



Participatory Research and On-Farm Management of Agricultural Biodiversity in Europe

Michel Pimbert

Foreword by Colin Tudge



Reclaiming
**Diversity &
Citizenship**

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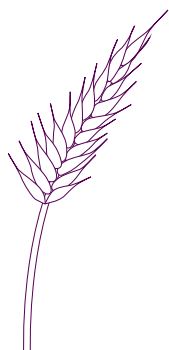
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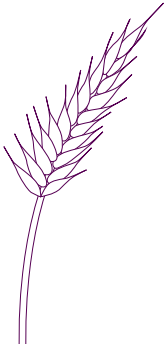
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Foreword

Colin Tudge

It should be fairly straightforward to feed everyone who is ever liable to be born on this Earth, and to feed them to the highest standards of nutrition and gastronomy. We should be able to do this without wrecking the rest of the world and driving our fellow creatures to extinction – farming can be wildlife friendly; for many creatures, farmland is a serious component of their habitat. Worldwide, agriculture is still by far the world's greatest employer, and so it could – and should – remain. The jobs it supplies should be among the most absorbing and agreeable of all, and of high prestige. Most of today's farmers work, as most farmers have over the past few hundred years, on small, mixed family farms – which still supply about 70 per cent of all the world's food; 90 per cent in countries like Nigeria. Industrial farming that is now called “conventional” is anything but. It accounts for only 30 per cent of the total world output and has existed for only about a century – less than one per cent of the total known history of agriculture.

Of course, all farming could benefit from good science and appropriate technology – this is true for all human endeavours. But we could easily do the basics right now. To a very great extent the necessary knowledge, methods and skills are what traditional farmers have and practice as a matter of course.

But we are not feeding ourselves well. An estimated one billion out of the world's seven billion people are chronically undernourished. Another billion suffer the “diseases of affluence”, of which obesity is the most obvious and diabetes is probably the most widespread and destructive. Our farming is not Earth-friendly. We are in the midst of a mass-extinction, for which agriculture is largely responsible. Half of all our fellow plant and animal species are estimated to be threatened. All the non-renewable main ingredients of crop production – soil, fresh water, phosphorus – are being squandered. Industrial – “conventional” – farming depends absolutely on oil, which is running



out. However, this may be just as well because if we go on burning it at the present rate, we will wreck the climate, as is already obvious. There is a horrendous loss of farmers worldwide as family farms which were traditionally small and complicated, producing mixtures of crops and livestock, give way to big, ultra-simplified estates and plantations that are monocultural to the point of absolute uniformity, and that employ as few people as possible. Even most farmers in rich countries today are poor, being among the lowest-paid in their respective societies, almost always stressed, sometimes despised, often in poor health, and prone to suicide. Yet a handful in Europe and the US are very rich indeed – heavily supplemented by government or European subsidies.

The entire global food industry is extremely lucrative – one of the world's biggest, as indeed it should be. Food remains the key to human existence as it always will—but the actual production of it has been virtually sidelined. Most of the wealth has shifted these past few decades out of farming and into food processing, distribution and retail. This is mostly under the heading of “value adding”, largely controlled by a few giant corporations and very rich individuals who swallow up more and more of the production and build increasingly bigger and ever more specialised industrial units, often with direct or indirect help from governments. Overall, this shift of wealth from the many to the few can, and should, be seen as a giant, systematised exercise in expropriation.

In essence, food production is a matter of biology: how much does the human species really need, and how much can the world produce—not just for the next few decades, but at least for the next 10,000 years. Food production is also, of course, a matter of morality: do we actually *want* to provide everyone in the world with good food, or are we content that the Devil should take the hindmost? Some, it seems, feel that while mass hunger is not exactly desirable, it is at least inevitable. If people are starving it must be because there are too many people.

However, agriculture is perceived these days not as an issue of biology and morality. It is seen, as the chill expression has it, simply as “a business like any other”. There is nothing wrong with business *per se* – we need not be anti-capitalist to abhor what is happening right now to the world – but it is surely wrong to add “like any other”. Many would say that access to good food is a fundamental *human right*: that to devise a system of farming that leaves people out in the cold – let alone a very fair proportion of the human race – is an absolute breach of human rights; an offence against humanity. This thought underpins Michel Pimbert's report, and is endorsed by various branches of the United Nations.

Still worse, the concept of business, which should be agreeable enough, has been corrupted. Nowadays all business is obliged to operate within the economic framework of “neoliberalism”. In all countries, all businesses of all kinds—including farms—are conceived as components of one vast “global market” which is supposedly “free”. Allegedly the market operates on a “level playing field”, but in reality it is controlled by

the biggest players, and is heavily tilted in their favour. In practice, a few multinational corporations run the global market virtually as a cartel. In this they are supported by the world's most powerful governments, including Britain's, who nowadays seem to see themselves as extensions of the corporate boardroom. Indeed they make a virtue of this; they call it "realism".

If the global, neoliberal market actually delivered the things that are good for humankind, for our fellow species, and for the fabric of the Earth, then we – people at large – could reasonably say: "Fair enough!" We could happily, or fairly happily, go along with the fiction that the glitzy bright supermarkets with their rows of breakfast cereals and "buy-one-get-one-frees" really do serve us well, and that they, and the farms that supply them, really do represent progress, modernity and the future. Legitimately we could feel sorry for all those people in "poor" countries who do not yet have a supermarket, but must rely on market stalls where the fruit, spices, chickens and cuts of lamb and goat are not all exactly the same, nor vacuum-packed, and are not brought in from the far corners of the Earth in the interests of customer "choice". We could accept, too, that the farmers who find they cannot supply the goods that the supermarkets need, and so go out of business, are well out of it: that their way of life belongs to the past; that they were probably unhappy in any case, and are now free to find more civilised employ in any one of the world's many vibrant and ever-growing cities. All this, after all, is what we city people are given to understand. It is the message of the TV ads which for more and more people worldwide are a prime source of information.

But actually, when we look beneath the glitz, we find that the modern food chain—beginning with the monocultural high-tech estate and the multi-story pig factory, and ending at the supermarket after many a contortion—is not serving us well at all. Indeed it is the main cause of the world's primary ills: the core reason why the human species is now in such dire straits – why there is hunger, why there are food riots, why everyone is wondering whether we can get through the present century in a tolerable state, never mind the next 10,000 years of human development.

For within the global, corporate-dominated economy, all farmers are required, above all, to make money. And because the economy is global and ultra-competitive, all farmers must try to make as much as possible within the shortest time, or they will lose out to someone else who can make more. In principle even this could be acceptable. Money ought to be a measure of something real and worthwhile – of a person's ability to do something well, or of general excellence. A little competition, at least in the form of friendly rivalry, is indeed a good spur. But in the modern economy, money is not a measure of underlying excellence, but is an end in itself. Indeed, it is the sole purpose of the whole endeavour; and the competition is ruthless, no-holds-barred, and to the death.

But what really matters is that the kind of farming that makes most money in the shortest time is absolutely at odds with the kind of farming that could feed us, and that could *continue to feed us*. Indeed it is diametrically opposed to such farming.

If today's industrial, neoliberal farming was providing us all with good food, and was looking after the fabric of the world, it still would not be perfect. We still might consider it unjust, and unpleasant, and seek to reform it on grounds of morality and aesthetics. But the present reality is far worse. Neoliberal farming is threatening to kill us all off. It already accounts for the death of a fair proportion of humanity and an even larger proportion of our fellow species, and is wrecking the planet—our only refuge—wholesale.

This may seem an extraordinary claim, yet the facts are clear. The corporates, governments, banks and their attendant experts who now dominate the world, claim that their strategies and policies are “evidence-based”. Yet the most fundamental



facts, which are the guts of evidence, are ignored completely. A fiction, based on abstractions, scientific and economic dogma, is substituted. All in all, the defence of the present neoliberal food system is the most astonishing example of what George Orwell in a different context (although only slightly different, when you look closely) called “double-think”.

For if we truly want to feed ourselves, and to go on doing so, we must apply the principles of biology. Those principles tell us that the most productive and sustainable farms – the ones that can continue to produce the most crops and livestock per unit area over the very long term – are mixed, tightly integrated, and, in general, organic. Many these days call this “agroecology”: the farm is conceived not as a single-product food factory but as an ecosystem, with many different animals and plants interacting synergistically. There is a huge literature worldwide to show that such synergistic systems are the most productive by far – and are certainly the most productive over time. Industrial, monocultural farms may outstrip them in yield from time to time, but only when the inputs are enormous and the crops are heavily protected with artificial pesticides and herbicides. Yet somehow, when official bodies produce official reports on the future of farming, this literature on agroecology is ignored in favour of brochures showing some industrial crop bursting at the seams in the idealised conditions of an experimental farm.

The epithet “organic” implies that artificial inputs are kept to a minimum— nitrogen-fixing plants provide the basic fertility, and livestock keep the nutrients cycling. In such systems the organic content of the soil builds up quite rapidly, meaning that the soil acts as a carbon sink. Organic-rich soils are spongy, too, and so retain water— irrigation becomes largely unnecessary. Such farms *improve* the soil year by year. They are indeed sustainable.

Farming also needs to be flexible, resilient. The world is changing and we need to be able to change with it. This will be especially necessary in the next few decades and centuries, as the climate continues to fluctuate. The key to resilience, as Charles Darwin made so clear in *On the Origin of Species*, is variation. Above all we need a diversity of crop and livestock species; and within each breed of crop and livestock we need as much genetic diversity as possible. Of course, we can't just grow a random selection of plants and animals as if they were wild: our crops and animals have to be tailored into forms that can be managed to produce good food. But it is perfectly possible to produce crops and animals that are all more or less the right size, shape and flavour; and that mature at the right sort of rate – but which, beneath the surface, at the level of the gene, are tremendously diverse. This possibility has been demonstrated abundantly over the past 10,000 years of agricultural history. Monocultures and clones are not necessary – and they are extremely vulnerable. A disease or a quirk of climate that kills any one individual will kill the lot.

But there is a snag – at least as far as the neoliberal economy is concerned, geared as it is to the maximisation of profit. Farms that are mixed, integrated and primarily organic are inevitably complex. So they require a high level of husbandry by farmers



who are experts: day-labourers trucked in from some disadvantaged economy will not do. When farms are complex and labour intensive there is little or no advantage in scaling-up – the appropriate units, the ones that really could feed the world and go on doing so, should generally be small to medium-sized.

There is a further biological advantage in the complex and the small-scale. When you look closely at a landscape – when you walk the ground, and especially when you work the land – you find that each field, each slope is different in terms of soil, drainage or microclimate. Even in today's economy, growers of crops that command high prices appreciate this. Wine-growers attend to the smallest detail, and take advantage of each caprice. Small farmers in traditional societies (in which farming was appreciated) applied the same level of care to their beans and potatoes. Multiply this local knowledge a billion times and we can see how we could raise the quality, the sustainability and the resilience, of all the world's food.

But farms that are intended to maximise wealth must be designed quite differently. The first requirement when profit is the motive is to maximise turnover – which in agriculture means yield.



Thus, official report after official report tells us that we must maximise yields – and as a matter of urgency. Britain's Chief Government Scientist, Sir John Beddington, told us in his recent “Foresight” report on *The Future of Food and Farming* that we need to raise the global output of food by 50 per cent by 2050 to take account both of future population increase—to an estimated 9.5 billion—and of increased individual “demand”. Sir John also gives us to understand that this can only be achieved with new technologies, including genetic engineering (to create “genetically modified organisms” or GMOs). In many a report, those who oppose these technologies are deemed to be “irresponsible”, “Luddite”, “elitist”, “unrealistic” – and so on.

Yet the basic statistics—what *ought* to be seen as evidence—present a quite different picture. The same UN demographers who tell us that the world population will reach 9.5 billion by 2050 also tell us that numbers should then level out – not because of catastrophe but because that is the demographic trend. After a few decades more, or perhaps a few centuries, numbers should decline. So the problem is finite: we need to feed 9.5 billion, and to go on feeding them.

Is this really possible? Well, a few basic statistics – including some in the Foresight report – suggest that it should be positively simple. For *The Future of Food and Farming* also tells us that the world includes about 4.5 billion hectares of agriculture.

With a world population of around 9.5 billion, we will need to feed two people per hectare. The average wheatfield in Britain, yielding 8 tonnes per hectare, provides enough protein and calories for about 24 people. The mixed, integrated farms of SE Asia probably produce enough food per hectare for about 50 people. Even the sorghum fields of the Sahel, producing about one tonne per hectare, provide enough macronutrients for two people—the world’s projected average requirement.

Furthermore, Hans Herren of the International Assessment of Agricultural Knowledge, Science, and Technology for Development (IAASTD) tells us that the world already produces enough food to provide each person alive today with around 4,800 kcals per day. This is about twice the average need. Putting this another way: we already produce enough food energy for 14 billion people. “Food energy” does not necessarily imply a good diet. But if we produce the energy by sensible means—cereals rather than sugar beet—the rest can follow. Fourteen billion is 50 per cent more people than we will ever need to feed. So why do we need to increase yields by 50 per cent over the next few decades? This claim is taken to justify the biotech industry and the government policies that support it. But it looks like pure commercial hype.

To be sure, there are problems – but they are not, in general, those of productivity; and they do not, in general, require much in the way of more technology. About 50 per cent of the food that could and should be grown in the world’s fields is lost before and after harvest to pests, including fungi. To a great extent the necessary technologies are simple – silos or better barns – but they require investment of the kind that just is not forthcoming. It is clear, too, that if we really did want to raise productivity then we need *not* turn first to high tech, and certainly not to GMOs. All who know Third World agriculture well, including the farmers themselves and those outsiders who have truly become involved, insist that small, mixed, family farms the world over could generally double or triple their output. The means to do this are not always technological – they include guaranteed prices for crops so that the farmers know how much to invest. But guaranteed prices are the anathema of the free market (although the richest countries, including those of the European Union, make their own rules on this). None of this means that small, mixed farms would *not* benefit from “high”, science-based technologies. Indeed they often stand to benefit most. But the technologies need to be *appropriate*: geared to the real needs of the small farmer. GMOs are certainly not.

In truth, the real problem for those who would maximise yields is that it is too easy to feed everybody well. Even the richest people cannot eat much more than the poorest, so the market becomes “inelastic”. The easiest way round that problem is to waste most of the food before selling it. The standard method is to feed staple foods—which could be feeding us all and are the basis of all the world’s great dishes—to livestock. Hence we feed half the world’s cereals and well over 90 per cent of the soya to animals – including cattle which are not designed by nature to eat such fare. In truth we could raise all the cattle and sheep we need on grass and browse without encroaching

on the main crops at all, and all the chickens and pigs we need on leftovers, as we traditionally did. But this is less profitable (within the present economy). So the fiction is maintained – and ratified from on high – that there is a global food shortage, and that only high-tech intervention, organised from on high, can put it right.

Merely increasing yields, though, is not enough for those who seek to maximise profit. Value must be added. Again, in principle, there is nothing wrong with this. Why not turn cacao seeds into chocolate? But “value adding” in the modern market has virtually become the prime focus. It manifests in endless packaging and selling fruit out of season. It manifests too in all the specious “choice” in the supermarket – which, when you look closely, is largely composed of endless variations of palm oil and corn syrup, grown in vast monocultures cheaply, thanks to the artificially low cost of oil.

The third essential requirement for those who would maximise profit is to reduce costs – and this, in the context of agriculture, is the most damaging of all. For the most expensive input in traditional farming is labour – because traditional farming is labour intensive. So labour and all the expertise that should go with it are replaced by heavy engineering and industrial chemistry (nowadays abetted by biotech). In such industrialised systems there are enormous advantages in scaling-up – the bigger the combine harvester, the better – so the fields and the estates become bigger and bigger. (There are “farms” of 300,000 hectares in the Ukraine – and some feel they are not yet big enough). With almost zero labour and vast fields, complexity goes right out of the window. The name of the game is monoculture. The vast estates are each dedicated to a single crop – which, in the interests of predictability are as genetically uniform as possible. Many are clones. Or we have vast livestock factories for pigs, poultry, and even these days for cattle. They too are as genetically uniform as possible. There is even talk (echoed in Beddington’s *Future of Food and Farming* report) of cloning livestock. Indeed it is more than talk. It is already happening.

All this is the precise opposite of what common sense, common morality, and basic biology tell us should be done. Yet it is the norm. It is what is now called “conventional”.

And there is worse. The free market is not really “free”, to be sure. It is manipulated and in effect controlled by the big players. But the big players are nonetheless obliged to slug it out. Each seeks to enhance its own “market share”. Each in principle would like monopoly—and some of the biggest companies, despite laws ostensibly to prevent this—have already achieved it.

When all the big players start fair, then the battle of the giants to gain supremacy becomes rather difficult. This is where high tech really comes into its own, and the patenting laws that go with it. For if one of the big players can come up with a technology that the whole market perceives to be essential, then truly they can fill their boots. All those who do not have the new technology are perceived to be disadvantaged. “Perceived” is the key word. This is a game, the market is an artifice, and perception is all.



This is the true purpose of GMOs. They do *not*, except in favoured circumstances, increase yields. They do *not*, overall, reduce reliance on herbicides, pesticides, or fertilisers. Indeed they can increase reliance. One of the world's leading GM crops, "Roundup Ready" rape (also known as canola) is designed expressly to be used alongside a herbicide (namely Roundup). But the biotech companies are very good at public relations. Moreover, to an increasing extent they finance and, hence, control agricultural research. It is now quite difficult to find agricultural research that is *not* commercially financed, commonly by biotech companies. Governments go along with this for a whole variety of reasons, one of which is that high-tech agriculture that veers towards monoculture is highly profitable. The profits are seen to increase GDP, which means they contribute to the "economic growth" that has become the principal goal, and indeed the *raison d'être*, of the world's most powerful governments. It is also far easier for governments to deal with a few large corporates than with thousands—or, worldwide, with billions—of individual farmers. Bureaucracy, the neoliberal economy, and various forms of high technology, fit together very well. They are the components of top-down control.



