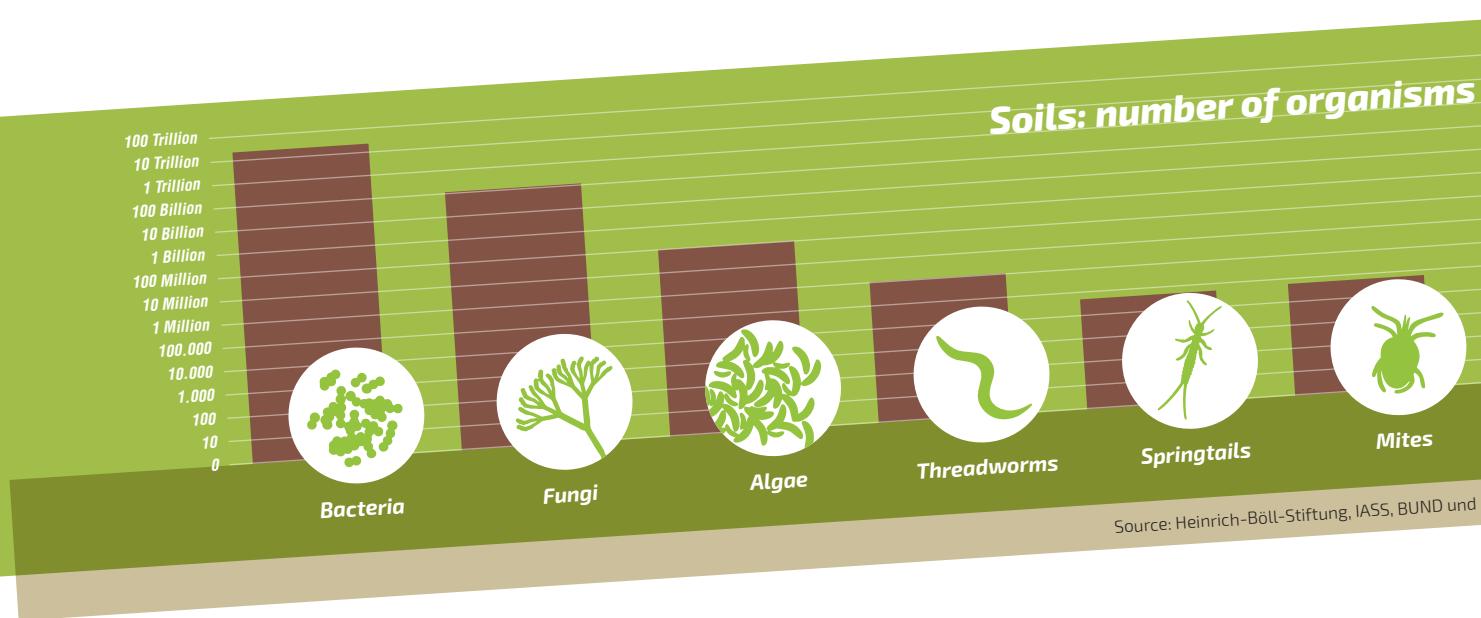


Group (2016): Overview of Community Supported Agriculture in Europe. <http://urgenci.net/wp-content/uploads/2016/05/Overview-of-Community-Supported-Agriculture-in-Europe.pdf>.

AVAILABLE ONLINE European CSA Research Group (2016): Overview of Community Supported Agriculture in Europe.

Prolinnova, McKnight-Stiftung mit welt-sichten (2016): Bäuerliche Innovation. Wie Agrarforschung erfolgreich mit Bauern zusammenarbeitet.

# SOIL IS DIVERSITY – DIVERSITY NEEDS



**S**oil is the foundation of all land-based ecosystems. Fertile soils only develop where plants use sunlight for photosynthesis. Soil-plant systems are the basis of regional water and nutrient cycles and significantly influence the earth's overall energy and temperature system. Each soil type is also an 'eco-type' and agriculture needs to consider this fact.

Agroecology sees soil and plants as elements of an ecosystem and not as a 'factory' with a 'resource base'. At its core, agroecology is therefore an attempt to understand and organise agriculture from an ecosystem perspective, allowing similar forces to take control that help

natural ecosystems develop and sustain themselves. A decisive factor in the soil's ecosystem is the number and diversity of soil organisms. There are more organisms in the soil than on the earth's surface and we probably do not even know most of them.

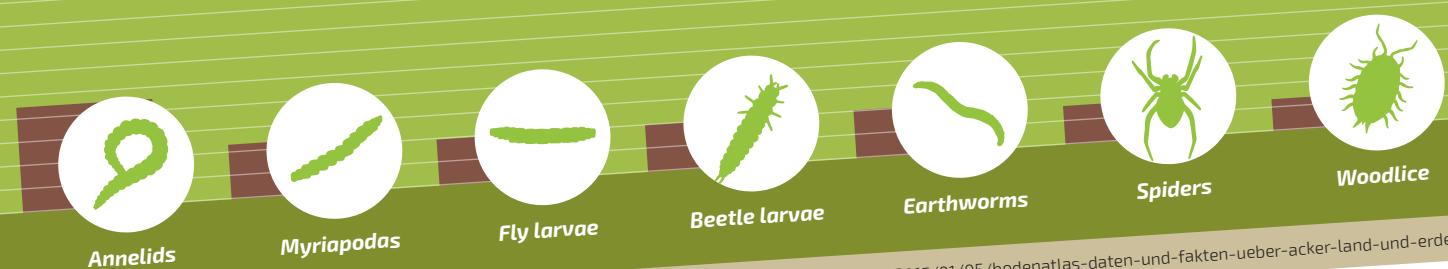
Farming depends on healthy soils that all originally developed from natural ecosystems. So far agriculture has only in very few cases not led soil health to deteriorate over time, creating pressure to move to fresh soils (land use change). Nature conservation and agriculture therefore need a sustainable soil strategy. Although a great challenge, such a strategy is a precondition for sustainable food production and the global conservation of natural ecosystems.