Fortunately, there are protestors: and some of those protestors present arguments that are in all ways superior to those that defend the *status quo*. The moral and metaphysical base of those arguments is obviously stronger than those that support the *status quo*. It is founded in a real desire to improve the human condition and make the world a better place. These protestors also take account of the statistics which show, beyond all reasonable doubt, that there are better ways of doing things – and in particular that we must build on the knowledge and expertise, not to say the brilliance, of the traditional, complex, agro-ecological, small farming that, mercifully, still exists.

Such are the arguments you will find in this report. Michel Pimbert is an agroecologist who has worked in both national and international agricultural research systems. He is now based at IIED where he facilitates participatory action research on policies and practices for food sovereignty, agroecology, and citizenship.

In particular Michel tackles two crucial and related themes. First, he looks at the specific but huge influence of the European Union's (EU) Common Agricultural Policy (CAP) – and especially the revisions planned for 2013. Secondly, and more generally, he asks how the world can and must engage more directly with the people who really can produce enough food for all of us, and who know how to do it: the world's vast battalions of small farmers.

His account of the CAP makes for dismal reading. As is well known, the CAP flouts the rules of the global free market by handing enormous subsidies to Europe's farmers. In

truth, the “free” market model is deeply flawed, especially when applied to agriculture, and some kind of control of the market is highly desirable. But the present system of subsidies is crude to the point of perversity and well beyond. It does not reward the small mixed farmers whom the world needs. Instead, at huge public expense, it rewards the biggest – encouraging them to become even bigger, which pushes the small farmers out of business. And as I’ve mentioned above, vastness is the enemy of the complexity and synergy that are vital. As well as the CAP, current seed laws are increasingly restricting the range of crops that can be grown. By insisting on uniformity, which is more and more tightly defined, they are reducing, drastically, the genetic diversity within each crop. By the same token, the laws of intellectual property are pushing us towards a world in which no farmer will be able to grow any crop or raise any animal that does not carry some patent. He or she will be forced to pay royalties to the company that holds that patent. This amounts, in effect, to a handover of farming that should belong to all of us, to a few big commercial players, working in concert with a few powerful governments.

Varietal and genetic diversity is the key to future food security: it is what will enable us to change direction as the climate continues to change – in ways that we cannot predict. Today’s GM wonder-crops with their narrow genetic base are all too likely to be nine-day wonders. To reduce the diversity of our most fundamental of resources—food—is to place us all in danger, especially our children and grandchildren. This should surely be seen as a human rights issue, and be dealt with by human rights law. Even more grandly, endangering the human race—albeit by this indirect means—should be seen as a crime against humanity. We – people at large – should be angrier than we seem to be; and we should be asking deep questions; not simply about the nature of the economy, but about the nature of governance. How do we have elected governments that clearly do not act in our best interest? Truly we need to re-conceive what we mean by democracy.

Michel’s second theme relates directly to this. For, he says, the small, traditional farmers of the world who, if given the chance, really could feed us and take care of our fellow creatures, are routinely sidelined. No-one listens to them. At best, they are patronised; but usually they are ignored completely. Yet (and as the IAASTD report acknowledged) the experience and local knowledge that small farmers have accumulated are essential to our future wellbeing. The world’s traditional farmers should be consulted as a matter of simple justice. But if humanity really cares about its own future, we should not merely consult the small farmers, we should seek them out as key participants. For the most part, they should set the agenda. To a very large extent they already know what we need to know, and can already do what needs to be done.

In truth, there has been a recent trend towards consulting farmers when planning agricultural research. But as Michel points out, the term “consultation” covers a spectrum of involvement which at the bottom end is virtually meaningless. Administrators and visiting experts often claim to have “consulted” the locals when all they have done is tell them what is about to happen – or even, what has just been done. Participation must mean far, far more than this: a true dialogue between modern science and traditional knowledge.



This report spells out what such dialogue entails, and how it can be brought about.

We might ask in passing why it is that the powers-that-be have created a system of food production and distribution that is so obviously bad for the human species in a dozen different ways, which is killing people in huge numbers; and which, for good measure, is wiping out our fellow creatures and threatening to send the whole world into ecological tailspin. We might ask why the powers-that-be still insist that we continue with more of the same. We might especially ask why they systematically ignore the people who really could do what needs doing. Not just ignore them—insult them and put them out of work. Why, indeed, do they favour abstract economic and scientific theory and dogma over real empirical knowledge while claiming, at the same time, to provide strategies that are “evidence-based”? Are they – the powers-that-be – wicked? This is hard to believe. Are they, simply, profoundly ignorant? Certainly, people in high places generally seem far too specialised. Economists rarely understand biology and operate as if they believe that the Earth and all the creatures within it, including humans, can be thrust into any economic mould that may be devised. Even worse: scientists who are now called biologists are increasingly no such thing. They are technologists, chemists *manqué*, adept in the manipulation of DNA. This is not the same thing at all. Very few of those in power seem to have any robust metaphysical or moral base. They are not skilled in asking what is *good*, and why.

What matters most, however, is false belief. The powers-that-be really do believe, or have persuaded themselves to believe, that what are now perceived as the ways of the Western world are the right ways.

The Western world is not on the whole obsessively “secular”: religion and, more broadly, spirituality, have played a huge part in its history and in psyche. But the modern age is certainly hard-nosed. It emphasises what it calls “rational” thinking at the expense of intuition – human sympathy and common sense. Science is taken as the exemplar of

rationality, and is perceived as the royal road to truth: if we are not omniscient already we soon will be if only we do more research; and with omniscience will come omnipotence.

The modern Western view rejects any notion of transcendence: the philosophy that prevails is materialistic—wedded to *stuff*. Indeed the belief is evident in official reports on everything—from the economy to climate change or health care—that personal enrichment and increasing physical comfort are the essence of “progress”. Sometimes we are even told in flights of political and industrial rhetoric that “to conquer nature” for our own comfort is “Man’s destiny”. The Earth and our fellow creatures, in the absence of any metaphysic, are perceived as “resources”. The point of human life, apparently, is to turn these “resources” into commodities which can be sold for money, which (by definition) makes us rich. At present, to be sure, the wealth stays at the top – the rich are growing richer while the poor growing poorer. But, we are assured, the wealth will inevitably “trickle down” to the rest of humanity. All we need to achieve this very particular version of Nirvana is more science and high tech, set free by the market.

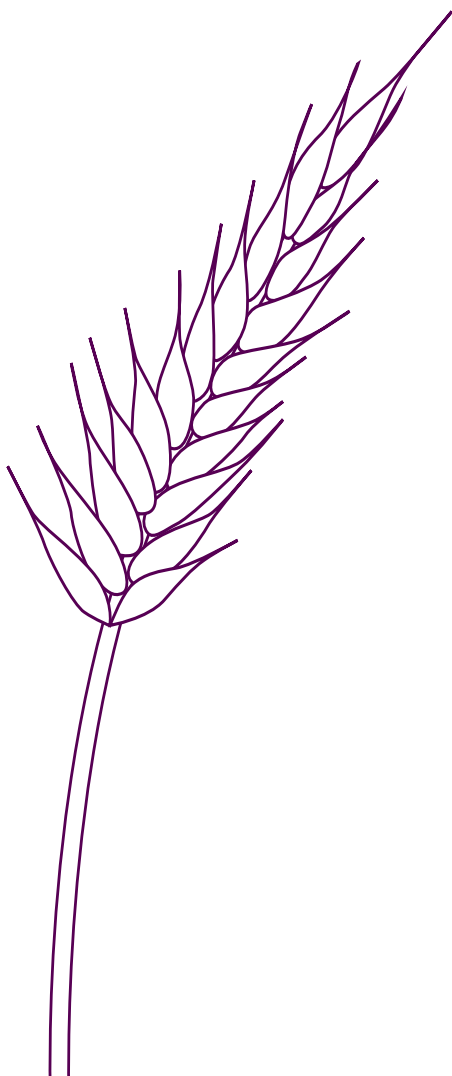
This philosophy is crude in the extreme but it’s the view, nonetheless, that prevails. Defenders of the *status quo* argue that this view prevails because it is true – and that it really is good for people. But that is obviously nonsense. The crude defence of materialism and the brutalised version of science and the dogma of neoliberalism that are invoked to support it prevail because those who cling to it really do become rich and powerful, at least in the short term; and those who are rich and powerful dominate the rest. It’s a simple tautology.

In August 1650 Oliver Cromwell wrote this plea to the parliamentarians of Scotland: “*I beseech you, in the bowels of Christ, think it possible you may be mistaken*”. I don’t believe that the people who are now in the most powerful positions will ever think it possible that they may be mistaken; and those of us who give a damn about the state of the world, and our children, and other people’s children, and our fellow creatures, have to take matters into our own hands and do our own thinking.

This is what millions of men and women worldwide are already doing, and have been doing since humanity began. In large part they have shown what we really need to do to solve our problems, and to create a better life. They are the people we ought to be engaging with. Michel Pimbert’s excellent report tells us how. It needs to be read, and acted upon. By all of us.

Colin Tudge, Wolvercote, March 18 2011

Colin is co-founder of the Campaign for Real Farming and the College for Enlightened Agriculture. His latest book, Good Food for Everyone Forever, is now available from Amazon or from Pari Publishing: www.paripublishing.com.



Summary

European agriculture faces some serious challenges from climate change, environmental degradation and rural social decline. In this context, maintaining the diversity of the natural resource base and the multi-functionality of agriculture keeps options open for adapting successfully to changing conditions. This paper explores how this can be achieved in the European Union (EU). Focusing more specifically on the on-farm management of biodiversity important for food and agriculture, this paper draws on experiences from the Farm Seed Opportunities project (FSO), a partnership which includes public-sector research institutes, peasant networks and organic farmers' associations from six European countries. The FSO seeks to develop innovative participatory approaches for managing agricultural biodiversity in Europe, and to identify appropriate regulatory frameworks for the on-farm conservation and sustainable use of seed diversity. The FSO highlights the need for a fundamental re-orientation of plant breeding so that it can build on both local and scientific knowledge in creating and maintaining a diversity of seed. Seed diversity ensures that farmers have the right plants to suit their specific climate, micro-environment and soil types—especially important for those farmers who maintain the environmental integrity of their farms by opting not to rely on chemical fertilisers and pesticides. However, the current seed breeding system is eroding this diversity and favouring far fewer, but more chemically-dependant, varieties. In turn, large scale genetically uniform monocultures and intensive factory farming are leading to further biodiversity loss in European landscapes (e.g. pollinators, soil organisms, natural enemies of pests, diverse ecosystems), undermining the capacity of farming to cope with climatic and other changes.

The paper first explores what participation means in the context of agro-biodiversity research and management. It then outlines three key challenges for participatory research and the on-farm conservation and management of agricultural biodiversity in the EU:

- i) *Transforming knowledge and ways of knowing.* Environmental dynamics and effects are usually long term and complex. This calls for more holistic and transdisciplinary ways of knowing than offered by the dominant narrow lens, universal and reductionist explanatory scientific models. Reductionist knowledge also favours corporate profits and control over labour and nature in simplified and standardised production systems. Such top-down, imposed natural resource



management all too often has huge social and ecological costs in areas where rural people directly depend on biodiversity-rich farming systems for their livelihoods. In contrast, methods and approaches for participatory learning and action can potentially help re-connect farmers and citizens with the biodiversity that sustains their livelihoods and culture. However, the issue is not merely about 'using' participation to make research more 'effective' or 'efficient'. Instead, a transformative process is required which is much deeper in scope and intent.

- ii) *Scaling up and institutionalising participatory research and innovation in plant breeding and agroecology.* The last 20 years have seen some interesting initiatives in participatory plant breeding (PPB), participatory varietal selection (PVS) and participatory research in agroecology. However, these have been limited to the local level. Now many large, public and private agencies in the EU are seeking to spread, scale up and mainstream participation in research and the management of agricultural biodiversity. This will require institutional reform and transformation, including significant changes in funding procedures and the organisation of research.
- iii) *Policy reversals for the participatory management of agricultural biodiversity in Europe.* In a globalising world, participatory approaches are not enough, however well-institutionalised. Inequitable rights of access, use and control over natural resources, macro economic policy or corporate interests mean that successful participation depends on structural shifts towards more equitable people-centred processes and democracy. For example, EU legal frameworks currently limit the potential of participatory seed selection and on-farm conservation by restricting farmers' free access to diverse seeds. Strict demand for uniformity has reduced genetic diversity to such a degree that none but the most advanced varieties are allowed to be sold on the market. In addition, intellectual property laws significantly constrain participatory plant breeding as breeders and farmers have to pay licenses and royalties for the right to use patented genes and proprietary technologies that are mostly owned by large seed corporations.

The paper concludes with some recommendations for implementing this approach in Europe:

- Be clear about the level of 'participation' involved in existing EU-funded research and development for on-farm conservation and management of agricultural biodiversity. Different degrees of participation are possible and it is also important to explore the options for participation in the whole research and development cycle.
- Build participatory agro-biodiversity research on the complementarity and uniqueness of the different evaluation criteria and indicators used by both farmers and scientists, as well as the needs of other resource users, such as women, the poor and the elderly.

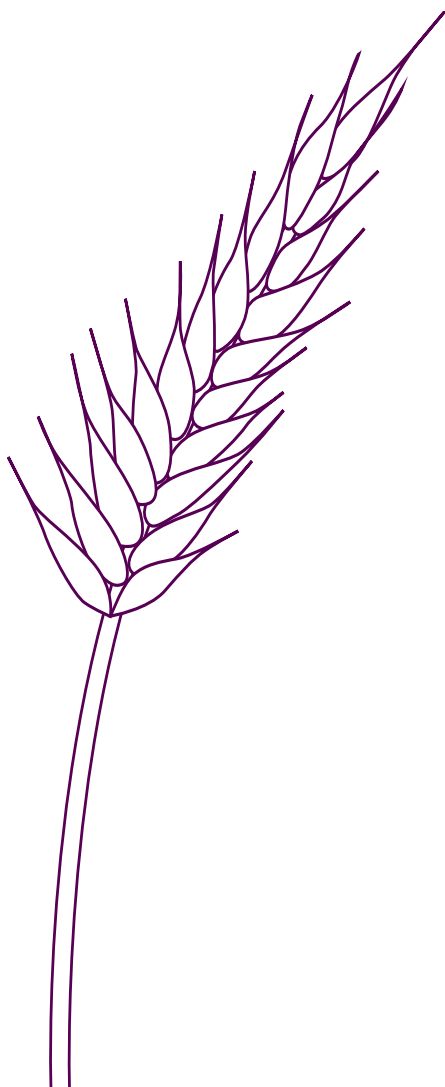


- Transform the organisation of state bureaucracies, the EU Commissions and organisations that produce social, environmental, economic and technical knowledge (research institutes, universities, government, civil society organisations, etc.). This will include building the capacity of technical and scientific staff in the participatory skills, attitudes and behaviour needed to learn from citizens; including representatives of diverse citizen groups and farmers in the governance and the membership of budget allocation committees of public sector planning and research institutes; and reorganising management and incentive systems to reward experimentation and participatory initiatives.



- Transform existing seed regulations to allow for the continued existence of heterogeneous and highly diverse crop varieties needed for resilient food systems.
- Revise the IPR system to ensure that knowledge, genetic resources and innovations remain accessible to all.
- Reform and transform the European Common Agricultural Policy (CAP) to i) reverse the decline in the number of farmers and farms in the EU and ii) create an enabling context in which farmers' have more time and material security to directly - and meaningfully - participate in framing policies and research priorities for food and agriculture.
- Promote non state-led forms of deliberative democracy and actions that make EU state institutions and corporations accountable to citizens.
- Help European farmers and other citizens to work together to strengthen their voices in setting research agendas and in framing policies and regulatory frameworks for the management of agricultural biodiversity, and to create processes in which expert knowledge and corporations are put under public scrutiny through appropriate methods for deliberation, social inclusion and legal action.

1



1. Introduction

“Agriculture has a footprint on all of the big environmental issues, so as the world considers climate change, biodiversity, land degradation, water quality, etc. they must also consider agriculture which lies at the centre of these issues and poses some uncomfortable challenges that need to be faced. We’ve got to make sure the footprint of agriculture on climate change is lessened; we have to make sure that we don’t degrade our soil, we don’t degrade the water, and we don’t have adverse effects on biodiversity. *There are some major challenges, but we believe that by combining local and traditional knowledge with formal knowledge these challenges can be met.*” Professor Robert Watson (IAASTD, 2008) (my emphasis).

This paper explores how participatory research can help to rise to the challenges facing European agriculture outlined by Professor Watson in the above quote, i.e. how local and traditional knowledge can be combined with formal knowledge, and why such an approach is important. The paper draws partly on experiences from the Farm Seed Opportunities project (FSO), whose aim is to contribute to the on-farm conservation, improvement and management of agro-biodiversity in Europe. The FSO partnership includes public-sector research institutes, peasant networks and organic farmers’ associations from six European countries. It is funded by the European Union (EU).¹ In addition to identifying appropriate regulatory frameworks for the on-farm conservation and sustainable use of seed diversity, the FSO also seeks to develop innovative participatory approaches for the management of agricultural biodiversity in Europe. Particular attention has been paid to how—and under what conditions—participatory plant breeding and seed production can be more widely encouraged in Europe.