## Conserving humus – building humus

A special 'product' made by soil organisms is humus. Soil organisms build humus, which consists of long organic chains of molecules, from the dead bodies and excrement of animals, insects and plants. Humus is sixty per cent carbon. Soil therefore contains twice the amount of carbon as the air. Pastureland generally has two to four times more humus than farmland because humus formation is disturbed less and humus depletion slower. Soils in temperate climate zones generally contain more humus than those in hot climates. In tropical rainforests, for example, decaying matter is integrated almost immediately into new organisms and plants and only very little humus develops in the soil. The carbon captured by the soil can always be released back into the atmosphere; soils are not a permanent sink.

# SOIL!

in the top cubic metre of soil



Le Monde diplomatique (2015): Bodenatlas: Daten und Fakten über Acker, Land und Erde. <https://www.boell.de/de/2015/01/05/bodenatlas-daten-und-fakten-ueber-acker-land-und-erde>.

Per hectare, organically farmed soils contain roughly 3.5 tons of carbon more than conventionally farmed soils (as a global average). Organic farming also leads to the formation of greater amounts of humus. This is because organic farming relies more on leguminous crops (plants such as peas, clover and alfalfa) and offers soil organisms more 'food' through diversified crop rotation and a permanent ground cover of either wild herbs and/or catch crops. Through their greater biodiversity and the greater number of organisms, organically farmed soils are better at digesting plant matter than soils regularly exposed to pesticides in conventional farming systems.

Pesticides are poisons against certain groups of organisms such as insects, mites (acarids) or fungi. A broader definition

would also include herbicides (poisons against plants). Most pesticides do not target specific co-organisms of plants (usually called pests, diseases or weeds); they impact whole sets of organisms that live under or on the soil. Attempts at pest control therefore weaken the capacity for self-regulation of agroecological systems and create a dependence on pesticides and mechanical interventions – truly a vicious cycle.

## Agroecology protects the soil

The following agroecological approaches can help sustain the soil, soil organisms and natural soil fertility in the long term and should therefore be promoted:

- Sustainable agricultural practices comprise only those that build, sustain

or regenerate humus over the long term. This requires permanent ground coverage wherever possible and adding organic matter such as compost, animal manure or green manure.

- All human intervention needs to consider local conditions. This concerns for example the use of machines (frequency, timing and pressure on the soil) and/or irrigation (risk of salinization, groundwater protection).
- Diversified systems of crop rotation, companion planting and/or agroforestry systems adapted to local conditions are all important in ecologically sustainable forms of agriculture.

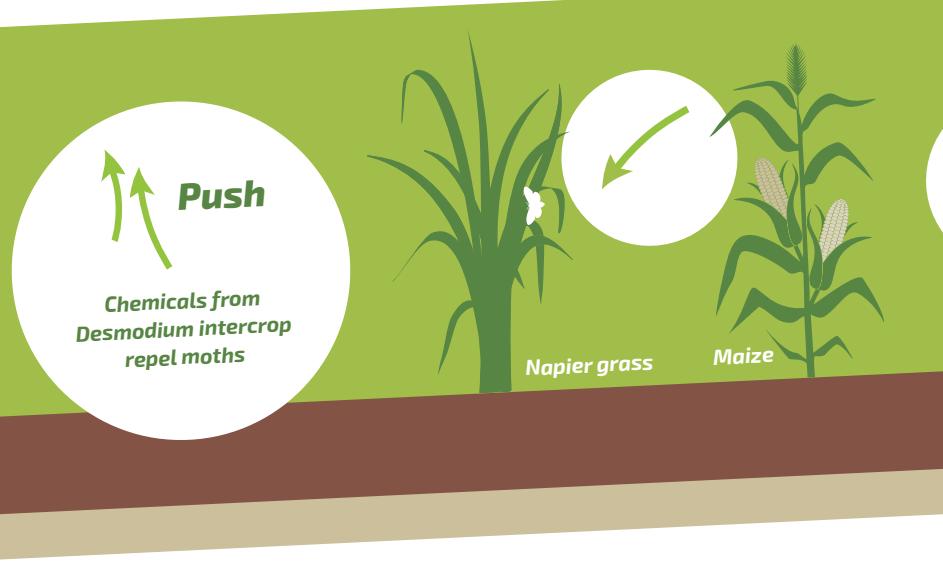
To secure food production in the long term, we depend on soils rich in life. It is time that we award soil protection greater political weight.

Dr. Birgit Wilhelm (WWF)

# INVITING FRIENDS, SCARING

## Biological pest control through

**How push-pull works  
in a maize intercropping  
system in East Africa**



Insect pests cause nearly one third of global crop losses. Agroecological crop protection methods allow peasant farmers to reduce losses and simultaneously reduce the need for pesticides. The so-called push-pull method is a good example of such a strategy. Peasant farmers combine their crops with plants that emit repellent chemicals or drive off insects visually (push) and/or attract natural enemies (pull). Pull attracts beneficial insects that either feast on the pest or lure them away. Peasant farmers therefore interplant crops with these helper plants, or plant them in a circle around their crop.