In this paper we first highlight the importance of agricultural biodiversity for sustainable agriculture and resilience to change, including climate change. Next, we clarify what ‘participation’ means and how it is used by different partners involved in participatory research initiatives such as the FSO project. We then discuss some of the key challenges for participatory research into the on-farm conservation and management of agricultural biodiversity in the European Union (EU). The three main challenges are: i) transforming knowledge and ways of knowing for the local adaptive management of

¹ IIED was one of the core partners in the FSO project along with 11 other European partners (research institutes and farmer networks). See www.farmseed.net/home for more information.



agricultural biodiversity; ii) scaling up and institutionalising participatory research and innovation in plant breeding and varietal selection; and iii) managing the impacts of globalisation on participatory management of agricultural biodiversity in Europe. We explore these challenges and offer some recommendations for the European Union in meeting them. The analysis presented here is based on observations from the FSO project as well as other case studies and the wider literature.

1.1 The importance of biodiversity for the next agricultural revolution

What kind of knowledge, science and technology is needed to solve agriculture's pressing social and environmental problems? After a three-year global study designed to answer this question, the recent International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD)² concluded that *"Business as usual is not an option"* (IAASTD, 2008) and called for a fundamental re-orientation of agricultural research so that it can build on both local and scientific knowledge.

The authors of this massive study emphasised the multi-functionality of agriculture in providing not only food, fibre, raw materials and biomass, but also vital ecosystem functions, landscape and cultures. Agricultural biodiversity in particular was highlighted as being fundamental to how well people can respond and adapt to climate change; how effectively landscapes absorb and store carbon; and how important vegetation and ecosystems are for reducing the adverse impacts of climate and other changes. Agricultural biodiversity is indeed fundamental for resilience and adaptation to change. It includes:

- the diversity of genetic resources (varieties, breeds, species, whether cultivated, reared or wild) used directly or indirectly for food and agriculture;
- the diversity of species that support production (soil biota, pollinators, predators, etc.) and those in the wider environment that support agroecosystems (agricultural, pastoral, forest and aquatic); and
- the diversity of the agroecosystems³ themselves.

This complex web of life plays multiple roles and functions in sustaining agroecosystems, landscapes, livelihoods and a habitable planet Earth (Box 1).

2 The IAASTD was launched as an intergovernmental process guided by a multi-stakeholder, 60-person strong office, under the co-sponsorship of the UN Food and Agriculture Organization (FAO), Global Environment Facility (GEF), United Nations Development Program (UNDP), United Nations Environment Program (UNEP), UNESCO, the World Bank and the World Health Organization (WHO). Outcomes were summarised in 22 key findings presented in the final IAASTD report, which was approved by 58 governments in 2008.

3 Agroecosystems are those ecosystems that are used for agriculture, and comprise polycultures, monocultures, and mixed systems, including crop-livestock systems (rice-fish), agroforestry, agro-silvo-pastoral systems and aquaculture, as well as rangelands, pastures and fallow lands (FAO, 1999).

Box 1. Agricultural biodiversity's role in the agroecosystem and wider landscape

Biomass production and yield efficiency. Diverse agroecosystems (such as mixed herds, intercrops, integrated agro-sylvo-pastoral, fish polycultures) are generally highly productive in terms of their use of energy and unit land area (or unit water volume). This efficiency is largely a product of the systems' biological and structural complexity, increasing the variety of functional linkages and synergies between different components.

Decomposition and nutrient cycling. Decomposer communities are highly diverse and are central to nutrient cycling, organic matter dynamics, carbon fixation and other ecosystem functions. However, detailed knowledge of the extent and functions of this diversity is limited, especially in aquatic environments.

Soil and water conservation. Soil, water and nutrient conservation have been improved with the use of windbreaks, contour farming with appropriate border crops and cover crops in a wide range of agroecosystems.

Pest control. Predators, parasitic wasps and micro-organisms play a key role in controlling agricultural pests and diseases. For example, more than 90% of potential crop insect pests are controlled by natural enemies living in natural and semi-natural areas adjacent to farmlands. The substitution of pesticides for natural pest control services is estimated to cost US \$70 billion per year. Many methods of pest control, both traditional and modern, rely on biodiversity.

Pollination and dispersal. There are more than 100,000 known pollinators (bees, butterflies, beetles, birds, flies and bats). Pollination mediated by components of agricultural biodiversity is an important function in a variety of terrestrial agroecosystems. About half of all plant species, including food-producing crop species, are pollinated by animals. In 2010, the contribution of insect pollinators to agricultural output was estimated at US\$190 billion.

Biodiversity conservation. There is no strict divide between 'wild' and 'domesticated' species important for food and livelihoods. Whilst not necessarily the subject of conscious management by herders or farmers, many wild plant and animal species thrive in, or are dependent on, agroecosystems, especially structurally and biologically complex agroecosystems.

Climate regulation. Through the sequestration and fixing of carbon—and as a source of atmospheric constituents—agricultural biodiversity contributes significantly to the chemical composition and properties of the atmosphere and thus has a marked influence on climate. In turn changes in climate feed back strongly to affect agricultural biodiversity and its multiple functions, such as influencing gaseous emissions by biological organisms.

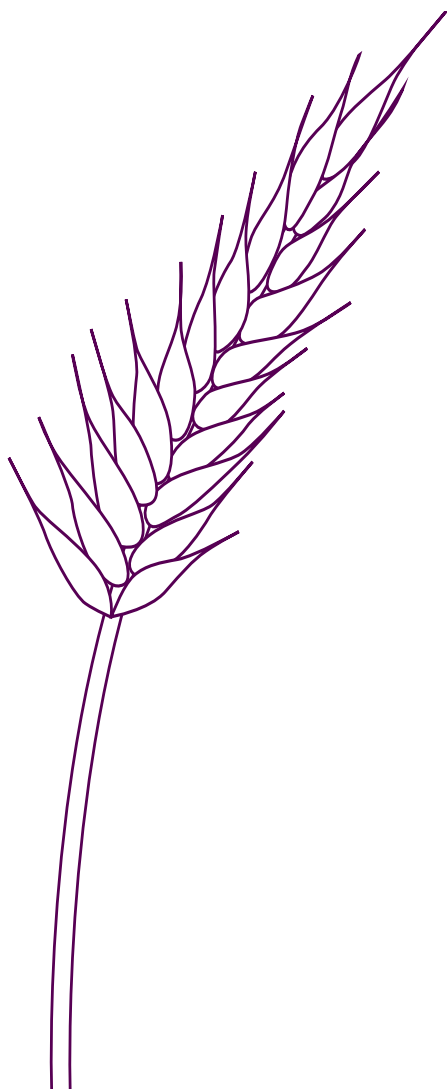
Functions in the water cycle. Agricultural biodiversity plays a crucial role in cycling water from the soil to the atmosphere and back. It also has measurable impacts on water quality.

Sources: FAO, 1999; Pimbert, 1999; TEBB, 2010.



The IAASTD report also acknowledged the key role that the local knowledge of farmers, particularly women, and other small-scale food producers should play in the future in developing appropriate technologies and knowledge systems, as well as their central role in providing global food security. It emphasises that by increasing investments in biodiversity-rich agroecological farming and adopting an equitable international trading framework, it is possible to establish more socially and ecologically resilient systems whilst maintaining current levels of productivity and improving the profitability of small-scale farmers. The IAASTD report says science must complement local knowledge and support sustainable farming to achieve the “best mix” of economic, social and environmental outcomes (IAASTD, 2008). This calls for more inclusive participation in the production and validation of knowledge for food and agriculture.

2



Defining participation: what type, where, when and how?

Over the last 20 years there have been several noteworthy initiatives in participatory plant breeding (PPB) and participatory varietal selection (PVS) in cereals, legumes and vegetable crops, in both tropical and temperate regions of the world. Many of these innovative initiatives have been well documented in the scientific and peer-reviewed literature (for example in Almekinders, 2007; Ceccarelli and Grando, 2007 and 2009; Dawson *et al.*, 2008; Dorward *et al.*, 2007; Pimbert, 1991; Sperling *et al.*, 1993 and 2001; Sthapit *et al.*, 1996; Vernooy, 2003; Weltzein and Christinck, 2008; Whitcomb *et al.*, 1996 and 2005). Similarly, there have been remarkable examples of participatory research in agroecology—which is the application of ecology and whole systems approaches to the design and management of sustainable agroecosystems (De Schutter, 2011). Agroecological innovations are based on traditional knowledge and local food system experiences; they link ecology, culture, economics and society to sustain agricultural production, healthy environments and viable food and farming communities. Some of the more notable examples of participatory knowledge creation in agroecology include the *Campesino a Campesino* movement in Central America (Holt Gimenez, 2006); action research on sustaining local food systems, biodiversity and livelihoods in South India, Peru, Iran and Indonesia (Fakih *et al.*, 2003; Pimbert *et al.*, in press); and the social process methodology used in the construction of sustainable peasant agriculture and food sovereignty in Cuba (Rosset *et al.*, 2011).

But whilst all these initiatives in plant breeding and agroecological research describe themselves as ‘participatory’, there is a need to carefully distinguish among the different kinds of participation involved in each case. For example, Table 1 shows seven different types of participation, ranging from passive to more active forms of participation. This typology is useful because it can help to better define and assess the ‘quality’ of participation in each research initiative—past, present and future. The typology in Table 1 can also help visualise and clarify the roles, rights and responsibilities of different actors (scientists, farmers...) involved in future programmes for on-farm conservation and management of agricultural biodiversity in Europe.

Table 1. A typology of participation

Typology	Components of each type
1. Passive participation	People participate by being told what is going to happen or has already happened. It involves the unilateral announcement by an administration or project management without listening to people's responses. The information being shared belongs only to external professionals.
2. Participation in information giving	People participate by answering questions posed by extractive researchers and project managers using questionnaire surveys or similar approaches. People do not have the opportunity to influence proceedings, as the findings of the research or project design are neither shared nor checked for accuracy.
3. Participation by consultation	People participate by being consulted, and external agents listen to views. These external agents define both problems and solutions, and may modify these in the light of people's responses. Such a consultative process does not concede any share in decision-making and professionals are under no obligation to take on board people's views.
4. Participation for material incentives	People participate by providing resources, for example labour, in return for food, cash or other material incentives. Much in-situ research and bioprospecting falls into this category, as rural people provide the fields but are not involved in the experimentation or the process of learning. This is commonly called participation, yet people have no stake in prolonging activities when the incentives end.
5. Functional participation	People participate by forming groups to meet predetermined objectives related to the project, which can involve the development or promotion of externally initiated social organisation. Such involvement does not tend to be at the early stages of project cycles or planning, but rather after major decisions have been made. These institutions tend to be dependent on external initiators and facilitators, but may become self-dependent.
6. Interactive participation	People participate in joint analysis, which leads to action plans and the formation of new local groups or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple perspectives and make use of systematic and structured learning processes. These groups take control over local decisions, and so people have a stake in maintaining structures or practices.
7. Self-mobilisation	People participate by taking initiatives independent of external institutions to change systems. Such self-initiated mobilisation and collective action may or may not challenge existing inequitable distributions of wealth and power.

(Adapted from Pretty, 1994)

From the perspective of the European Union, an important implication of the typology in Table 1 is that the *meaning* of participation should be clearly spelt out in all EU-funded research and development for on-farm conservation and management of agricultural biodiversity.

When analysing the kind of participation in which different actors are engaged it is also important to look at the whole research and development cycle. Key moments or stages when participation can occur throughout the research and development cycle are during:

- i) evaluations of results and impacts of research, as well as risk assessments;
- ii) scientific and technological research—the production and validation of knowledge;
- iii) the choice of upstream strategic priorities for research and development (R&D);
and
- iv) the framing of policies for agricultural development and the management of agricultural biodiversity.

This understanding of *when* and *where* farmers and other citizens can directly intervene in the R&D cycle is crucially important. A focus on the entire R&D cycle allows for a shift from narrow concepts of participatory research that confine non-researchers to ‘end of the pipe’ technology development (e.g. participatory technology development) to a more inclusive approach in which farmers and other citizens can define the *upstream strategic priorities* of research and the governance of food and agricultural research. This more systemic understanding also allows one to situate a particular technology (e.g. a crop variety) in the wider policy context that has shaped the R&D process which generated that specific technology.

For example, most public plant and animal breeding work in Europe is determined by the needs of the various industries on the input and output sides of food production proper. The social context of public plant and animal breeders’ work is such that the directions and uses of public funded research are increasingly specified by those who hold power in the industrial food system (Levins and Lewontin, 1985; Lewontin and Levins, 2007). These trends have become more apparent recently as private companies have massively invested in biotechnology research and development as well as in the newly emerging BANG⁴ technologies. The convergence of BANG technologies planned by and for corporate capital is transforming and further subordinating much of public research to its own corporate ends (ETC, 2010).

Similarly, R&D priorities for agricultural machinery and food processing technologies are biased towards controllable uniformity in Europe. Current harvesting technology cannot cope with multiple cropping systems and situations in which several varieties of the same crop are grown together on the same plot of land. Current food processing technology can only tolerate a very small amount of variation in the ‘raw materials’.

4 The term BANG describes the technological convergence of Bits (information technology), Atoms (nanotechnology), Neurons (neurosciences), and Genes (synthetic biology/biotechnology). This concept is becoming entrenched in the science policies of most major governments. The ability to manipulate matter atom by atom is enabling a new fusion of powerful technologies as nanotech, biotech, information technology and neurotechnologies (brain technologies) converge into one common technology platform, with potentially profound impacts on societies and the environment (see ETC, 2008; What Next seminar, 2008 -<http://www.bangseminar.org>).



Powerful supermarkets and retailers usually require such standardisation and thereby drive biodiversity loss along the food chain. Much of agricultural research responds to—and reinforces—the needs of these powerful actors in the food system.

Reclaiming research for the public good in Europe thus depends on restructuring R&D to allow for citizens' participation at all levels—democratising food and agricultural research so that citizens can determine upstream strategic priorities, the allocation of funds and policies for science and technology (Pimbert, 2010). And the knowledge of farmers, food workers, and citizen-consumers will also be key in re-designing farm tools, machines, cropping patterns and food processing technology that can cope with—and encourage—increasing biodiversity in agroecosystems and the entire food chain from seed to plate. In turn, resilience to shocks and stresses such as climate change depends on a deep structural transformation within industrial food and farming to replace controllable uniformity and standardisation with locally-managed biological diversity adapted to a myriad of specific and distinct contexts.

Citizens' engagement with public research must make it possible for them to set the agenda and ensure that research addresses both the structural and immediate causes of the multiple crisis induced by industrial food and farming, including biodiversity loss; cost-price squeeze causing farm bankruptcies, impoverishment and migration; and vulnerability to climate change. In this context, participatory methods and deliberative processes that genuinely include different actors are important in 'opening up' the entire research cycle to greater citizens' oversight and democratic control over *what* knowledge is produced, *for whom*, *how*, *where* and with *what* likely effects.

In practice, such a power-equalising dynamic seeks to involve both researchers and non-researchers in close co-operative engagement throughout the R&D cycle, jointly producing new knowledge and with mutual learning during the process. As such, this form of co-operative inquiry and participatory knowledge creation implies a significant reversal from dominant roles, locations and ways of knowing.

For each of the stages (i to iv) listed above for the entire R&D cycle, different methods are available to directly involve scientists, farmers and other actors in the participatory process. These are described next.

2.1. Participatory methodologies

In recent years there has been a rapid expansion of new participatory methods and approaches in the context of PPB/PVS and more generally in agricultural research and development. These have drawn on many long-established traditions that have put participation, action research and adult education at the forefront of attempts to emancipate disempowered people. To those involved in the wider body of development and conservation programmes, projects and initiatives, these approaches represent a significant departure from standard practice. Some of the changes underway are remarkable. In a growing number of government and non-government institutions, extractive research is being superseded by investigation and analysis by local people

themselves. Methods are being used not just for local people to inform outsiders, but also for people to analyse their own conditions (Chambers, 1992 & 1993; Pimbert, 1991; Pretty and Chambers, 1993).

For both scientific and technological research, as well as the evaluations of PPB/PVS research products and impacts (Stages i and ii above), a suite of methods for participatory inquiry can be combined in different sequences.⁵ Despite the different ways in which these approaches are used, there are important common principles uniting most of them (Pretty, 1994):

- *A defined methodology and systemic learning process*: the focus is on cumulative learning by all the participants and, given the nature of these approaches as systems of learning and action, their use has to be participative.
- *Multiple perspectives*: a central objective is to seek diversity, rather than characterise complexity in terms of average values. The assumption is that different individuals and groups make different evaluations of situations, which lead to different actions. All views of activity or purpose are heavy with interpretation, bias and prejudice, and this implies that there are multiple possible descriptions of any real-world activity.
- *Group learning process*: all involve the recognition that the complexity of the world will only be revealed through group learning. This implies three possible mixes of investigators: from different disciplines, from different sectors and from outside (professionals) and inside (local people) the area.
- *Context specific*: the approaches are flexible enough to be adapted to suit each new set of conditions and actors, and so there are multiple variants.
- *Facilitating experts and stakeholders*: the approaches are concerned with transforming existing activities to try to bring about locally-accepted improvements. The role of the 'expert' is to help people carry out their own research within their own context and so make improvements. These facilitating experts may be stakeholders themselves.
- *Sustained action*: the learning process leads to debate about change, including confronting others' constructions of reality. This debate changes actors'

5 These systems of inquiry include agroecosystems analysis (AEA), beneficiary assessment, diagnosis and design (D&D), *diagnostico rural rapido* (DRR), farmer participatory research, *groupe de recherche et d'appui pour l'auto-promotion paysanne* (GRAAP), *méthode accélérée de recherche participative* (MARP), naturalistic inquiry, participatory analysis and learning methods (PALM), participatory action research (PAR), participatory research methodology (PRM), participatory rural appraisal (PRA), participatory rural appraisal and planning (PRAP), participatory technology development (PTD), participatory urban appraisal (PUA), planning for real, process documentation, rapid appraisal (RA), rapid assessment of agricultural knowledge systems (RAAKS), rapid assessment procedures (RAP), rapid assessment techniques (RAT), rapid catchment analysis (RCA), rapid ethnographic assessment (REA), rapid food security assessment (RFSA), rapid multi-perspective appraisal (RMA), rapid organisational assessment (ROA), Rapid Rural Appraisal (RRA), *samuhik brahman* (joint trek), soft systems methodology (SSM), theatre for development, training for transformation, and visualisation in participatory programmes (VIPPP).



perceptions. Action is agreed through a process of negotiation. The changes that are implemented are therefore a compromise between various conflicting views. Sustained action includes local institution building or strengthening, thus increasing the capacity of people to initiate action on their own (see Borrini-Feyerabend *et al.*, 2007).

When used well, these participatory methodologies allow scientists and other outside professionals to learn *with*, *by* and *from* farmers, food workers, and citizen consumers. They can help create a working relationship in which people's priorities and values become more fully expressed in the production of new knowledge and technologies (Chambers, 2008). Appropriate behaviour and attitudes allow outsiders to establish rapport, convene, catalyse, facilitate, adapt, watch, listen, learn and respect. Meanwhile, the sense of empowerment among non-researchers (farmers, food workers...) grows as *they* map, model, diagram, interview, rank and score, inform and explain, show, discuss and analyse, plan, present and share their knowledge and experience with others.

However, whilst these approaches can support diversity, decentralisation and democracy, they do not by themselves guarantee public participation in science and the design of technologies. Democratic participation in food and agricultural research obviously implies broader reforms within the scientific community and the social forces that largely determine today's public research agenda (IAASTD, 2008; Mac Rae *et al.*, 1989; Pimbert, 2009). As discussed elsewhere, we need to create spaces and processes that allow for more direct citizen participation and pluralism in deciding on the allocation of funds for research, setting upstream strategic research and development (R&D) priorities, validating knowledge and new technologies, ascertaining risks in the face of considerable uncertainties, and framing policies for food and farming (Pimbert, 2009).

These reforms would broaden democratic control over existing public research institutions and universities in order to transform theory and practice. They would involve a range of institutional and methodological innovations to enhance democratic participation, citizen deliberation and inclusion in food and agricultural research in Europe. These innovations are particularly appropriate for involving farmers and citizens in the upstream definition of research priorities and the framing of broad policies for agricultural research and development (Stages iii and iv above). When these methods and approaches are used well, they are part of a process in which professional knowledge, local knowledge, negotiation skills, research skills and democratic values come together to create new knowledge and promote social and ecological change.

These approaches include citizens' juries, scenario workshops, public hearings and visioning exercises (Box 2); they differ substantially in detail and have been applied to a wide range of issues and contexts. They all, however, seek to adopt to varying degrees the criteria of deliberation and inclusion listed in Box 3.

Box 2. Participatory research methods for agricultural biodiversity management: a selection

Many of the methods described below can be combined and used at different stages in the participatory research cycle for the management of biodiversity important for food and agriculture.

Citizens' juries

A citizens' jury is a group of citizens—selected to be a fair representation of the local population—brought together to consider a particular issue set by the local authority. Citizens' juries receive evidence from expert witnesses, whom they can cross-question. The process may last up to several days, at the end of which a report is drawn up setting out the views of the jury, including any differences in opinion. Juries' views are intended to inform government decision making.

Citizens' panels

Research panel

A research panel is a large sample of a local population used as a sounding board by a public sector organisation. It is a form of research which tracks changes in opinion and attitudes over time. In Germany, for example, these panels consist of 500-3,000 participants. Members are recruited either by mail or by telephone as a sample of a given population. Panels have a standing membership and a proportion of their members is replaced regularly. Participants are asked regularly about different issues over a period of time.

Interactive panels

Other models also have a standing membership which may be replaced over time, but they consist of small groups of people who meet regularly to deliberate on issues and make policy recommendations.

Consensus conferences

A panel of lay people who develop their understanding of technical or scientific issues in dialogue with experts. A panel of between 10-20 volunteers is recruited through advertisements. A steering committee is set up with members chosen by the sponsors. The panel's members attend two weekend sessions where they are briefed on the subject and identify the questions they want to ask in the conference. The conference lasts for three or four days and gives the panel a chance to ask experts any outstanding questions. The conference is open to the public and the audience can also ask questions. The panel's members retire and independently of the steering committee prepare a report that sets out their views on the subject. Copies of the report are made available to the conference audience and panel members present key sections to the audience.

Deliberative opinion poll

This method measures informed opinion on an issue. A deliberative poll examines what the public at large thinks when it has had the occasion and information to consider the matter carefully and closely. A baseline survey of opinion and demography is carried out and the participants of the poll are then recruited so that they resemble the wider group both in terms of demography and attitude. Often briefing begins before the event by means of written or/and visual information. Then, over several days, the participants deliberate in smaller groups and compose questions to be put to experts and politicians in plenary group discussions. Their views on a given subject are measured before the poll begins and again once it has finished. Changes in opinion are measured and incorporated into a report. Deliberative polls are often held in conjunction with television companies.

Box 2. Participatory research methods for agricultural biodiversity management: a selection

Visioning exercises and future search conferences

A range of methods (including focus groups) may be used within a visioning exercise, the purpose of which is to establish participants' 'vision' of the kind of future they would like to create. Visioning may be used to inform broad strategy for a locality, or may have a more specific focus (e.g. environmental consultations for Local Agenda 21).

Future search conferences usually involve a two to four-day meeting where participants attempt to create a shared community vision of the future. The meeting brings together those with the power to make decisions with those affected by the decisions to try to agree on a plan of action. The process is managed by a steering group of local people representing key sections of the community. People who are recruited are asked to form several 'stakeholder groups' within the conference. During the process they move from reviewing the past to creating ideal future scenarios. Each of the stakeholder groups explains its vision and then a shared vision is explored. The conference ends with the development of action plans and policy recommendations. Self-selected action groups develop projects and commit themselves to action towards their vision.

Issue forums

These are ongoing bodies which involve regular meetings focusing on a particular issue (e.g., community safety or health promotion). They may have a set membership or operate on an open basis, and are often able to make recommendations to relevant council committees or to share in decision-making processes. In India, for example, issue forums or study circles in villages are spaces where villagers gather to discuss specific subjects of interest, e.g. the impact of hybrid varieties or genetically modified organisms. Sometimes they will call in outside experts to help. The understanding and information that they generate is then used in the village assembly decision-making processes.

Multi-criteria mapping

Multi-criteria mapping attempts to combine the transparency of numerical approaches with the unconstrained framing of discursive deliberations. The technique involves a rather complex series of steps, including: deciding the subject area; defining the basic policy options; selecting the participants; conducting individual interviews (two to three hour sessions where additional options are selected, evaluative criteria are defined, options are scored and relative weighting is given to criteria); having researchers carrying out quantitative and qualitative analyses; providing feedback on preliminary results to the participants; developing deliberations among participants; and, after a final analysis, producing a report and policy recommendations.

Sources: adapted from Chambers, 1992; Clark, 1998; ESRC, 1998; Holland and Blackburn, 1998; Lowndes and Stoker, 1998; Coote and Lenaghan, 1997; Stirling and Maher, 1999; del Valle, 1999; NEF, 1998.



Box 3. Some features of deliberative and inclusive processes (DIPs)

- **Deliberation** is defined as ‘careful consideration’ or ‘the discussion of reasons for and against’. Deliberation is a common, if not inherent, component of all decision making in democratic societies.
- **Inclusion** is the action of involving others and an inclusive decision-making process is based on the active involvement of multiple social actors. It usually emphasises the participation of previously excluded citizens.
- **Social interaction.** This normally incorporates face-to-face meetings between those involved.
- There is a **dependence** on language through discussion and debate. This is usually in the form of verbal and visual constructions rather than written text.
- A deliberative process assumes that, at least initially, there are **different positions** held by the participants and that these views are all respected.
- DIPs are designed to enable participants to **evaluate and re-evaluate** their positions in the light of different perspectives and new evidence.
- The form of **negotiation** is often seen as containing value over and above the quality of the decisions that emerge. Participants share a commitment to the resolution of problems through public reasoning and dialogue aimed at mutual understanding, even if consensus is not being achieved or even sought.
- There is the recognition that, while the goal is usually to reach decisions, or at least positions upon which decisions can subsequently be taken, an **unhurried, reflective and reasonably open-ended discussion** is required for those decisions to be solidly grounded and owned.

Source: adapted from Holmes and Scoones, 2000 and references therein.

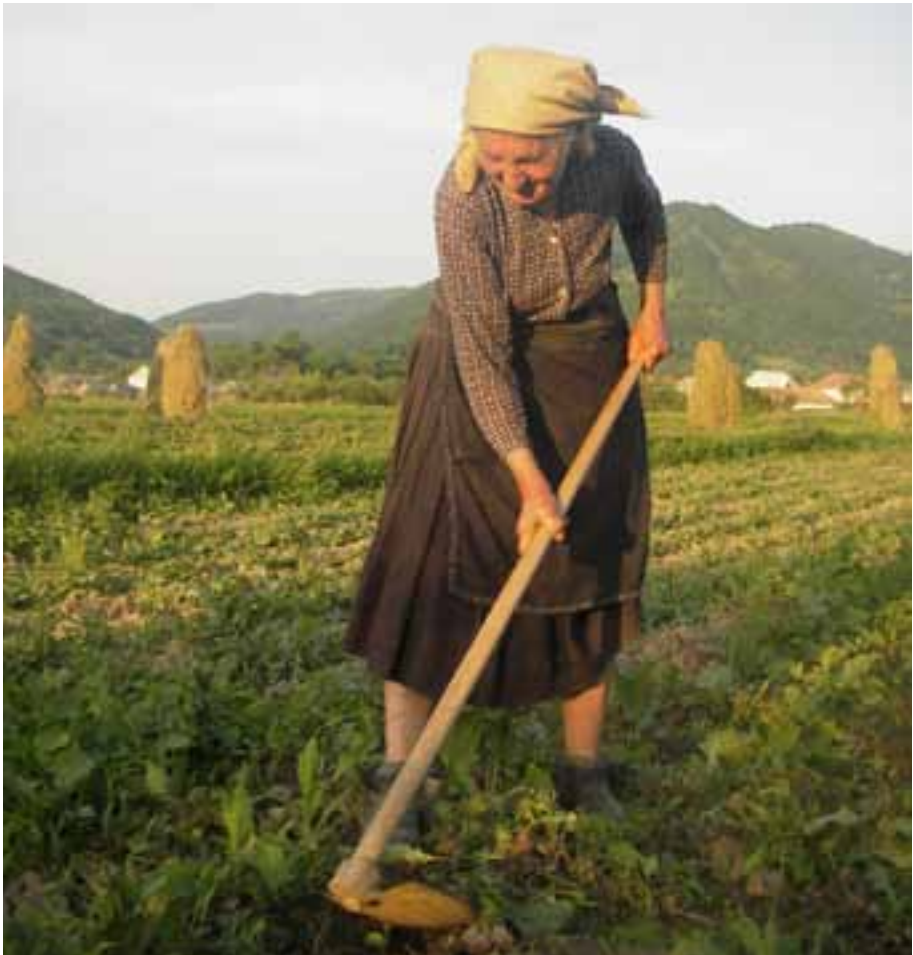
2.2. Spaces for participatory learning and action

Platforms and local organisations that bring relevant actors together are key for mobilising capacity for social learning, negotiation and collective action for research into the management of agricultural biodiversity. Platforms and local groups range from farmer networks to farmer field schools (FFS), user groups, co-management bodies and learning groups. Over time, reflections on participatory practice have led to more critical views on the nature of platforms for local adaptive management. For example, platforms are not always welcoming spaces for women, nor inclusive of the weak and marginalised, nor free from manipulation and co-option by more powerful insiders and/or outsiders.

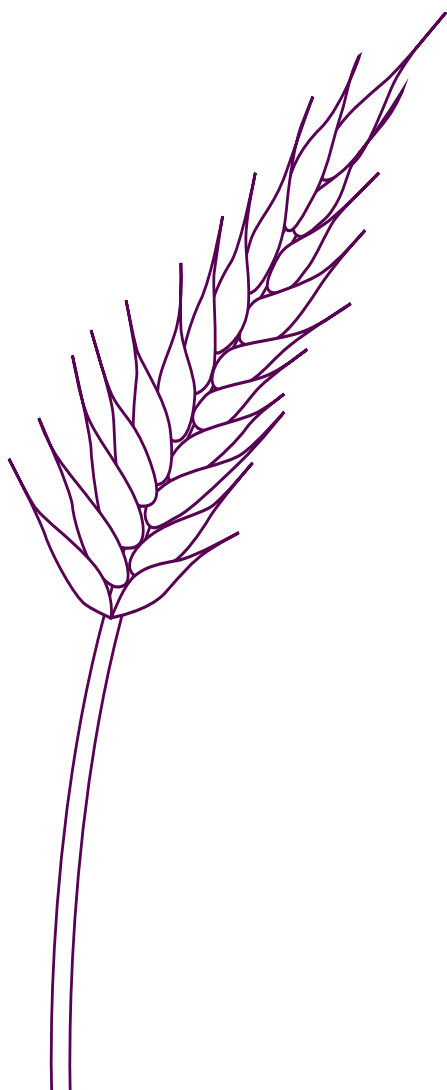
More generally, important differences exist between two radically different types of spaces for participation: *invited spaces from above* and *popular or citizen spaces*. Examples of the former are government and donor-led efforts to set up co-management committees, resource user groups and research platforms like the FSO. In contrast, citizen or popular spaces are created by people who come together to create arenas

over which they have more control, e.g. farmers' platforms for negotiation and collective action; do-it-yourself citizens' juries that frame alternative policies, etc. Examples of such popular spaces include recent citizens' juries on the priorities and governance of food and agricultural research in India (www.raitateerpu.org) and West Africa (Pimbert *et al.*, 2010; www.excludedvoices.org).

Whilst there are notable exceptions, popular spaces are arenas within which, and from which, ordinary citizens can gain the confidence to use their voice, analyse, deliberate, frame alternatives and action, mobilise, build alliances and act (Pimbert and Wakeford, 2001; Pimbert, 2010). Creating and nurturing such safe spaces is essential for intercultural dialogue, mutual learning, and embracing the experience, expertise, fresh thinking, energy, and perspectives of hitherto excluded actors, including women and the youth. But it is noteworthy that such popular spaces may also reproduce subtle forms of exclusion in the absence of a *conscious* social commitment to politics of freedom, equity and gender inclusion.



3



Challenges for participatory research in the European Union

3.1. Transforming research for the local adaptive management of agricultural biodiversity

A greater emphasis on participatory research and locally-driven innovation in the EU is essential to offset two dominant biases:

Reductionism and the neglect of dynamic complexity. The science of parts (reductionism), *as opposed to knowledge and ways of knowing that integrate the parts*, has largely failed to guide agroecosystem management. Narrow lens, universal and reductionist explanatory models have generated a crisis in natural resource management through their inability to come to terms with the dynamic complexity and variation within and among ecosystems (Gunderson *et al.*, 1995; Berkes *et al.*, 2003). Daily, seasonal and longer-term changes in the spatial structure of ecosystems are apparent at the broad landscape level right down to small plots of cultivated land. Environmental dynamics and effects are usually long term and their complexity calls for more holistic and transdisciplinary ways of knowing. Moreover, new ecological knowledge systems need to work with the complexity of ecosystems in a constructivist approach to science so that innovation and learning becomes embedded in management. This emphasises the need for flexible individual and collective responses in which farmers and local resource users are central actors in analysis, planning, negotiations and action. Participatory learning and action is thus key for the local adaptive management of biodiversity and agroecosystems (Holling *et al.*, 1998; Borrini-Feyerabend *et al.*, 2007).

Social marginalisation and exclusion. This manifests itself through the neglect of farmers and local people, their knowledge, priorities, management systems, institutions and social organisation, and the value to them of local assets (natural, social, cultural...). Within this dynamic of 'denying and undermining the other', powerful actors seek to control agricultural biodiversity management through discourse, law and coercion.



Policies and practice, therefore, aim to exclude people and so discourage all forms of local participation in the management of agricultural biodiversity. Meanwhile, reductionist knowledge selectively favours corporate profits as well as control over labour and nature in simplified and standardised production systems. Such top-down, imposed natural resource management all too often results in huge social and ecological costs in areas where rural people directly depend on biodiversity-rich farming systems for their livelihoods. In contrast, methods and approaches for participatory learning and action offer an alternative to create spaces for 'voices from below' and *potentially* help re-connect farmers and citizens with the biodiversity that sustains their livelihoods and culture.

Eliciting and making visible diverse *local* realities, priorities, categories and indicators through participatory research is very much needed today in the EU to challenge or complement the top-down, 'one size fits all' science, policy and practice applied to on-farm conservation and the management of agricultural biodiversity. However, claims that one tradition of knowledge and practice (local, vernacular systems *versus* external science-based systems) is always better than the other may ultimately restrict possibilities. Instead, a key challenge for participatory learning and action lies in creating *safe* spaces where plural and complementary traditions of knowledge can be purposefully combined for the local adaptive management of agricultural biodiversity and their equitable use.



At heart, local adaptive management of agricultural biodiversity depends on platforms of local resource users and other citizens which provide safe spaces to deliberate, arbitrate, act on feedback from the environment and *produce new knowledge for action*. This implies a greater commitment to democratic pluralism and cross-cultural dialogue in the production and validation of knowledge. And in future, the framing and boundary conditions for participatory research, learning and action need to be kept as open and flexible as possible, and facilitators need to be comfortable with diversity, surprise and the ‘unusual’.