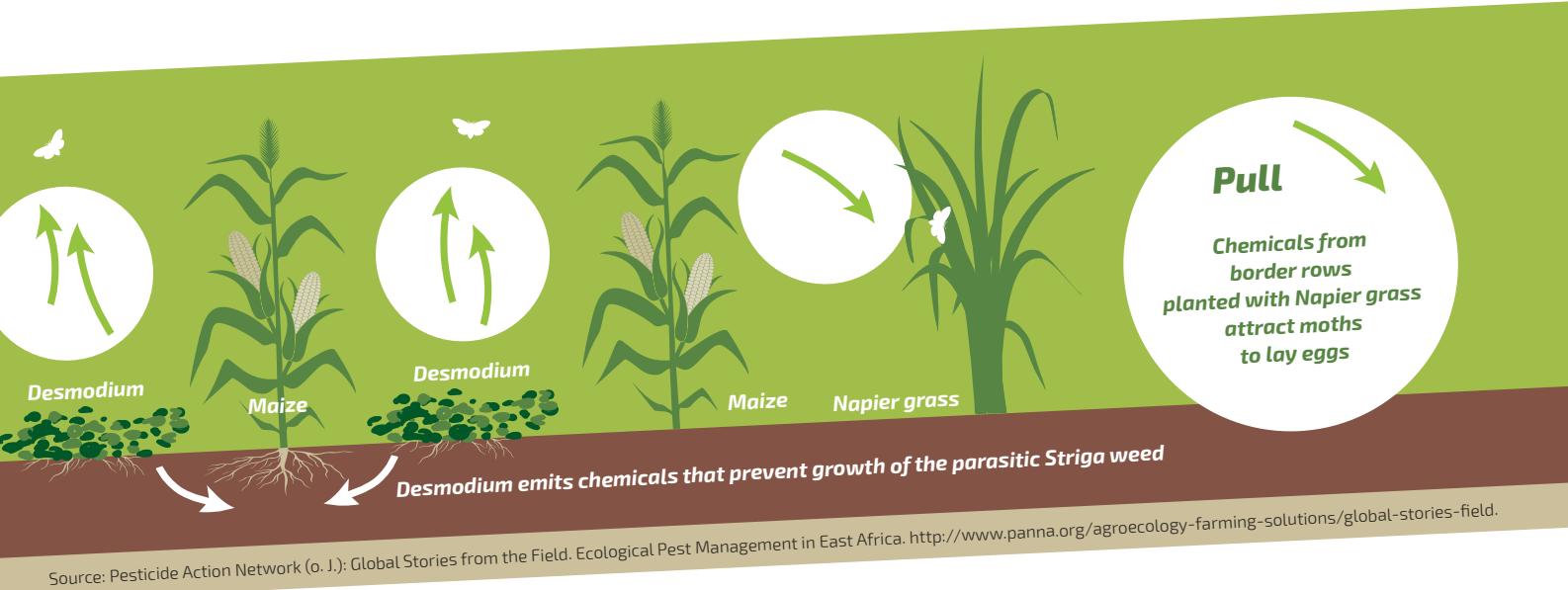
### Push-pull in Kenya

Even though it is smaller in size than a hand, East African peasant farmers nonetheless fear the stem borer moth and its larvae. The International Centre of Insect Physiology and Ecology (ICIPE) in West Kenya has developed one of the most successful and well-known push-pull approaches for tropical climate agriculture to ward off the stem borer and the parasitic Striga weed. Both pests can lead to significant crop losses. Their approach is simple but ingenious. Farmers interplant their maize with legumes such as Desmodium and shield the crop with a ring of grass plants, which also provide animal fodder.

Stem borer moths usually lay their eggs on maize plants. Once hatched, the larvae bore themselves into the maize stems and hollow them out. The Striga weed in turn taps into maize roots and steals the plant's nutrients and water, causing it to die off. ICIPE field researchers discovered that Desmodium drives away the stem borer moth and attracts its natural enemies. The plant also kills off Striga. They also noticed that stem borer moths are attracted to grasses that are frequently used as animal fodder, such as Napier grass, to lay their eggs. Intercropping maize with Desmodium and surrounding these fields with a ring of Napier grass pushes the stem borers away from the maize crop and pulls them to the edges of the field. The system has further advantages. Most legumes fix nitrogen

### Further reading

# OFF ENEMIES: push and pull



and therefore improve soil fertility. Napier grass not only helps control the stem borer; farmers can also use it as fodder. During heavy rainfall, the grass acts as a natural barrier that prevents soil erosion and improves soil water uptake.

Implementing such a push-pull system does require additional labour. Analyses from Kenya, however, unequivocally show that peasant farmers in particular profit from the method. The extra labour pays off: crop failure is reduced and the high investments into and follow-up costs of chemical pesticides go down.

## Promoting push-pull

Most studies of push-pull systems have been conducted at the individual field level or in production systems with only

a small number of plants. Plant diversity in ecologically complex cropping systems also plays a role. A study from west Kenya reveals that greater structural diversity of the landscape is associated with a lower incidence of aphids. Landscape structure clearly influences aphid infestation rates of different beans and the numbers of natural enemies of this pest. Infestation varied depending on whether fields were surrounded by hedges or not, how dense these hedges were and how many different plants they consisted of. Another influencing factor was the kinds of plants in neighbouring fields and the degree of parcelisation and diversity of these fields.

This suggests that the application of the push-pull principle to entire landscapes would be likely to have significant

potential to reduce the use of pesticides in agriculture, increase soil fertility, promote biodiversity and regulate water cycles. In Europe and beyond, push-pull approaches to pest control have already been implemented, particularly in vegetable, fruit and cereal production, as well as in forestry.

Even though agroecologically-oriented peasant farmers understand the benefits of crop diversity, the underlying principles of 'chemical ecology' have so far not been researched with scientific rigour. We still need to improve our understanding greatly before we can hope to develop entire agricultural landscapes that effectively reduce pest incidence. Current results from push-pull trials show that it is worth investing into agroecological research.