The FSO project illustrates how participatory research can enrich varietal assessments. The aim was to study the evolution of landraces and commercial varieties when displaced from their region of origin and seed multiplication environments.⁶ In multi-location on-farm studies of the responses of different crop varieties grown in different environments, FSO scientists and farmers used well-established quantitative indicators to compare and contrast varietal performance within and between locations (Serpoly *et al.*, in press). In addition to quantitative measures, FSO partners also identified qualitative and experience-based indicators used by farmers to assess the performance of the crop varieties grown in their fields (Box 4).

⁶ The experimental protocol in FSO was designed against the policy context of regulations on conservation varieties. One of the main goals was to measure objective criteria on landraces as they evolved in organic agriculture conditions, in order to provide information for the European Commission on the impacts on diversity of farmer exchange and cultivation of these landraces. See Box 10 for further details.

Box 4. Seeing plant varieties through the eyes of farmers

Farmers involved in the FSO project rely on their own criteria and indicators to assess crop varieties and their performance on the farm. Overall, farmers emphasise more qualitative criteria and experiential-based indicators than those used by scientists in the FSO project.

For example, in the early phases of participatory plant breeding work, farmers criticised researchers for using such terms as “genetic material”, “weeds” and “quantifiable selection criteria”. In contrast, when describing their relationship with their crops, farmers see them as *living* plants and companions, and they never view the plant as an *object*. They have a strong emotional attachment to plants and see them as a source of knowledge and inspiration, provided one has a friendly and empathetic relationship with them. *“If you know how to dialogue with her, really allow her to enter inside you and speak to you.....Because I do not know anything about wheat, it’s the wheat plants that teach me everything”* (J.F.Berthelot, a French farmer, pers comm.).

During the course of the FSO project it became more apparent that each participating farmer has his or her own intimate way of describing plants that do well, are healthy and show good qualities. For example, Jean Francois Berthelot talks of “wheat plants that are laughing” (*“un blé qui rigolle”*). For Bernard Ronot, the wheat plants must radiate colour and energy (*“ça doit cracher”*) and for Florent Mercier “the straw of wheat plants can be tall but must be strong” (*“les pailles peuvent être grandes mais doivent être costaudes”*). Other farmers assess the energy radiance and the aura of the wheat plants as evidence of good health and performance in their fields. Farmers’ quality criteria for crop varieties also include taste, smell, colour, as well as the ‘sound’ and ‘music’ generated when seeds of the same variety are poured out of a bag onto a firm surface. Seed varieties nurtured and grown by these FSO farmers are thus experienced in a deeply holistic and sensual way. Farmers’ assessments of crop varieties embrace both quantitative criteria (yield, disease resistance, etc.), as well as qualitative indicators that emerge from a sensual and emotional relationship with plants and the living environment.

This emotional bond with plants is seen as a key source of more holistic knowledge and action which recognises and builds on the highly dynamic nature of plant-environment interactions. For example, many FSO farmers fixate less on finished products (i.e. crop varieties), giving much more importance to the ongoing, open-ended process that generates crop variability and adaptation to highly diverse and ever changing conditions. *“We are not just asking for varieties. We want a permanent process, a way of working that allows us to do crop breeding and selection that can improve plant populations in each locality. Selection work should thus guide the evolution of plants, helping them to diversify and adaptively respond to unique local contexts and micro-environments”* (French farmers views presented at La Ferme du Moulon, 2010).

Sources: Observations and conversations with FSO farmers between 2007 and 2010; INRA (2010), *Compte Rendu réunion Ferme du Moulon*, 9-10 February 2010.

Given the FSO project objectives and emphasis on participatory research, farmers’ criteria and indicators are very important for two reasons. First, they represent and reflect farmers’ world view and ways of seeing and experiencing plants and the environments they live in. Second, these indicators help one to better understand the knowledge system which guides farmers’ varietal selection work and management

of on-farm agricultural biodiversity. To be effective, participatory research on the management of agricultural biodiversity needs to build on the complementarity and uniqueness of the different evaluation criteria and indicators used by both farmers and scientists.

Thus, combining at least four types of indicators in a single process may help deal with increasingly uncertain change in both social and ecological processes:

- Experiential indicators used by farmers which reflect *experience-based* changes in environmental or socio-economic conditions. These are site specific and reflect the differentiated needs and expectations of community members.
- Technical or scientific indicators that are universal, disciplinary and quantitative enough to allow for comparisons between locations and across time.
- Indicators that can help relate scientific knowledge and methods to local peoples' experiences.
- Indicators that can help relate local people's knowledge to scientific methods and knowledge.

Complementarities between—rather than opposition of—scientist and farmer perspectives are key here. The FSO programme tried to combine both the scientific approach and analysis with farmers' intuition and knowledge in a mutually-beneficial way. Most breeders involved in the FSO project agree that selection is as much an art as a science, and that an intuitive sense of the plant is essential to success. In the multi-location on-farm studies mentioned above, the FSO scientists involved clearly valued the farmers' knowledge of their farms and their plants as much as the quantitative data they collected and the analyses they did. An important objective for the FSO scientists was to provide the farmers' network with as much information as a formal research programme would have in order to complement their observations and to work with them in evaluating the variable responses of plants grown on their farms and when evaluating their selections. Instead of opposing scientific and farmer viewpoints, FSO partners thus actively looked for synergies between these forms of knowledge and how they might be combined to give a fuller understanding of complex systems. Acknowledging difference and this search for common ground were important in building mutual respect and a more collegial relationship between the farmers and scientists involved.

Learning to better 'acknowledge difference' is a key challenge for future EU projects. Different social actors may have different views of what constitutes a positive impact, as well as different criteria of evaluation. Different indicators are likely to be used by women and men, the poor and rich, the young and old, and residents and migrants. For instance, indicators used to evaluate the performance and impacts of participatory plant breeding are likely to differ according to the individual's degree of dependence on biodiversity. Thus, decision makers at different levels— e.g. an organic farmer and



a national policy maker— use different kinds of information to guide their decisions. Participatory research on the management of agricultural biodiversity thus needs to sensitively explore and build upon such different perspectives of what is relevant and important. In this regard, it is worth emphasising that the analysis of gender differences in the participatory management of agricultural biodiversity remains as much a challenge today as it was at the beginning of this decade (e.g. see Farnworth and Jiggins, 2003).

The process described here is all about bridging the local and global to generate the context-specific knowledge (social and ecological) needed to sustain livelihoods and agricultural landscapes in the face of dynamic complexity and uncertain change. The kind of knowledge that emerges from this decentralised process of social learning has been well described by James Scott in his book *Seeing Like a State* (1998). He speaks of “*forms of knowledge embedded in local experience*” (*mêtis*) and sharply contrasts them with “*the more general, abstract knowledge displayed by the state and technical agencies*”. *Mêtis*, says Scott, “*is plastic, local and divergent...It is, in fact, the idiosyncrasies of mêtis, its contextualities, and its fragmentation that make it so permeable, so open to new ideas*”. This kind of participatory, experiential understanding takes involvement with our surroundings seriously. Its criteria of validation and quality are much broader than those of the positivist social and natural sciences that still inform much of ago-biodiversity management today in Europe. As the experience of the French farmer seed networks suggests, this way of knowing can also generate radically new knowledge for the dynamic management of agro-biodiversity (Box 5).

All members of such networks of knowledge producers and users (Box 5) effectively act as an ‘extended peer community’. As active participants they introduce ‘facts’ and sources of knowledge which scientists working in standardised and idealised research conditions simply cannot factor in and/or assess. The subsequent cross-checking of opinions, joint analysis of information collected, citizen deliberations and peer to peer reviews are all involved in the *in situ* validation of useful knowledge. This extended peer review is a formidable asset at a time when citizens and their communities are faced with the open-ended uncertainties of a fast changing world (environmental and climate change, spread of new diseases, unstable markets, political change....). These autonomous networks for learning and action contribute to the emergence of a “*post-normal science*”⁷ (Funtowicz and Ravetz, 1994). Post-normal science is the sort of inquiry in which the facts are uncertain, values are often in dispute, stakes are high and decisions are urgent. Its core ideas include an extended peer community and the recognition of a plurality of legitimate perspectives on every issue.

7 Post-normal science reflects three key insights: i) these times are far from normal: uncertainty now rules political and environmental affairs; ii) normal puzzle solving science is now thoroughly inadequate as a method and a perspective for solving the great social and environmental issues of our times; iii) extended peer communities of citizens can no longer be relegated to second class status, and their special knowledge can no longer be dismissed as ‘unscientific’, inferior or bogus (see Ravetz and Funtowicz, 2008).

Box 5. Farmer networks transforming the theory and practice of plant breeding in France

Farmers who grow crops in low external input systems or under organic farming conditions are keen to find seeds adapted to their specific cultivation practices. They complain that commercial varieties do not grow well in poor soils when no chemical fertilisers and pesticides are used. Moreover, farming with no or very few external inputs reveals the heterogeneity of their farming environment and the corresponding need for diversity in their crop varieties. And they have many different needs and uses for their crops: farmers rearing animals and crops in mixed farms need long stem cereals which provide more straw; farmers practising permaculture require early sowing or deep rooting crop varieties; and farmers who produce their own bread are especially interested in the taste, colour and nutritional quality of the bread they make from their own cereals. The standard, industrial farming varieties offered by public and private plant breeding programmes fail to meet the diverse needs of these farmers and their land.

In 2003, the *Réseau Semences Paysannes* (the Peasant Seeds Network) was created in France by the *Confédération Paysanne*, the National Coordination of Defenders of Farm Seeds, and several organic farmers' associations. The *Réseau Semences Paysannes* is made up of 50 member organisations and builds on the earlier work of French seed savers, focusing not only on vegetables and fruit, but also on cereals, oilseeds and grapevines. Members of the *Réseau Semences Paysannes* (RSP) have initiated their own plant breeding based on traditional crop varieties.

Since 2003 the RSP has worked with a small group of plant breeders from INRA, the French National Agricultural Research Institute. Participatory plant breeding work has so far primarily focused on wheat, maize and crucifers. This process of co-inquiry between scientists and farmers has generated a number of tensions, as well as new opportunities for meaningful change:

- In sharp contrast with mainstream science, the RSP farmers clearly reject the reductionist, utilitarian and mechanistic view of the living world. Their concepts and categories of knowledge do not sit well within the quantifying-instrumental approach of conventional plant breeding. This has created tensions with well-meaning researchers from INRA, whose language—and its implicit assumptions—reflects and reinforces an instrumentalist view of nature. For example, as mentioned above, in the early phases of participatory plant breeding work, farmers criticised researchers for using such terms as “genetic material”, “weeds” and “quantifiable selection criteria”. In contrast, farmers’ emotional bond with plants is seen as a key source of knowledge and it clearly positions farmers outside the positivist scientific paradigm that values a cool ‘objective detachment’ in the pursuit of knowledge.
- A few RSP farmers reject the studies of heredity based on experimental analysis and many others in this farmer network value a more holistic and phenomenological approach to understanding their interactions with plants and the living environment. Phenomenology is a body of knowledge which relates empirical observations of phenomena to each other and tries to extract the essential features and the essence of what one experiences. The farmers’ ways of knowing are thus radically different from the epistemological norms of mainstream plant genetics and breeding as practiced by the vast majority of plant breeders in France.
- The scientists working with the RSP and, more generally on PPB and PVS in France, represent a very small percentage of the total number of researchers employed by INRA (8 out of a total of 8,000!). Moreover, all the INRA scientists working with the RSP farmers are women. For this minority of scientists it is clear that an alternative research paradigm is urgently needed within INRA and the EU.

Box 5. Farmer networks transforming the theory and practice of plant breeding in France

They do believe that science can give us a greater appreciation and understanding of diversity, adaptation and evolution. But whilst they may use objective criteria and fairly reductionist measures, their declared goal is always to put this in context of the larger picture and work towards a more holistic understanding. Rather than seeing the quantification step as 'objectifying' the plants, they argue that it can give us further insight into the intrinsic beauty of how nature works. To date, the RSP and FSO experience shows that the attitude of sensitive inquiry of this minority of researchers is a potentially important source of epistemological convergence and meaningful dialogue between scientists and farmers.

As the process of co-inquiry with more open-minded scientists unfolds, it is becoming more apparent that the farmers' experiential knowledge and phenomenological understanding of the living world resonate with new insights from modern genetics and biology. This is true, for example, in the areas of fluid genomes and indeterminate relations between genes and the environment (Commoner, 2002; Ho, 2003); non-linear dynamics, plasticity and the emergence of new forms; epigenetic effects in which the environment modulates genetic expression and leads to heritable phenotypic changes; metamorphosis and process transformation in growth, development and evolution; emergent properties and the self-organisation of the living world (Pouteau, 2007a&b). Ultimately, new forms of plant breeding based on a more holistic science of dynamic complexity and participants' engagement with the living world may grow out of these conversations between farmers and scientists as they generate plant varieties suited to a diversity of unique situations and needs. This would amount to nothing less than a paradigm revolution in genetics, plant breeding and modern biology.

Sources: Pimbert, 2010 and references therein; and www.semencespaysannes.org.

The example of the *Réseau Semences Paysannes* and similar farmer networks in Europe and elsewhere (see Pimbert, 2010) emphasise that the issue is not merely about 'using' participation to make research more 'effective' or 'efficient'. Instead, the transformative process envisaged here is much deeper in scope and intent. Participation is all about ensuring greater cognitive justice between fundamentally different knowledge systems and ways of knowing. As Visvanathan argues, cognitive justice is *"the constitutional right of different systems of knowledge to exist as part of a dialogue and debate"* (Visvanathan, 2005). Cognitive justice thus seeks to advance democratic practice by recognising the claims of communities, groups and networks in decisions that fundamentally affect people's lives. Such demands do not represent an anti-science agenda, nor are they necessarily against modern technology. Instead, the idea of cognitive justice emphasises the right for different forms of knowledge—and their associated practices, livelihoods and ways of being—to coexist. *"The opposition of expert and layperson disguises to a certain extent the opposition between science and alternative sciences. One needs instead a parliament of epistemic debates, but also the ecologies that would let these forms of knowledge survive and thrive not in a preservationist sense but as active practices"* (Visvanathan, 2005).



Future participatory research on the management of agricultural biodiversity in the EU needs to actively explore these new frontiers by opening up new communicative spaces in which cognitive justice and democratic inquiry can take place.

3.2. Scaling up and institutional transformation

With few exceptions, participatory learning and action for on-farm conservation and agro-biodiversity management had been limited to the local level for many years. More recently, the focus on the micro has given way to attempts to adopt and apply these participatory approaches on a wider scale. For example, many large, public and private agencies—including the government departments, development agencies, non-governmental and civil society organisations and research institutes in the EU—are now seeking to spread, scale up and mainstream participation in research and the management of agricultural biodiversity. Embedding and situating peoples' participation at the heart of policy decisions, organisational procedures and resource allocation has thus become a fundamental challenge for the EU member states. Such institutional transformation involves several interrelated levels of change (Box 6).

However, the dynamics of institutionalising participation are *substantially* different depending on whether they are primarily used to justify external decisions and control by powerful actors or whether they aim instead to devolve power and decision making away from external agencies, thereby (re)building local assets and peoples' sovereignty. Evidence from Europe and elsewhere⁸ points to a continuum of practice in which issues of power, knowledge and learning for change are key (Table 2).

⁸ See Pimbert, 2004a & 2004b and www.iied.org/pubs/search.php?s=IP.

Box 6. Institutionalising participatory approaches and people-centred processes

The term ‘institutionalisation’ describes the process whereby social practices such as participation become regular and continuous enough to be called institutions. The dynamics of institutionalising participation and people-centred approaches imply long-term and sustained change, which in turn recognises the conflict between different sets of interests, values, agendas and coalitions of power. In practice, this process of institutionalising participatory approaches emphasises several interrelated levels of change:

- Spreading and scaling up change from the micro (e.g. project/local) to the macro (e.g. policy/national) level.
- Scaling out from a single line department, sector or initiative to catalyse wider changes in organisations (e.g. government and donor agencies, non-governmental organisations, civil society groups and federations, private corporations), and in policy processes.
- Changing attitudes, behaviour, norms, skills, procedures, management systems, organisational culture and structure, as well as policy change.
- Including more people and places through lateral spread, from village to village, municipality to municipality, district to district and so on.

Change and learning are central issues for the individuals and organisations involved in this spectrum of practices. At its simplest level (e.g. towards the top end of Table 2), learning is a process through which new knowledge, values and skills are acquired. At a deeper level (e.g. towards the bottom of Table 2), learning involves “*a movement of the mind*” (Senge, 1990). Along this spectrum, different orders of change or learning are involved:

- i) No change—no learning. Denial, tokenism or ignorance. This is still widespread today, both in the South and the North. More often than not the *rhetoric* of participation is institutionalised, without corresponding changes in organisations, policies and practice.
- ii) Accommodation—first order learning and adaptation but maintenance of the *status quo*. Much of the focus of first order change is on making adjustments to the existing system, doing more of the same, but doing it better (emphasis on efficiency) or by reorganising components, procedures and responsibilities (emphasis on effectiveness).
- iii) Reformation—second order learning, critically-reflective adaptation. The organisational culture and facilitation continuously encourage the questioning of existing practices, rules, procedures and regulations. They seek to expand collective knowledge and understanding by learning about the assumptions and goals behind existing routines, practices, theories and policies.
- iv) Transformation—third order learning, creative re-visioning and re-design of the whole system. This involves seeing things differently, ‘doing better things’ and

re-thinking whole systems on a participative basis. As such, it involves a shift in consciousness and a transformative level of learning. Individuals and organisations see the need to *transform in order to be transformative*.