Pablo Tittonell (Wageningen University and Instituto Nacional de Tecnología Agropecuaria, INTA)

# **STRONG ROOTS, PROUD**

## *The revolution of smallholder farming*

Often there is no straightforward path to success. For the System of Rice Intensification (SRI), the path takes us around the entire globe. The system was developed in the 1970s in cooperation with farmers in Madagascar. From 1999 onwards, the method took hold in Asia. More recently, implementation of SRI has spread to sub-Saharan Africa. It is estimated that over ten million smallholders from over fifty countries in Asia, Africa and Latin America practice SRI today. Knowledge-sharing networks and initiatives across the globe, such as farmer education centres and agroecological movements, have contributed substantially to the spread of SRI. The key contribution, however, is from the farmers who

have applied, adapted and continued to spread the method.

### **SRI: Good for farmers and the environment**

Yet how does the system work? SRI is an agroecological farming method characterised by its specific principles to sowing and cultivation. The method has proven its worth particularly for smallholders, granting high yields from traditional, nutritious rice varieties and reducing the impact on the environment. SRI enables peasant farmers to preserve or even increase the diversity of rice varieties and counter the trend towards loss of diversity. The resulting improved and locally available gene pool is invaluable in the face of ever-more-frequent

weather extremes. Farmers who apply SRI grow more local varieties because the greater yields increase the profitability of cultivation. They prefer local varieties because they are better adapted to the local soil and climate and because of their enhanced resistance to pests and diseases. Consumers, too, generally prefer the taste of local rice varieties. As a method, SRI provides the following advantages:

- Shorter timespans to grow seedlings: Instead of the usual 20 to 30 days, farmers can now transplant seedlings after only 8 to 12 days.
- Seed savings of 75 to 90 per cent: Smaller seedlings also make transplanting less time-consuming.
- Water requirements are reduced by 25 to 50 per cent: There is no need to permanently flood the paddies.

### **Benefits of the System of Rice Intensification over conventional rice cultivation**

**47 %**  
greater yields

**40 %**  
less water

# CROP YIELDS: practices through the System of Rice Intensification

- Reduced costs per hectare: Farmers buy fewer additional seeds and require less chemical fertiliser, herbicide and pesticide. In some countries labour requirements are also reduced.

A particular strength of the SRI method is its flexibility: farmers may adopt it at any scale. Adoption requires neither investment in additional resources, nor external inputs. Farmers who have adopted SRI can save seeds more easily and in greater amounts. This particularly benefits producers who plant nutrient-rich varieties for their own consumption.

Moreover, SRI is easily combined with multiple crop rotation systems. In Vietnam, for example, farmers plant rice in combination with winter vegetables such as peanuts, soy beans and potatoes. After harvesting, rice straw and stubs are left

to rot on the paddies, where they provide nutrients for the potato seedlings. Farmers now refrain from the former and environmentally harmful practice of burning straw. The ground cover also prevents the growth of weeds, improves soil health and reduces evaporation.

## Expanding and further developing SRI

It should be noted that SRI is not a quick fix; there are steps to follow, defined times to sow seeds, principles for plant spacing, use of fertiliser and irrigation. The method is built on the ideas that farmers themselves experiment and develop the system. Yield increases and environmentally sound practices are therefore a challenge requiring analysis. The system's flexibility,

dynamism and diversity of practice make it all difficult to evaluate SRI using conventional methods as well as to assess it in general.

However, this has not prevented SRI from becoming a success story. Over the course of the last 10 years, smallholder farmers have begun to develop SRI-based approaches for wheat, maize, various millet varieties, vegetables and tubers. This has grown into the System of Crop Intensification, which has proven to be just as effective as SRI and is gaining ground, for example, in Nigeria and Ethiopia. The coming years will show whether this success story also takes such a long and winding route around the world as SRI. It would be great for smallholder farmers if it does.

Le Nguyet Minh (Oxfam America)



Source: Africare, Oxfam, WWF (2010): More Rice for People. More Water for the Planet. <https://www.oxfamamerica.org/static/oa3/files/more-rice-for-people-more-water-for-the-planet-sri.pdf>.  
(<http://creativecommons.org/licenses/by/2.5/>), via Wikimedia Commons, Photograph 2: anyamay/Shutterstock.com.

# ONLY THOSE WHO SOW WILL REAP ITS PROFITS

**I**t may seem obvious, but it is fundamental for agroecology that farmers save their seeds. A concept built on closed cycles and minimising external input must necessarily promote seed banks, networks for exchange, research and seed breeding by farmers.

The already highly concentrated seed market recently became drastically more concentrated when Bayer bought Monsanto, and this will severely limit the scope for alternative approaches to seed sharing and propagation. Three companies now hold control over sixty per cent

of the global commercial seed market. Bayer and Monsanto, so much is clear, are no basis for agroecology. Besides seeds, both corporations also produce pesticides and aim to sell them as a package.

These corporations, however, 'only' control the commercial seed market, which represents an opportunity for agroecology because the concept is orientated towards farmer's seed systems and their further development. In the Global South, farmers still share and develop the majority of seeds between themselves. Governments and the majority of scientists, nonetheless, have neglected these farmer-based seed systems for decades.

As a result, they no longer function at full potential. Notwithstanding, the key to the development of agroecological seed systems lies in the promotion of systems in which farmers maintain control over seeds. Many regions have already developed such alternative approaches.