Table 2. Institutionalising participation and people-centred approaches: the spectrum of current practice in natural resource management

Institutionalisation as mere labelling	'Participation' used only as a label to make proposals and rhetoric attractive to donors, while actions continue to be extractive
Institutionalisation as use of participatory methods and approaches for staff training	Participatory methods primarily used for one-off training of staff members. No commitment to using methods for field action and policy making; no effective skills available. Lack of commitment and resources prevent the continuation of the approach for programme management and organisational development.
Institutionalisation as the use of participatory methods and approaches for project management and policy consultations	Participatory methods are used at the appraisal stage and to develop more effective policies and programmes but are not linked with institution development aspects. The use of methods and participation discourses are sustained as long as funding is available but taper off on withdrawal of resources and in the absence of effective local organisations
Institutionalisation in which participatory approaches are used for local institutional and organisational development	Participatory approaches and methods are used effectively for policy processes, programme management and local institutional development, which shows short and long-term impact. The process, however, may not be accompanied by corresponding changes in policies and support organisations at larger scales (e.g. in policy reforms, learning environment, structures, funding and evaluation mechanisms).
Institutionalisation of participation as transformation for organisational change, lateral learning and inclusive governance	Participatory processes, approaches and methods used as part of a strategy of policy and organisational transformation as well as local institutional development. This dynamic of transformation involves deliberations, appraisal, planning, negotiation, bargaining and conflict resolution together with lateral expansion of local organisations through resource user to resource user, village to village mechanisms. Safe citizen spaces and federated networks (national and international) are key for decentralising governance and for re-localising/democratising 'power'.

Source: adapted from Pimbert (2009)

Most farmers and researchers involved in the EU-funded FSO project would agree that institutional reform and transformation are the key challenges for the future. Significant changes in funding procedures and the organisation of research are seen as necessary in this context. For example, the 2009 International Conference on Farm Seed Opportunities (FSO) identified some of the changes in EU procedures that are needed to support future participatory research in Europe (Box 7).

Experience to date reveals that the following are key for creating the enabling

Box 7. Reforms needed in EU project management and funding procedures to make participatory research work in Europe

FSO partners identified the following as key enabling factors for participatory research in EU projects:

- Research funded by the EU should begin with an initial exploratory phase (9 to 12 months) during which partners can more sharply define and re-shape the agenda for research on the basis of their shared analysis, discussion and initial scoping study. EU funding needs to allow for this flexibility and adaptive management of the research process, rather than 'locking' partners into a fixed framework of activities listed in the original project proposal.
- Adequate funds need to be earmarked for developing agreements on respectful and fair ways of working with partners, such as for on-farm research involving dialogue and the free prior informed consent of farmers and other local partners. EU funds should favour projects that adopt clear codes of research ethics.
- Adequate provision should be made to train scientists in the use of participatory research methods and processes of co-inquiry with farmers. The EU has an opportunity and responsibility to create more enabling conditions for participatory research through professional training and re-orientation of scientific research institutes and their staff.
- EU project funding should be designed to support the work of facilitators/animators of farmer networks. Moreover, adequate funds should be made available to help strengthen local organisations, learning groups and platforms set up by farmers to foster co-operation, learning for change and collective action.
- EU budgets for participatory research should earmark funds to remunerate farmers and farm workers for their involvement in participatory knowledge creation and co-development of new innovations with scientists and animators/facilitators. A guaranteed and unconditional minimum income is required to reward farmers for their contributions: knowledge, skills, time, communicative competence and other forms of human creativity expressed in the co-construction of knowledge and innovations.
- When research partners need to use several European languages, adequate funds should be allocated for translation and inter-cultural communication.
- EU projects that seek to promote participatory research need to shift from a blueprint and logical framework model to a more open-ended, learning process approach. Research needs to be designed so that it can adapt to the uncertainties, surprises, changes, and trade-offs inherent in processes of co-inquiry involving both scientists and farmers—especially given that in addition to research, these farmers also engage in other farming and income-generating activities.
- The EU has an opportunity to encourage more widespread participation in R&D on agricultural biodiversity by publicly recognising and rewarding the pioneering scientists and farmers doing cutting edge work in PPB, PVS and agroecological research in Europe. Today very few scientists and farmers in Europe engage in PPB and PVS, or in other aspects of participatory on farm conservation and management of agricultural biodiversity.

Sources: Participant discussions in the Farmer Forum held during the *International Conference on Farm Seed Opportunities* (FSO), 14-15th October 2009, Marseilles, France; participant discussions in the *Seminar on Farmer-Researcher Feedback on Experiences with Participatory Plant Breeding*, 8th-9th February 2011, Angers, France.

conditions and drivers necessary for the level of change required (Pimbert, 2004a):

- i) Actors with emancipatory values, attitudes and behaviours. The history of participatory natural resource management shows that innovative, charismatic and/or dynamic people have championed changes in policies, field practices, training and organisations. Field observations also highlight the central importance of professional attitudes and behaviour in enabling the scaling up of people-centred innovations.
- ii) People-centred learning and critical education which promotes ecological knowledge for sustainability, both among local agricultural biodiversity users and those who work with them.
- iii) Enabling organisations which emphasise resource users' abilities, promote organisational learning and which are flexible in their structure and procedures.
- iv) Safe spaces where farmers and other citizens can get together, share problems and decide on action. Linking together these safe spaces and local groups into broader federations has helped farmers capture some power back from centralised, top-down agencies and corporations.
- v) Policy spaces above and below. Supportive national policy decisions are complemented by farmer- and citizen-led attempts to contest and shape policies from below.
- vi) A context in which biodiversity resource users have some control over funding decisions and allocations made by local, national or international funding bodies.

At the EU level, institutionalising the kind of participatory research needed for on-farm conservation and the management of agricultural biodiversity depends on bringing about change in two key areas:

- i) Organisational transformation within state bureaucracies, research institutes and the EU Commissions
- ii) Professional re-orientation and re-skilling of scientists and research institutes.

If the objective of on-farm conservation research is to achieve the sustainable and effective management of biological resources, then nothing less than functional participation will suffice (Table 1). This implies the use of participatory methodologies by staff of research institutes and government agencies. For example, participatory rural appraisal (PRA, see Box 1 and Pretty *et al.*, 1994) and methods for deliberative and inclusive processes (DIPs; Box 3)⁹ are a growing family of methods and ways of working that enable local people and outsiders to share, enhance and analyse their knowledge of life and conditions, in order to plan and to act. These approaches involve self-critical awareness of one's own attitudes and behaviour towards farmers and local people.

The adoption of participatory methodologies calls for a greater emphasis on training in communication rather than technical skills. Scientists and other professionals must learn

⁹ See Pimbert and Wakeford, 2001 and references therein.



to work closely with colleagues from different disciplines or sectors, as well as with rural people themselves, including women. Good judgement and interpersonal skills should be cultivated through the adoption and use of participatory methods. This may imply a significant shift in technique for conventional trainers, since training for participation must itself be participatory and action-based (Chambers, 1992; 1996). Nurturing the attitudes and behaviour needed for respectful engagement in participatory processes is also key for change. One practical implication is that research institutes and government agencies need to set aside time for field experiential learning for their professional staff, so that they can see, hear and understand for themselves local people's reality, and then work to make it count.

However, the adoption of a participatory culture and changes in professional attitudes and behaviour are unlikely to automatically follow the adoption of new methods. Training agency personnel in participatory principles, concepts and methods must be viewed as part of a broader process of reorienting institutional policies, procedures, financial management practices, reporting systems, supervisory methods, reward systems and norms (Thompson, 1995; Absalom *et al.*, 1995; Pimbert *et al.*, 2000). In both government departments and research institutes, the challenge for top and middle management is to design appropriate institutional mechanisms and rewards to encourage the spread of participatory methods within the organisation. Without this support from the top, it is unlikely that participatory approaches which enhance local capacities and innovation will become core professional activities. They will remain isolated and marginalised within government departments and research institutes responsible for on-farm conservation and agro-biodiversity management programmes. Throughout the European Union—and at all levels—the central challenge for directors and board members of public administrations and research institutes is to radically restructure procedures and working relationships within their organisations (Box 8).

Institutionalising and operationalising participatory approaches in research institutes and government bureaucracies will be an arduous task based on trial and error, self-critical reflection and further experimentation and innovation. But this EU-wide transformation is all the more necessary *now* given that many remediation, mitigation and adaptation responses to climate change in Europe depend on supporting innovative participatory research to re-introduce biodiversity at the farm and landscape levels.

3.3. Participation and managing agricultural biodiversity in a globalising world

Participation and participatory research have sometimes been seen as a panacea or a technical fix for on-farm conservation and the management of agricultural biodiversity. But all too often participatory approaches have failed because of inequitable rights of access, use and control over natural resources, macro economic policy or corporate interests. Many citizens have thus increasingly learnt to see participation as part of—and dependent on—wider structural changes towards more equitable people-centred processes and democracy.

However, the effectiveness of such changes at any given level is usually limited when there is no corresponding change in other levels or in the processes that influence or govern them. In this regard, newly emerging global trends are deeply problematic for the EU as a whole (Box 9). If unchecked, these trends could largely inhibit direct participation in civic affairs and freedom outside the market and commodity relations.

Box 8. Organisational transformation for participation in knowledge production

The following are key actions for those seeking to make organisations that produce social, environmental, economic and technical knowledge (research institutes, universities, government, civil society organisations, etc.) more participatory:

- Include representatives of diverse citizen groups and farmers normally excluded from decision making in the governance and the membership of budget allocation committees of public sector planning and research institutes.
- Establish procedures to ensure transparency, equity and two-way accountability in the allocation of funds and dissemination of new knowledge.
- Encourage shifts from hierarchical and rigidly bureaucratic structures to 'flat', flexible and responsive organisations.
- Build the capacity of technical and scientific staff in the participatory skills, attitudes and behaviour needed to learn from citizens (mutual listening, respect, gender sensitivity as well as methods for participatory learning and action).
- Provide capacity-building and experiential learning for staff/people to develop their ecological literacy and skills in agroecology and ecological design.
- Ensure that senior and middle management positions are occupied by competent facilitators of organisational change with the vision, commitment and ability to reverse gender and other discriminatory biases in the organisations' ideologies, disciplines and practices.
- Promote and reward management that is consultative and participatory rather than hierarchical and efficiency-led. Establish incentive and accountability systems that are equitable for women and men.
- Provide incentives and high rewards for staff who experiment, take initiatives and engage in participatory work, and acknowledge errors as a way of learning-by-doing and engaging with the diverse local realities of citizen's livelihoods in urban and rural contexts.
- Redesign practical arrangements and the use of space and time within the workplace to meet the diverse needs of women, men and older staff and to help them fulfil their new professional obligations to work more closely with citizens and other actors (timetables, career paths, working hours, provision of paternity and maternity leave, childcare provisions, mini sabbaticals, promotion criteria...).
- Encourage and reward the use of gender-disaggregated and socially-differentiated local indicators and criteria in monitoring and evaluation as well as in guiding subsequent technical support, policy changes and allocation of scarce resources.
- Provide incentives and paid time for staff to engage in processes of internal learning and communication within their organisation.

Source: adapted from Pimbert, 2009.

Box 9. Globalisation and participatory management of agricultural biodiversity: emerging constraints

Globalisation challenges the state from above—for example by transnational corporations—and from below—by citizens and communities. In this emerging context, the state seeks to keep control over at least one of three stages of decision-making for the management of biodiversity: policy making, operations, or ownership of the resource. Under pressure from above and below, the state uses a very particular strategy of separating policy making over the use of resources from both the operational activities and the ownership of these resources. As in the past, the state thus continues to strengthen its own development interests today by removing decisions over the management of biodiversity and other natural resources from farmers, local users and communities (Finger and Finger, 2003).

Decentralisation policies are also a reaction to the diminishing financial capacity of the state. Diminishing state subsidies and relatively weak local capacities lead to situations in which private corporate sector involvement is increasingly seen as necessary for the provision of previously public services and free ecosystem services such as open pollinated crop varieties and farmers' seed exchange practices. This trend is reinforced by higher environmental standards that require investments and technologies that overwhelm the capacities and resources of farmers and local governments.

In the context of globalisation and increasing competition, public administrations everywhere tend to see citizens as clients or consumers, and consequently ask for their financial participation. States also allow corporations to commodify and privatise nature on an unprecedented scale. For example, under new trade agreements as well as stronger intellectual property laws and seed regulations, the secular rights of farmers to participate in saving, multiplying and selecting seeds on-farm is being denied as farmers have to pay for seeds and other genetic resources over which corporations hold exclusive patent rights.

3.3.1. Seed laws

The European legal frameworks which dictate what seeds can be sold on the market and who owns them are of paramount importance here. These legal frameworks currently limit the potential of participatory research into seed selection and on-farm conservation by restricting farmers' free access to diverse seeds:

The DUS test. To be registered on a national seed list and certified for sale, a variety must be 'distinct, uniform and stable'—this is known as the DUS test. If a variety does not pass the DUS test it cannot figure on an official list and be legally sold. In the EU, the strict demand for uniformity has reduced genetic diversity to such a degree that none but the most advanced varieties are allowed to be sold on the market. This legally-induced genetic uniformity has also reduced the number of different seed varieties available to farmers and consumers. This reduced access to diverse seeds has constrained on-farm participatory plant breeding and varietal selection in Europe. Future participatory research on the management of agricultural biodiversity depends on changing seed regulation and certification laws to make it possible to grow, exchange and sell plant varieties that currently do not meet the DUS test. The

FSO project has identified several categories of plants that require different seed regulatory frameworks in the EU (Box 10). Several recommendations have been made by FSO partners to ensure the continued access of diverse seeds to farmers engaged in participatory plant breeding and selection programmes in Europe (see FSO, 2010).

Box 10. New seed regulations for the conservation and sustainable use of agricultural biodiversity in Europe

The European programme on Farm Seed Opportunities (FSO) was designed to support the implementation of seed regulations and propose several regulation scenarios to help conserve agricultural biodiversity and promote on-farm and participatory plant breeding (PPB). The FSO project has identified several types of varieties still cultivated by farmers in Europe and has analysed their ability to meet current EU criteria for distinctness, uniformity and stability (DUS criteria). Many crop varieties still grown across Europe do not fit the DUS criteria:

- Local or old varieties that fit the definition of conservation varieties, still maintained by either small-scale seed companies or breeders or farmers, with local or regional diffusion.
- Population varieties, heterogeneous participatory plant breeding (PPB) varieties, and local and old varieties that are distinct, but for which the criteria of uniformity and stability can be only verified for a few characters. Many crop varieties in this category are particularly useful for organic and low-input agriculture, with a large potential diffusion and resilience to climate change.
- Other varieties developed by farmer, professional and amateur breeding activities that will continue to evolve and which possess a variable level of homogeneity.

Given the threats raised by climate change in Europe it is imperative that existing seed regulations be transformed to allow for the continued existence of the heterogeneous and highly diverse crop varieties needed for the design of resilient food systems.

Source: www.farmseed.net

- **Intellectual property rights.** The second set of legal instruments that need to be reconsidered are intellectual property rights (IPR)—the rules and rights that determine who owns genetic material. With the signing of the UPOV convention in 1961,¹⁰ a special form of intellectual property right was created to reward and remunerate the work of professional plant breeders: plant breeders' rights (PBRs). Initially, varieties which were temporarily protected by PBRs could be freely used by breeders to develop new varieties—the so-called breeders' exemption. Farmers also had the right to use their harvest from protected crops as new seed, a secular right that has misleadingly been called the 'farmers' privilege'. However, in March 1991 the UPOV convention was revised and PBRs strengthened to look more like a patent right. The farmers' privilege and breeders' exemption have been drastically limited. If European farmers want to use protected seed now they have to pay additional

¹⁰ UPOV is the International Union for the Protection of New Varieties of Plants.



royalties on them. The current drive to extend industrial patents to seeds will only further restrict the availability and exchange of plant genetic diversity. This trend will significantly constrain participatory plant breeding as breeders and farmers have to pay licences and royalties for the right to use patented genes and proprietary technologies that are mostly owned by large seed corporations.¹¹ Such IPR laws are counterproductive and work against the public good at a time of increasingly rapid climate change in Europe. Indeed, local adaptation to climate change now depends on supporting participatory research on the on-farm conservation and management of agricultural biodiversity. For this to happen on a significant scale, the EU must ensure that knowledge, genetic resources and innovations remain accessible to all. This is a basic condition for economic democracy and the exercise of human rights, including the right to food and participation in Europe.

As stated by the participants of the recent European forum on “*Let’s Liberate Diversity!*”:

“We cannot accept that the European Union regulation restricts Farmers’ Rights only to the right for registration of varieties in common or “conservation” catalogues, and to paying royalties to breeders every time farmers multiply their own seeds, while at the same time it permits the widespread introduction of patents on plants and animals” (Declaration of Szeged, 2011 – see Annex 1).

This sentiment was strongly echoed by farmers who travelled from Europe, Africa, the Americas, and Asia to make their voices heard at the meeting of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) in Bali, in March 2011:

“We cannot conserve biodiversity and feed the world while our rights to save, use, exchange and sell our seeds are criminalized by laws that legalize the privatization and commodification of seeds..... The Treaty itself contradicts farmers’ rights when it promotes patents and other forms of industrial property over seeds. All forms of patents; plant variety protection and its royalties on farm-reproduced seeds; as well as all other forms of industrial property over life must be banned in the Treaty.

The Treaty proposes the “sharing of the benefits” of the industrial property rights that it recognizes. These “benefits” result from the very theft of our peasant seeds. We do not want to be offered the proceeds from the theft of our seeds; we do not want benefit sharing because we do not want industrial property rights on seeds.