## Creating seed banks

For some years, Nepal has been investing into local seed banks, and this paid out after the devastating earthquake in 2015. In many regions the country's infrastructure was destroyed, villages became inaccessible and aid supplies arrived months late. In this situation, it was far easier to

**Decentralised  
seed banks bolster  
the independence  
of peasant farmers**



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**Further reading**

# AGROECOLOGY

access and distribute the seeds stored in decentralised seed banks. The Nepalese NGO LI-BIRD successfully organised large farmer seed exchanges, which both secured seed supply and ensured diversity. Nepal is definitely a special case: corporations do not develop seeds adapted to high altitudes because the market and profit margins are so small. Nepal recognised this and began improving the framework conditions for local peasant farmers, helping them to establish seed banks and strengthening their rights.

## Strengthening peasant farmer seeds

Agricultural policy in Vietnam used to focus on the industrialisation of agriculture and therefore also of seeds, particu-

larly in the Mekong Delta, the country's most fertile agricultural land. At one point a mere five different types of rice were grown there, a dangerous drop in diversity. In response, the Southeast Asian NGO SEARICE began to promote the creation of seed initiatives in the Mekong Delta. During the 2014 season, these initiatives produced 166,000 tons of rice seed, roughly 30 per cent of the total amount the Delta required. This success shows the power of farmer-based seed systems and proves that cooperation between farmers and scientists can successfully re-diversify a genetically impoverished seed system. The seeds produced by farmers are highly drought and salt tolerant. Now that they can breed seeds again, farmers have be-

come very assertive in seed selection and frequently select highly heterogeneous seeds in field trials. Seed and variety protection legislation is in most cases corporation-friendly and therefore usually bars market access to such seeds. For farmers experienced in breeding seeds, however, precisely these kinds of seeds are particularly attractive, because selective breeding allows them to adapt seeds to the conditions prevailing on their land.

Framework conditions that allow smallholders to engage in agroecological seed sharing and breeding independently of commercial market interests helps to secure livelihoods and strengthen farmers' self-determination – allowing them to reap the profits of agroecology.

Stig Tanzmann (Brot für die Welt – Evangelischer Entwicklungsdienst)

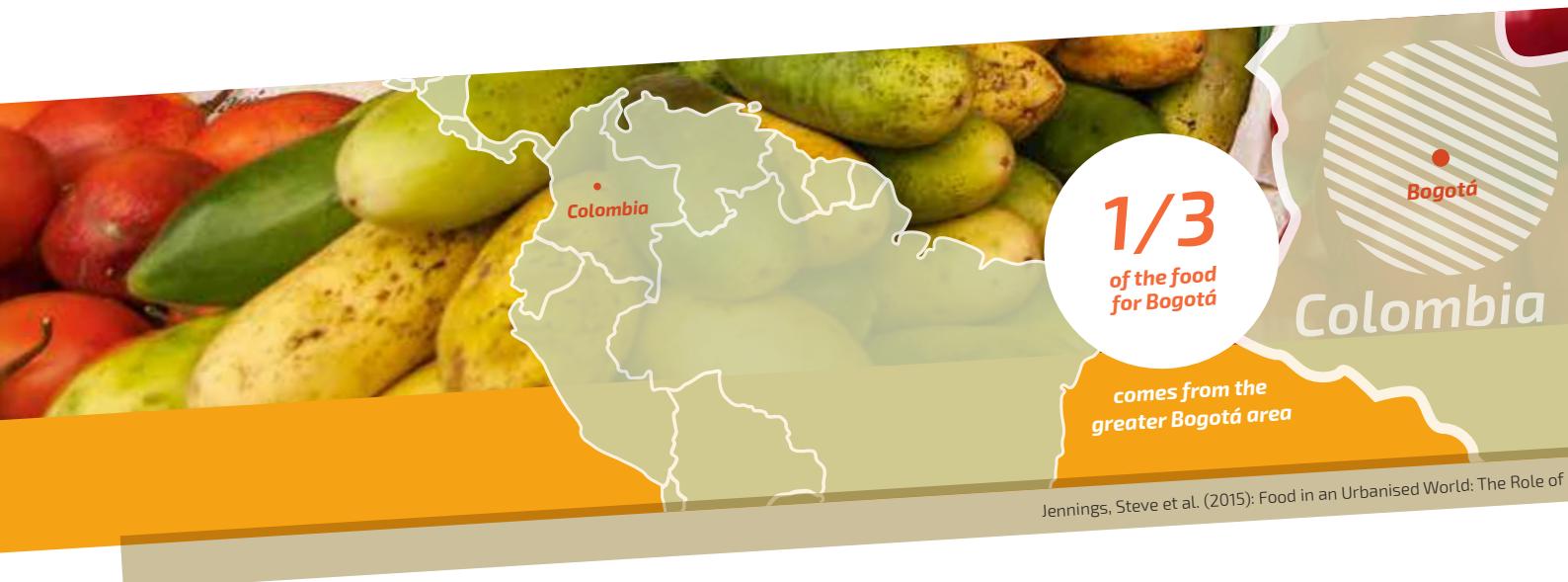


Commercial-NoDerivs 2.0 Generic (CC BY-NC-ND 2.0), Global Crop Diversity Trust/Cary Fowler/Attribution-NonCommercial-ShareAlike 2.0 Generic (CC BY-NC-SA 2.0), Heiko Stuckmann/pixelio.de.

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# FARMER MARKETS PROVIDE FOOD FOR



**S**mallholders play an important role in food production. They produce the majority of all food worldwide and in particular supply regional markets. We nonetheless frequently overlook this contribution and do not adequately support it. Farmers in Colombia have successfully made their contribution to food security visible through farmers' markets in Bogotá. Regional smallholders currently produce 65 per cent of the food needed by Colombia's capital with its approximately 8 million inhabitants.

The city's markets are the farmers' answer to the consequences of the liberalisation of Colombia's economy since the end of the 1990s, which led the country to go from self-supplier to food importer. In a region characterised by smallholders and a diversified peasant farmer agricul-

ture, the state destined 700,000 hectares to palm oil production and the expansion of grazing areas for livestock. Around 300,000 people lost their livelihoods. In the face of cheap food imports, smallholder production was no longer economically viable and therefore uprooted a system grounded in peasant farming. Despite these difficult conditions, farmers continued to produce fresh and diverse products for local markets.

## Farmers' markets as a political statement

In 2004, a government statement caused outrage among farmers. The statement alleged that only the massive import of food could feed the population of Bogotá, because smallholder production alone could not possibly produce sufficient food.

Peasant farmer organisations could not leave such disdain unanswered and, in cooperation with NGOs, began organising farmers' markets. In November 2004, they organised the first market on Bogotá's historic square Plaza de Bolívar. Their foremost aim being to make a political statement. They also demanded a say in developing and implementing public food policies and that the government ensure them a fair share in the national food market.

Even though the regulatory requirements set out by the local authorities were hard to meet, these markets took place every two weeks. Notwithstanding these challenges, further markets soon began to develop in other parts of the city. Divided along city district lines, farmers began organising themselves in committees (comités campesinos), comprising between 10 and 80 families.

# FRESH COLOMBIA'S CAPITAL



These committees organise the logistics of collecting produce from the individual farms and transporting it into the capital. In many cases, district authorities support these efforts, either by providing means of transport or by paying for petrol. Committees also play a role in coordinating, networking and training. There is also a negotiating committee consisting of various farmer organisations that negotiates with Bogotá's municipal authorities. This committee takes care of the market permits and ensures the markets meet the regulatory requirements.

## Advantages for smallholders and consumers

These markets provide a great variety of fresh food at affordable prices: this was met with a positive reception among consumers in the city. Farmers sell manioc,

potatoes, vegetables, fruit and even processed dairy and meat products, bakery products, ready-to-eat dishes, flowers and many other products. Direct marketing means farmers earn around 25 per cent more in spite of products being around 30 per cent cheaper for consumers. Markets also help farmers network and organise, learn about their rights and speak with others about general problems all farmers face.

Using farmers' markets as a platform, farmers have established a dialogue with the municipal authorities, and made proposals to strengthen and protect the smallholder economy in the Bogotá region. They achieved their first success in 2006, when the city authorities officially recognised farmer markets as one pillar of the city's food provision and announced municipal support. It then took until 2010 for the municipal authorities to begin providing regular public funds to finance

the farmers' markets, as well as to cover the costs of transportation, setting up the markets and providing training to farmers in food processing, cold chain management, sales strategies and public relations. This has allowed the markets to spread to now 20 central squares of the capital. Around 1,500 farmers actively participate in these markets.

These successes are nonetheless under threat. Since a new municipal government took office in 2016, there have been irregularities and budget cuts. Further obstacles concern the certification and registration requirements for farm products, as well as attempts by the city government to outsource the management of markets to a company and take away control from farmers. Beyond merely a platform to sell their produce, markets also offer peasant farmers an opportunity for greater visibility and to promote their participation in regional agricultural and food policy.

Ismael Díaz (Instituto Latinoamericano para una Sociedad y un Derecho Alternativo (ILSA))

# ALTERNATIVE MARKETS PEASANT

**Where does the food produced by agriculture come from globally?**

70 %  
is produced  
by peasant  
farmers



Source: CFS (2015): CFS High-Level Forum on Connecting

**A**lthough recognized as a power house in the global agricultural commodity market, dominated by large agri-business enterprises, Brazil is also home for a thriving family-farm sector. 84.4 per cent of all farms are family farms. These produce the majority of staple foods in the Brazilian diet: 87 per cent of manioc, 70 per cent of beans, 58 per cent of milk, 50 per cent of poultry and 59 per cent of pork. Nearly three quarters (12.3 million) of all farmers work in the family-farm sector.

#### State as buyer: A successful strategy

As pillars of its 'Zero Hunger strategy', the Brazilian government has implemented two innovative programmes, which provide strong support to smallholders,

reduce rural poverty and promote local food systems. These programmes also improve access to healthy food in particular for the poorer segments of the population. This is important because whilst undernourishment remains a problem, the number of people who are overweight due to unhealthy food is also on the rise. Since 2003, the Food Acquisition Program (Programa de Aquisição de Alimentos, PAA) buys food from smallholders and distributes it through community kitchens, public food banks, as well as community centres, nursing homes, hospitals, homeless shelters etc. In 2015, the Brazilian government spent 450 million USD on this program. The number of participating farmers increased from 42,000 in 2003 to 185,000 in 2012. The program invites smallholders to organise in cooperatives and associations, as this facilitates their participation in the PAA program.

The National School Meals Program (Programa Nacional de Alimentação Escolar, PNAE) is a further source of support for smallholders. Since 2009, public education institutions such as schools and kindergartens are required to spend 30 per cent of their food budget on regional produce from smallholders. The PNAE program provides food to 45 million children and young people in the country daily. It mainly buys fresh fruit and vegetables from smallholders to provide young people with good and healthy food. Municipal authorities are in charge of implementing the PNAE and PAA programs.

#### Belo Horizonte: Municipal politics with potential

In many ways, Belo Horizonte is a pioneer city in the area of food security programming. Each year, the city's School Meals

#### Further reading

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# FOR FARMERS IN BRAZIL



**77 %**  
is produced  
for local  
markets

Only  
**23 %**  
is traded  
on the  
world market

Smallholders to Markets. Background Document. <http://www.fao.org/3/a-av042e.pdf>. Copyright: Filipe Frazao/Shutterstock.com, Leagam/Shutterstock.com, AppStock/Shutterstock.com.