We demand public policies in favor of living, farmers’ seed systems, systems that are in our communities and under our control. These public policies should promote reproducible local seeds, but not non-reproducible seeds,

¹¹ The top 10 seed companies account for 67% of the global proprietary seed market, with the world’s largest seed company alone accounting for 23% of that market; and the top three companies accounting for 47% of the market (ETC, 2008).

like hybrids. They should prohibit monopolies, and favour instead agroecology, access to land and good care of the soil. These policies should also facilitate participatory research in farmers' fields and under the control of farmers' organizations, not the control of the industry. We call on our communities to continue to conserve, care for, develop and share our peasant seeds: this is the best form of resistance against theft and the best way to maintain biodiversity" (The Bali Seed Declaration - see Annex 2).

3.3.2. The Common Agricultural Policy

At a higher level, agricultural policies have also shaped the context in which R&D takes place in Europe. Over the last 50 years, the European Community's Common Agricultural Policy (CAP) has promoted the standardisation and intensification of agriculture. Between 1963 and 1983, EC cereal prices were reduced by 45%; since then they have fallen by another 30%. During this period, agricultural production and intensification increased along with huge food surpluses and escalating damage to the environment and rural communities (Baldock, 1990; Lorenzen, 1992).

The CAP is essentially a system of guaranteed farm prices—well above the world market prices—for specific commodities, combined with measures to block the entry of cheaper products from outside the European Community (EC). In 1991, the EC spent 60% of its entire budget on the CAP alone. But most of the money did not go to farmers. A full two-thirds of it was allocated to non-productive activities like stockpiling and destroying surpluses, or getting rid of them on the world market through export subsidies. In 1992, EC ministers agreed to reform the CAP partly in response to the problems created by the first CAP. However, the new policy led to further standardisation of Europe's agroecosystems and concentrated production in fewer areas, to the detriment of both people and nature (Chopin *et al.*, 2009; CAP 2013 group, 2010).

The structural changes induced by the CAP have significantly undermined the possibilities for participation, on-farm conservation and the management of agricultural biodiversity in Europe. Three trends have been particularly damaging in this regard:

A decline in the number of farmers and farms in the EU

In 1990, there were 8 million farms in the 12 member states that made up the EU. Ten years later—after the accession of three additional member states (Austria, Finland, and Sweden—the EU had lost 1.4 million farms, reducing the total in 2000 to 6.6 million farms. The number of farmers has declined in a similar manner. In France for example, the percentage of the active working population in agriculture decreased from 30% to 3% over a period of 50 years. Overall, the number of European farmers is decreasing every year by about 2%, though falls of more than 8% were registered between 2002 and 2003 in the Czech Republic, Hungary, Poland, Slovenia, Slovakia and the UK.¹² There is also a negative demographic trend in Europe's agricultural

¹² On average, between 2003 and 2007 the agricultural labour force fell by 11.5% in the EU-27; i.e. by 1.6 million workers. It fell by 10.7% in the EU-15 between 2000 and 2007, a loss of 681,700 full time jobs (CAP



sector: currently only 6% of farmers are under the age of 35 across the EU, and 34% of all farmers are over 65 years old (CEJA, 2011).

At the same time as farmers and farms have dramatically declined in numbers, land and capital have become concentrated into larger and larger farm holdings. For example, in Germany the average farm size has increased from 10 to 40 hectares in the last 40 years.¹³ The net result of these trends is that there are simply fewer and fewer farmers around to engage in participatory processes in the rural areas of Europe. Without people there is, by definition, no participation possible.

2013 Group, 2010).

13 Source: Eurostat, 2010: see <http://epp.eurostat.ec.europa.eu>.

A decline in farmer's time and material security to enable participation

Farmers and their employees often work very long hours for little money in the EU. The European Parliament noted that between 1995 and 2002, prices paid to farmers declined by 1.1% (European Parliament, 2004 cited Choplin et al, 2009). Between 1990 and 2008, prices paid to French farmers dropped by 15% for beef and 30% for pork.¹⁴ Many farms would be unprofitable if EU subsidies were withdrawn. Subsidies are distributed unevenly and favour large farms. It has been calculated that 74% of the CAP funds go to just 20% of EU farmers, while at the other end of the scale 70% of farmers share just 8% of the funds (BBC, 2008).

Farmers' incomes—particularly small and medium-sized farmers—are declining, and farmers are experiencing much insecurity and uncertainty within the EU.¹⁵ This is also associated with worsening working conditions: stress, work-related accidents and illnesses, and high levels of suicide among indebted farmers (Choplin, 2009). The situation is far worse for farm labourers and migrant workers across the EU. Their working conditions are often precarious, with no job security and very poor pay. Many migrant workers from Africa and Eastern European countries are subjected to human rights abuses and economic exploitation, especially those who work on fruit and vegetable farms. Empirical evidence now available across the EU fully justifies calling these migrant workers the “*new slaves of capitalism*” (see Herman, 2008).



14 Over the same time period, French consumers paid 50% and 20% more for beef and pork respectively. The difference between what producers received as farm gate prices and what consumers paid was captured by the 10 food processing and distribution corporations that dominate the food system in the EU (Choplin et al., 2009).

15 Farm incomes fluctuate with changes in agricultural prices. While they rose by 7% in the European Union between 1995 and 2002, they have kept falling since 2005. The real farm income per worker fell by 11.6% in the EU-27 in 2009, following a drop of 1.8% in 2008 (Eurostat). In France, these reductions in income were 18.5% and 12.4% respectively (CAP 2013 Group, 2010).



These trends are major structural constraints for widespread participation and the co-construction of knowledge. Participation in civic affairs and decision-making largely depends on transformations that allow people to reclaim control over time, space and resources. More specifically, there is a need for economic arrangements that offer enough material security and time for citizens (both men and women) to exercise their right to participate in shaping policies for the public good and ecological sustainability. Only with some material security and time can people be 'empowered' both to think about what type of research and policies they would like to see and to engage in deliberative forms of democratic decision-making (see Gollain, 2004).

The collapse of agricultural biodiversity in Europe

The CAP has directly contributed to the loss of biodiversity in Europe by promoting standardisation, specialisation and the intensification of farming. As industrial methods of production and the market economy have penetrated almost every corner of Europe, diversity has been replaced with uniformity in agriculture, forestry, fisheries, and animal husbandry, to make it more controllable.

Instead of a huge patchwork of different crop varieties, most parts of Europe are now covered by a relatively small number of closely related high yielding varieties that thrive on chemical fertilisers, pesticides and irrigation. Many of the traditionally grown varieties no longer exist. Since the 1920s Greece has lost 95% of its traditional, locally adapted wheat varieties. A single potato variety (the *Bintje*) covers about 80% of the land sown to this crop in the Netherlands. The many varieties of almonds on which Spain based its production have been almost totally replaced by a few high yielding varieties from California. In several crops there is also clear evidence that the remaining high yielding varieties have an extremely narrow genetic base, making them very vulnerable to pests and climate change (FAO, 2010).



Hundreds of Europe's hardiest breeds of chicken, geese, ducks, pigs, cows and other farm animals have also disappeared forever or are on the verge of extinction. Half of all the breeds that existed at the beginning of the 20th century have vanished. Of the 2,576 breeds of all types of farm animals recorded in Europe, almost half are considered at risk. Between 1995 and 1999, the number of mammalian breeds at risk of loss increased from 33 to 49%; the number of bird breeds at risk of being lost grew from 65 to 76%. According to the FAO's Commission on Genetic Resources for Food and Agriculture, the rapid spread of large-scale industrial livestock production focused on a narrow range of breeds is the biggest threat to farm animal diversity (FAO, 2007).

The requirements of food industries for a uniform product—whether for processing, or distribution—have further exacerbated the loss of biodiversity in the food sector. For example, after the reunification of Germany in 1990, East German farmers were prohibited from growing varietal mixtures of barley, so that they would produce a more uniform product for the West German brewing industry (Pimbert, 1993).

One of the ironies of this neo-liberal model of agricultural development is that it destroys the very resource on which the system depends. This loss of biodiversity reduces the options open to farmers and scientists to adapt crops and animals, as well as agroecosystems to adapt to new environments and change. And the potential

for participatory research to bring farmers and scientists together is also constrained by the smaller number of crop varieties and livestock breeds now available in the EU. Similarly, the co-construction of new knowledge and agroecological innovations is also severely limited as a result of the biological impoverishment and uniformity of European landscapes. Agroecological design options for natural control of pests have disappeared with the clearance of ponds, hedges, species-rich grasslands, diverse woodlands and other wildlife corridors to make way for heavy machines and monocultures. These represent vital sources of food and habitat for birds, pollinators, insect predators and parasites. The loss or degradation of ecosystems also means that there are fewer natural models or analogues available as starting points for new,



participatory agroecological designs that combine a diversity of plants, animals and micro-organisms into functional wholes: genetic mixtures, intercropping, polycultures, multiple cropping, mixed farming, agro-sylvopastoral systems, agroforestry and forest farming (Altieri, 1995; Gliessman, 2006).



More insidiously, the erosion of agricultural biodiversity aggravates the loss of farmer and traditional knowledge of plant, animal, and microbial species used for food, medicinal, agricultural and other purposes. Rural processing technologies and innovations that evolved over many generations also disappear, together with the know how and capacity for peasant experimentation that historically produced a myriad of sophisticated agricultural and ecological management systems in Europe (Pimbert, 1993). This loss of farmer knowledge—and the cultural self confidence it gave— ultimately reduces the creativity and potential of participatory research into the adaptive management of agricultural biodiversity.

Reversals for participation and food sovereignty in Europe

Reversing such structural constraints to participation in the management of agricultural biodiversity will require a strong commitment to non state-led forms of deliberative democracy and actions that make EU state institutions and corporations accountable to citizens (see Rahman, 2004). To bring about this kind of transformation, it is likely that European citizens will have to take the lead. As stated by the authors of the recent European Food Declaration, an alternative vision for food and farming in Europe must be developed through an inclusive democratic process:

“A wide range of renewed activities such as increasing local food production, local markets, local procurement, seed swaps and so on has been emerging and growing across Europe. In addition new movements, such as the

Transition Town movement, GM-free regions and national and local debates on food policy show increasing public support for another form of food and agriculture.

Yet, grassroots activities and local movements are not enough. We believe it is time to build a broad coalition of groups at the European level to challenge the current Common Agriculture Policy (CAP) and the European Commission's and our governments' avowed plans for a renewed CAP in 2013. Their vision is, to keep the global 'competitiveness' of Europe's food industry as the chief objective of Europe's CAP. The political process for the new CAP 2013 is starting now. We believe a strong message is needed, not only for EU policy makers, but for policy makers in our countries – a vision for a CAP suitable for the 21st century.

We have created a 'European Food Declaration: towards a healthy, sustainable, fair and mutually supportive Common Agriculture and Food Policy'. It outlines what we think the policy objectives of a CAP for the next decades should be [see Box 11]. We invite as many organizations, groups and individuals as possible.... to use it as a tool to promote the discussion about what kind of food and agriculture policy we need". (www.europeanfooddeclaration.org/declaration/en).

Whilst the European Food Declaration offers a radically new vision and policy framework for the CAP, the actual policies for food sovereignty cannot be specified in full detail for all people and places in Europe. They have to take into account local



Box 11. An excerpt from the European Food Declaration: Towards a healthy, sustainable, fair and mutually supportive Common Agriculture and Food policy

After more than a half-century of industrialisation of agriculture and food production, sustainable family farming and local food cultures have been substantially reduced in Europe. Today, our food system is dependent on under-priced fossil fuels, does not recognize the limitations of water and land resources, and supports unhealthy diets high in calories, fat and salt, and low in fruit, vegetables and grains. Looking ahead, rising energy costs, drastic losses in biodiversity, climate change and declining water and land resources threaten the future of food production. At the same time, a growing world population faces the potential dual burden of widespread hunger and chronic diseases due to overconsumption.

We will only be able to address these challenges successfully with a completely different approach to food and agriculture policies and practices. The European Union must recognize and support the crucial role of sustainable family farming in the food supply of the population. All people should have access to healthy, safe, and nutritious food. The ways in which we grow, distribute, prepare and eat food should celebrate Europe's cultural diversity, providing sustenance equitably and sustainably.

The present Common Agriculture Policy (CAP) is currently being debated and is due for change in 2013. After decades of the domination by transnational corporations and the World Trade Organisation (WTO) in determining food and agriculture policy, it is time for people in Europe to re-appropriate agriculture and food policy: it is time for *food sovereignty*^a [my emphasis]. We believe a new Common Food and Agriculture Policy should guarantee and protect citizens' space in the EU and candidate countries and their ability and right to define their own models of production, distribution and consumption following the principles outlined below.

The new Common Food and Agriculture Policy:

1. considers food as a universal human right, not merely a commodity.
2. gives priority to growing food and feed for Europe and changes international trade in agricultural products according to principles of equity, social justice and ecological sustainability. The CAP should not harm other countries' food and agriculture systems.
3. promotes healthy eating patterns, moving towards plant-based diets and towards a reduced consumption of meat, energy-dense and highly processed foods, and saturated fats, while respecting the regional cultural dietary habits and traditions.
4. gives priority to maintaining an agriculture all over Europe that involves numerous farmers producing food and caring for the countryside. That is not achievable without fair and secure farm prices, which should allow a fair income for farmers and agricultural workers, and fair prices for consumers.
5. ensures fair, non-discriminatory conditions for farmers and agricultural workers in Central and Eastern Europe, and promotes a fair and equitable access to land.

a *"Food Sovereignty is the right of peoples to define their own food and agriculture; to protect and regulate domestic agricultural production and trade in order to achieve sustainable development objectives; to determine the extent to which they want to be self reliant; to restrict the dumping of products in their markets; and to provide local fisheries-based communities the priority in managing the use of and the rights to aquatic resources. Food Sovereignty does not negate trade, but rather it promotes the formulation of trade policies and practices that serve the rights of peoples to food and to safe, healthy and ecologically sustainable production."* (www.viacampesina.org).

Box 11. An excerpt from the European Food Declaration: Towards a healthy, sustainable, fair and mutually supportive Common Agriculture and Food policy

6. respects the local and global environment, protects the finite resources of soil and water, increases biodiversity and respects animal welfare.
7. guarantees that agriculture and food production remain free from GMOs and fosters farmers' seeds and the diversity of domestic livestock species, building on local knowledge.
8. stops promoting the use and the production of industrial agrofuels and gives priority to the reduction of transport in general.
9. ensures transparency along the food chain so that citizens know how their food is produced, where it comes from, what it contains and what is included in the price paid by consumers.
10. reduces the concentration of power in the agricultural, food processing and retail sectors and their influence on what is produced and consumed, and promotes food systems that shorten the distance between farmers and consumers.
11. encourages the production and consumption of local, seasonal, high quality products reconnecting citizens with their food and food producers.
12. devotes resources to teaching children the skills and knowledge required to produce, prepare, and enjoy healthy, nutritious food.

Source: www.europeanfooddeclaration.org/declaration/en





history and culture as well as the unique social and ecological contexts in which food systems are embedded. In this context, democratic participation and citizen empowerment are crucial for the process of policy making (who makes policy and how it is made) and the implementation of policies such as the next CAP. As Patel puts it, the food sovereignty movement argues *“for a mass re-politicization of food politics, through a call for people to figure out for themselves what they want the right to food to mean in their communities, bearing in mind the community’s needs, climate, geography, food preferences, social mix and history...”* (Patel, 2007).

European farmers and other citizens will thus need to simultaneously engage in a series of bold innovations, including:

- Strengthening the voices of farmers and those hitherto excluded from decision making in setting research agendas and in framing policies and regulatory frameworks for the management of agricultural biodiversity, including the CAP for food and farming in Europe.
- Creating safe spaces and participatory processes in which expert knowledge and corporations are put under public scrutiny through appropriate methods for deliberation and social inclusion (e.g. citizens’ juries, scenario workshops, citizen panels, multi-criteria mapping—see Box 2) and transparent oversight (e.g. Citizen’s Advisory Councils—see Box 12).
- Make full use of human rights law, environmental law, criminal law and other legal instruments to bring to account corporations and other powerful actors in the food system for undermining European citizens’ right to food and healthy nutrition as well as their right to a pollution free environment.
- Supporting ‘citizen watch’ and ‘citizens’ oversight’ initiatives to enable people to freely access independent and clear information on new regulatory frameworks and international agreements as well as understand their impacts on their right to participate in decision making and manage agricultural biodiversity in autonomous ways.