Program provides over 40 million lunches to 155,000 children that attend the 218 public schools in Belo Horizonte. The city has created further incentives. Its PAA program provides fruit and vegetables to subsidized Popular Restaurants, serving over 20,000 meals per day at minimal prices, and for the food bank. The program achieves this by buying food directly from smallholders.

Two other important city programs have improved urban consumers' access to fruit and vegetables while supporting the small family farmers who produce them. With the Abastecer supply program, the municipal government of Belo Horizonte licenses sellers to set up stores in city-owned property. The municipal authorities regulate the prices for up to 25 products, which are up to 50 per cent below normal market prices and therefore affordable even for lower-income people. The authorities do not regulate the prices

for other products and this allows vendors to make a profit.

The municipal government moreover supports farmers' and organic markets. The Straight from the Field program aims to facilitate direct interactions between small rural producers and urban consumers. By eliminating the intermediaries that normally operate in bringing the products of small rural producers to urban markets the program hopes to increase the income of smallholding farmers. In 2015, 20 producers from five rural communities participated in the program selling a variety of fresh vegetables and fruit at affordable prices in the city. All of these supportive measures since the end of the 1990s have led Belo Horizonte to become the only large Brazilian city where more fresh fruit and vegetables are sold on alternative markets than in supermarkets.

## Achievements at risk

In 2016, corruption scandals and a severe recession put the future of many Brazilian social programs at risk. The Ministry for Agrarian Development, responsible for policies for the family farm sector, was dissolved and its programs were distributed among other ministries. The budget for the PAA program was cut. Nevertheless, the Second National Plan for Agroecology and Organic Production adopted in 2015 provides fresh hope. It promises even greater support for smallholders. Continuous pressure by civil society organisations combined with an increased demand for healthy food should allow the success story of smallholder farming in Brazil to continue.

Cecilia Rocha (Ryerson University, Member of IPES Food) and Melody Mendonça (Ryerson University)

# HOW DOES FOOD REACH

## Cities and countries in Europe promote

**A**griculture was for a long time off the radar for almost all European cities. More recently, however, a new dynamic is beginning to show. Political processes to reconsider food policy have begun in some cities, often heavily infused by food sovereignty concepts. Inhabitants of such cities began to demand food produced locally and organically and through theory and practice, they begin to discover the concept of agroecology.

### New markets for farmers in Spain

In Barcelona, for example, the mayor, Ada Colau, has been providing agroecology and solidarity economy-based impulses (see box) to the entire region since 2015. Currently, the city and surrounding rural areas are initiating a process towards a more self-sufficient and fairer food system for this region of 3.3 million inhabitants, for example through projects involving the public provision of food to cantinas, schools and kindergartens.

The Spanish cities of Valencia and Zaragoza also support agroecology. Both cities have large areas of agricultural land within the city boundaries and regional

produce is the motor of food supply for both cities. Both cities, for example, provide incentives for young farmers to take over a farm within the city and convert it to organic production. Snacks made from regional organic products sold at bars and stalls make consumers aware of the importance of regional trade structures. Urban marketing points help smallholders to better access larger regional markets. Thanks to Spanish food culture and the fact that supermarkets have not supplanted the regional marketing of food to the extent that they have done so for example in Germany, open markets play a greater role in food supply than in other parts of Europe.

**Agroecology and  
solidarity economy:  
two concepts that  
mutually reinforce  
each other**



# OUR TABLES?

## innovative marketing approaches

### Municipal policy in Rennes set its sights on regional organic food

France has frequently been and remains a motor for innovative production and marketing concepts. To a certain extent, politics in France has also pursued solidarity-economy approaches that improve the framework conditions for marketing agro-ecological products. The high esteem for smallholders and high quality food thereby plays an important role. In Rennes, the political framework conditions promote the provision of regional and organic food. The city supports the development of urban gardens, the founding of CSAs, cooperative food stores and 'open air' markets in the early evening when people finish

work. It supports these projects financially, but also provides distribution sites for vegetable boxes and information campaigns. Urban planning, too, recognises the importance of maintaining agricultural land close to the city and fosters closer ties between the city and the surrounding areas. The Rennes metropolitan region has for example developed an overarching local agriculture scheme.

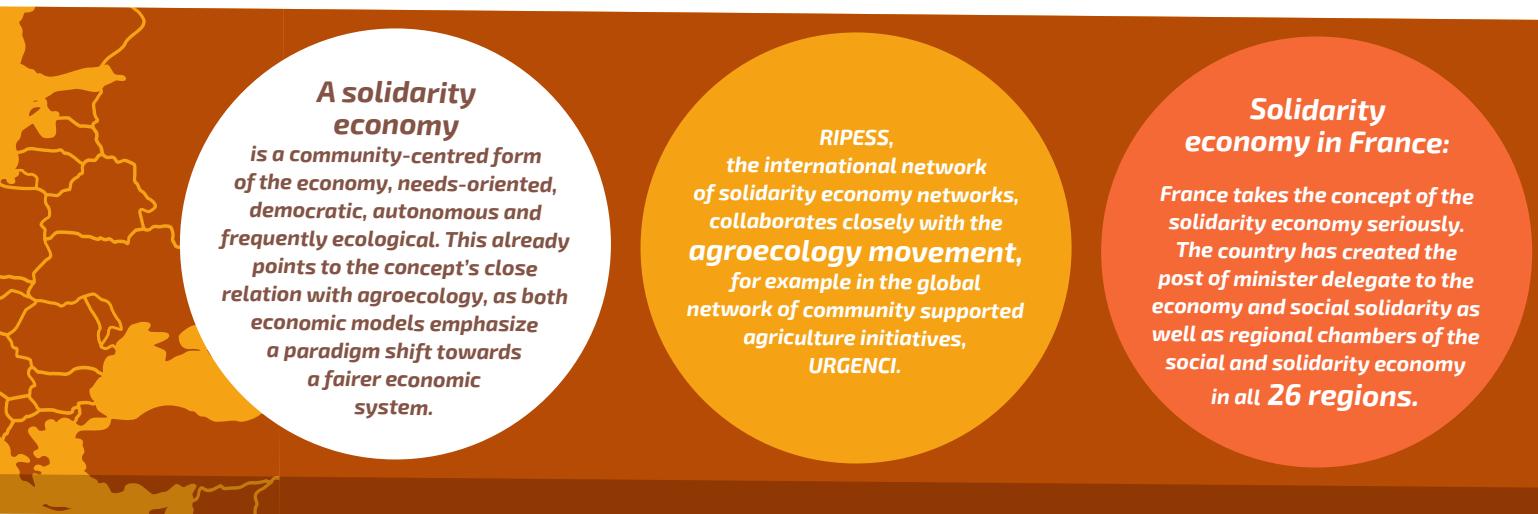
### Food sovereignty as a constitutional goal: Developments in Switzerland

In Switzerland, a referendum aiming to anchor the concept of food sovereignty in the constitution is currently underway. Already the increase in discussions sur-

rounding the issue is important. The city of Geneva in particular has been very active over the past years. The city rapidly provided support to civil society ideas and projects. Furthermore, a regional label was created to make the hospitality sector aware of the regional marketing of produce.

These examples show an increase in activities to promote agroecological approaches in some cities and countries of Europe. Nonetheless, these can only be the initial steps towards a true transformation. Cooperation between civil society, cities, universities, restaurants and farmers even beyond city boundaries is set to play a key role.

Peter Volz (*Die Agronauten*)



For further information on collaboration between agroecological and solidarity economy networks see: [www.socioeco.org](http://www.socioeco.org)

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# **LET'S MOVE! THE PATHWAY TO AGRO**

In many places, alternatives break through the cracks of the industrial food system and show that agroecology can provide the basis for a socially and ecologically sustainable transformation of agriculture. Peasant farmers across the world use tried and tested agroecological cultivation methods to protect soil fertility, promote diversity on agricultural land and plates alike, preserve natural resources and exercise the human right to adequate food. Innovative marketing strategies provide consumers with fresh and affordable agroecological produce. Food policy councils and other initiatives gain a greater say in local food systems and co-develop food policy. So far, agroecology has hardly made it onto the political agenda. This is because, as a system, agroecology has no need for agro-chemicals or GMOs and strengthens local marketing structures, which leaves no room for international agro- and food corporations to make a profit. Broad-scale implementation of agroecology will require a fundamental transformation of global relations of power.

Social movements across the world have made the potential of agroecology known internationally. Science, civil society organisations, the United Nations and governments have taken up the concept. Although in principle a success, this puts the concept of agroecology at risk to be co-opted and watered down. This could include reducing agroecology to particular cultivation methods in an attempt to cushion the ecological crisis of conventional agriculture, whilst leaving untouched or even accentuating the systemic logics and relations of power.

A reorientation of the food system built on agroecology requires first a new understanding of the nature of sustainable food systems. As is well known, we cannot hope to solve problems by the same logic that created them in the first place. This means to leave behind the dogma of increasing general productivity through industrial agriculture as a strategy for feeding the world. We must re-orientate political instruments, develop innovative local marketing approaches and foster citizen participation in defining food and agricultural policies. The political measures below are therefore of central importance:

Agroecology thrives on the work by pioneers and countless individuals who jointly struggle for a social and

# ECOLOGY

## ***Support for diversified agroecological farming***

Long-term investments and economically sustainable practices will require that peasant farmers, the landless, nomadic communities and indigenous peoples have secured access to and control over land and natural resources. Seed regulations should provide support to peasant seed systems and promote the exchange of genetically diverse seeds. Incentives such as financial support and information sharing on the agroecological circular economy approach, as well as practices to

maintain and improve soil fertility, recycle biomass, improve biodiversity and minimise the agrochemical and fossil fuel input, should be created. Promoting participatory research between peasant farmers and scientists should provide the means to develop and spread agroecological practices and innovations further. Regulations and legislation that stand in the way of agroecology, such as intellectual property rights and food safety regulations that hinder peasant farmers must be changed.

## ***Promoting short food supply chains and alternative trade structures***

Peasant farmers need markets where they can sell their produce at fair prices and actively define market conditions. Public authorities need to support these markets by providing the required public infrastructure. Public procurement to supply canteens or schools with food should favour local farmers. Public institutions can buy produce at reliable rates and amounts. This would create a sustainable future for peasant farmers and equally

ensure the regional supply of high quality produce. Concepts such as Community Supported Agriculture (CSA), which strengthen the ties between consumers and producers and create a new awareness of the importance of agriculture, should receive greater support. Priority must be granted to providing local and regional markets with diverse and healthy food.

## ***Democratising our food system***

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 marginalised people, especially in rural areas, should receive support, and authorities should integrate them into political decision-making processes. In particular the interests and needs of women and young people in agriculture need to be considered. Research agendas and

research itself must become participatory. Only such an approach will ensure that they are adapted to the needs of peasant farmers and build on their knowledge. To spread the knowledge of agroecology, we need to establish agroecological farming schools. Municipalities and cities need to recognise the importance of initiatives such as food policy councils to jointly develop local food systems.

Sarah Schneider (MISEREOR)

ecological transition of agriculture. Let's move!

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