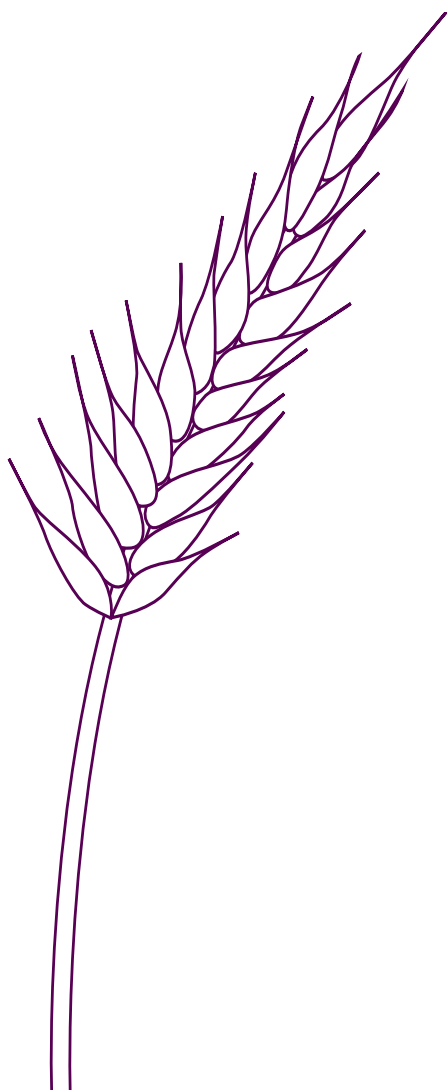
Box 12. Citizen's Advisory Councils for corporate oversight and accountability

In the absence of effective oversight, agri-food companies are known to lower social and environmental standards, to reduce costs and to maximise short-term financial returns, - leaving local people, the environment, and governments unfairly disadvantaged and exploited. This insufficient oversight and low standards can result in acute and catastrophic damage (food poisonings, agro-chemical pollution, hazardous working conditions for farm laborers and food workers), and long-term, chronic degradation, impoverishment, and public health impacts. To help correct this problem, local citizens need to be involved in the oversight of industry operations that affect their lives, and to do this they need an organization with money, staff, authority, broad representation, and most of all, independence. Thus, governments should require the establishment of Citizen Advisory Councils (CACs) to provide informed public oversight for the agri-food sector, to be funded either from government resource revenues or from industry directly. A CAC should be structured to give local citizens a direct voice in the corporate and governmental decisions that affect them and their communities. The CAC should be empowered to provide oversight on all aspects of an agro-chemical and food corporation operating in their region - research & development, production, transportation, refining, sourcing of food, public revenue collection, risk management, labour standards, and environmental compliance. The CAC should review and submit written comments on all project operations. This should include government legislation, regulations and permits, and industry policy and procedure, and industry financial matters -revenues, costs, taxes, royalties, etc. The importance of these citizens' councils is paramount - they are not government, they are not industry, but they are established and operated solely by and for the citizens of the region. Such councils would provide an unprecedented level of transparency and informed public participation with regard to corporate activities along the food chain - an important prerequisite to achieving a socially just and environmentally sustainable society. For examples of how Citizen Advisory Councils work and what they can achieve see Steiner, 2003.

Sources: Steiner, 2003; IUCN Resolution 4.089 – www.iucn.org

- Linking formal decision-making bodies and processes with spaces in which expert knowledge and corporations are put under public scrutiny, by engaging relevant social actors and coalitions of interest. A key challenge lies in creating new forms of accountability based on the concept of extended peer review—a more inclusive and plural process in which farmers, local resource users, food workers, and food consumers/citizens have as much say as scientific specialists, planners, corporate CEOs, and other professionals in validating knowledge and policies (see above).
- Facilitating the interlinking and federation of farmer/citizen spaces as a way of decentralising and democratising the management of agricultural biodiversity and the governance of food systems, in both rural and urban contexts.
- Supporting the emergence of transnational communities of inquiry and coalitions for change committed to equity, democratisation, diversity and dynamic local level adaptation in food, farming and land use.

4



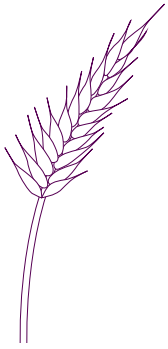
Concluding remarks

Drawing on experience in Europe and the wider literature, this paper has offered some critical reflections on how—and under what conditions—the EU might support the development of innovative participatory approaches for the management of agricultural biodiversity in Europe. Recommendations for the European Union and its citizens are offered on how to address three challenges in particular: i) transforming knowledge and ways of knowing for the local adaptive management of agricultural biodiversity and resilience in the face of climate change and uncertainty; ii) scaling up and institutionalising participatory research and innovation in plant breeding, varietal selection, agroecological research and the on-farm conservation of agricultural biodiversity; and iii) the impacts of globalisation on participatory management of agricultural biodiversity in Europe.



All the above are difficult challenges for the EU and its citizens because they imply significant changes in dominant policy and practice. For example, the development of more effective, interdisciplinary and participatory research based on cognitive justice, mutual respect and democracy will involve clear shifts in power relations in setting upstream strategic research priorities and in framing policies for food and agricultural science and technology. New professional values, participatory methodologies and behaviour will also need to be widely encouraged and rewarded in scientific research institutes and within relevant EU Commissions. Similarly, there are major technological and institutional challenges associated with a shift to more autonomous and re-localised food systems based on biodiversity-rich agroecologies and circular economy models that combine food and energy production with water and waste management for resilience (see Jones *et al.*, 2010). In circular systems, as farm and energy inputs are sourced and food products distributed locally, a reduced geographic scale is accompanied by the production of a wider range of foodstuffs in urban, peri urban and rural areas in gardens, allotments, on farms and in market gardens. Food is processed on the farm or in small local processing units and there is a significant shift away from large-scale, centralised electricity generation to decentralised small-scale renewable energy systems (Jones *et al.*, 2010).

We know from experience that bringing about such transformative change is usually messy and chaotic—once a process has been catalysed, many different dynamics can unfold. But this EU-wide transformation is all the more necessary *now* given that many remediation, mitigation and adaptation responses to climate change *directly* depend on supporting innovative participatory approaches for managing agricultural biodiversity at the farm and landscape levels. The construction of a new modernity for food and farming in Europe also depends on such a transformation—one in which a diversity of peasant agricultures and re-localised food systems generate meaningful jobs and sustainable livelihoods, democratic control and citizen oversight, ecological resilience and sustainability, as well as healthy food for all.



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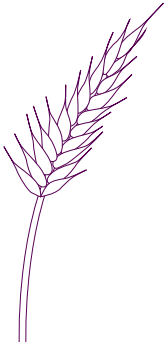
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Annex 1.

Declaration of Szeged

The 6th European forum “*Let’s Liberate Diversity!*” on agricultural biodiversity took place on February 25-26, 2011 in Szeged, Hungary. At the plenary session on February 26th the **Declaration of Szeged** was adopted:

On 24 February 2011, we, farmers and practitioners, from 17 European countries, who conserve and renew agricultural biodiversity met in Szeged, Hungary, which currently holds the Presidency of the European Union, and prepared this statement to be addressed to our governments, the European Union and the Governing Body of International Treaty on Plant Genetic Resources for Food and Agriculture.

On February 24, 2004, the European Union approved the International Treaty on Plant Genetic Resources for Food and Agriculture (IT PGRFA). In the 7 years that have elapsed, it has still not adapted its internal legislation to incorporate the commitments of the Treaty. This anniversary a few days before the next meeting of the Governing Body of the Treaty in Bali gives us the opportunity to highlight what is urgently needed.

We are farmers, gardeners, artisans, consumers and environmental groups organised in associations and networks of European civil society. We represent tens of thousands of people from varied cultural traditions.

In our fields and our gardens, we all contribute to the conservation of traditional varieties in their traditional ecosystems, the collective and local dynamic management of agricultural biodiversity for the purposes of our agricultural production, to its development by the constant creation of new varieties, their widespread use and their added value in local markets.

Assessment

Whenever farmers in Europe resow a portion of their harvest, they create new seeds, adapting them to their local environment and climate change, while reducing their dependence on chemical inputs. These farmers’ varieties are always ‘new’ varieties, hence they are rarely homogeneous or stable.

The local collective organisation of seed exchange, of the management of agricultural biodiversity and the transfer of local knowledge guarantee the conservation and sustainable use of PGRFA. Since its origin, agriculture has been shaped by the collective rights of farmers to conserve, use and exchange their seeds, which we

wish to preserve. Only 'reproducible' seeds allow for the conservation, renewal and increase of agricultural biodiversity, while non-reproducible seeds, e.g. F1 hybrids or others, are an important cause of the erosion of crop biodiversity.

We wish to reiterate the particular responsibility of the European Union, as the dominant agro-industrial power in the world, which, furthermore, supports in its own region and disseminates to the rest of the world agricultural policies and regulations that destroy agricultural biodiversity by giving preference to agro-industry, facilitating market concentration in the hands of a few international actors, financial speculation on food, and land grabbing for industrial monocultures.

We cannot accept that the European Union regulation, restricts Farmers' Rights only to the right for registration of varieties in common or "conservation" catalogues, and to paying royalties to breeders every time farmers multiply their own seeds, while at the same time it permits the widespread introduction of patents on plants and animals.

It is for these reasons why we would like to bring to the attention of the Treaty's Governing Body our contributions to the ongoing debate on the revision of seed laws in Europe.

In relation to the Treaty

We wish to reiterate the importance, for food and farming and for future generations, of Articles 5, 6 and 9, which deal with the contribution of farmers to the conservation and renewal of biodiversity, and their associated rights.

We recall that in relation to Article 5, Contracting Parties (CP) committed themselves to promote and support farmers and local communities in managing and conserving their plant genetic resources and to eliminate the threats to these resources.

We recall that in terms of Article 6, Contracting Parties have undertaken to develop and maintain policy and legal measures with the aim of fostering "the development and maintenance of diverse farming systems" and "maximizing intra- and inter-specific variation" of varieties. In article 9 CPs have undertaken to protect and promote Farmers' Rights. These articles cover all PGRFA and are legally binding for all CPs.

The concept of benefit-sharing has not proved able to mobilise the necessary financial resources for on-farm conservation even though industry's seeds are all developed from seeds collected for free from the fields of farmers who selected and conserved them. Instead, most of the funds mobilised by donor countries go to the Global Crop Diversity Trust for *ex situ* conservation. This bias is also depriving the Treaty of operating resources.

We observe that our governments are imposing many obstacles to the implementation of articles 5, 6 and 9 linked to Farmers' Rights and instead are focusing their efforts on the facilitated exchange of genetic resources within the multilateral system. Similar to the situation in many other countries worldwide, European legislation is only interested in securing privileges for industry and ignores Farmers' Rights.

In relation to Article 9 of the Treaty, the respect of Farmers' Rights, which are collective, to save, use, exchange, sell and protect their farm-saved seeds and their knowledge is the principal condition for making possible their essential contribution to the conservation and sustainable use of plant genetic resources for food and agriculture.

Thus we demand of the European Union and all of its Member States recognition that European farmers are also contributing to the conservation of plant genetic resources for food and agriculture and to include this positively in legislation on Farmers' Rights:

- to choose freely, select, develop and grow their own seeds (except for GMOs) and then to sell the crop, without respect to whether these come from varieties listed in the catalogue ;
- to be granted free access to plant genetic resources in *ex situ* seed banks;
- to exchange and sell seeds for conservation purposes and for the dynamic management or selection on the farm used for agricultural production. In this respect, we demand explicit recognition of farmer's rights to select and conserve their own seeds and for this reason to exchange plant genetic resources of varieties not listed in the catalogue, as breeders are doing.
- to reproduce their own seeds in order to adapt them to local conditions. An explicit recognition of the right to use freely, and without need for a license, is needed for all varieties, regardless whether or not the varieties are protected by an industrial property right, in order to be able to develop new varieties.
- to protect their seeds from genetic contamination and appropriation through contamination by patented genes.

We demand that for each newly registered variety it should be mandatory to disclose the breeding method used.

We demand a ban on disseminating in open environment genetically modified (GM) plants (i.e. plants modified in ways which do not occur naturally) whether through transgenesis or any other unregulated genetic transformation. Coexistence between GM and non-GM crops is impossible. All forms of patenting of life should be prohibited.

We demand that industrial property rights on plants such as plant breeders' rights should not affect Farmers' Rights to multiply and exchange farm-saved seed.

We demand that the obligation to disclose all information on the origin of plant genetic resources used for new plant breeders' rights be implemented concretely.

We demand from the European Union and each Member State, which is a Contracting Party participating in the Governing Body of the Treaty in Bali, to support the implementation of Articles 5 and 6 of the Treaty, introducing new agricultural and research policies that:

- Promote participatory breeding, the dissemination and the use of reproducible seeds, *in situ* on-farm conservation, local seed banks managed collectively by farmers and gardeners and through the transfer of local knowledge;
- Discourage the widespread use of non-reproducible seeds.

These policies must also take into account the right to food sovereignty and the right to preserve local cultural heritage and related activities, which guarantee the added value of plant genetic resources and products derived from agricultural biodiversity on local markets, thereby helping to conserve and renew these resources.

These rights must be complemented by the positive recognition in the law of the possibility of selling non-GM seeds of varieties not included in the catalogue.

The decision of the European Union (Directive 98/95 and following) to take into account the needs of organic farming, of "*in situ*" conservation of biodiversity and locally adapted variety mixtures must be realised by opening the Catalogue to the registration of populations varieties that are not homogeneous and are non-stable for the purposes of organic farming, conservation of biodiversity or for other specific uses.

As our governments have not yet recognised the urgency for action, we reiterate to them today, 7 years after the signing of the Treaty, that the time has come to implement immediately and resolutely Farmers' Rights in Europe.

In relation to GB4,

We ask the European Union and other Contracting Parties attending the meeting of the Governing Body of the Treaty in Bali to put in place policies that support the implementation of Articles 5, 6 and 9 with new financial resources and appropriate measures at national level. Particularly in relation to the Treaty's funding status, either through its regular funds or other funds allocated to the support of conservation activities. We ask that members of the European Union make available regular funds for the Treaty's core administrative budget.

Even though we appreciate the effort of some countries to contribute to the Treaty's fund to support on-farm conservation, we reject the principle of funding only on a voluntary basis.

The money raised by the Global Crop Diversity Trust, which is dedicated exclusively to *ex situ* conservation, should also be made available, in equivalent amounts to the Treaty for on-farm conservation.

As already approved by the previous meetings of the Governing Body, we recall the importance of participation in Treaty negotiations of those farmers' organisations that actually participate in the conservation of agricultural biodiversity.

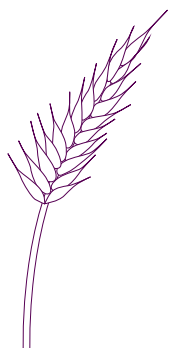
For this reason we request that a space for dialogue and debate be initiated with the Governing Body, with the participation of organisations that are defending biodiversity on-farm, and that this participation be organised in line with the principles that States have agreed during the reform of the Committee on World Food Security (CFS), i.e. autonomy and self-organisation of farmers' organisations and civil society.

We also remind national governments the importance of ensuring active and effective treatment of farmers, practitioners and consumers who actually participate in the conservation of agricultural biodiversity.

Concerning Article 6, we ask CPs to support the Secretariat's proposal to create an ad hoc working group on the sustainable use of plant genetic resources with the active and effective participation of civil society.

Regarding Article 9, we support, based on the document IT/GB-4/11/Circ.1, the proposal to have guidelines for the establishment of Farmers' Rights.

Source: <http://www.liberate-diversity-hungary2011.org/>



Annex 2.

La Via Campesina¹⁶: Bali Seed Declaration

Peasant Seeds: Dignity, Culture and Life Farmers in Resistance to Defend their Right to Peasant Seeds

Farmers throughout the world are the victims of a war for control over seeds. Our agricultural systems are threatened by industries that seek to control our seeds by all available means. The outcome of this war will determine the future of humanity, as all of us depend on seeds for our daily food.

One actor in this war is the seed industry that uses genetic engineering, hybrid technologies and agrochemicals. Its aim is the ownership of seeds as a source of increased profits. They do this by forcing farmers to consume its seeds and become dependent on them. The other actor is peasants and family farmers who preserve and reproduce seeds within living, local, peasant and indigenous seed systems, seeds that are the heritage of our peoples, cared for and reproduced by men and women peasants. They are a treasure that we farmers generously place at the service of humanity.

Industry has invented many ways of stealing our seeds in order to manipulate them, mark them with property titles, and thereby force us, the farming peoples of the world, to buy new seeds from them every year, instead of saving and selecting them from our harvest to plant the following year. The industry's methods include genetically modified organisms (GMOs) and hybrid seeds, which cannot be reproduced by farmers, as well as industrial property over seeds, including patents and plant variety certificates, all of which are imposed through international treaties and national laws. These are but different forms of theft, as all industrial seeds are the product of thousands of years of selection and breeding by our peoples. It is thanks to us, peasants and farmers, that humanity has at hand the great diversity of crops that, together with animal breeding, feeds the world today.

¹⁶ La Via Campesina is an international movement of peasants, small- and medium-sized producers, landless, rural women, indigenous people, rural youth and agricultural workers. It is an autonomous, pluralist and multicultural movement, independent of any political, economic, or other type of affiliation. Born in 1993, La Via Campesina now gathers about 150 organisations in 70 countries in Asia, Africa, Europe, and the Americas.

In their drive to build monopolies and steal our natural wealth, corporations and the governments who serve them place at risk all of humanity's food and agriculture. A handful of genetically uniform varieties replace thousands of local varieties, eroding the genetic diversity that sustains our food system. Faced with climate change, diversity is a strength, and uniformity a weakness. Commercial seeds drastically reduce the capacity of humanity to face and adapt to climate change. This is why we maintain that peasant agriculture and its peasant seeds contribute to the cooling of the planet.

Our communities know that hybrid and genetically modified seeds require enormous quantities of pesticides, chemical fertilizers and water, driving up production costs and damaging the environment. Such seeds are also more susceptible to droughts, plant diseases and pest attacks, and have already caused hundreds of thousands of cases of crop failures and have left devastated household economies in their wake. The industry has bred seeds that cannot be cultivated without harmful chemicals. They have also been bred to be harvested using large machinery and are kept alive artificially to withstand transport. But the industry has ignored a very important aspect of this breeding: our health. The result is industrial seeds that grow fast have lost nutritional value and are full of chemicals. They cause numerous allergies and chronic illnesses, and contaminate the soil, water and air that we breathe.

In contrast, peasant systems for rediscovering, re-valuing, conserving and exchanging seeds, together with local adaptation due to the local selection and reproduction in farmers' fields, maintain and increase the genetic biodiversity that underlies our world food systems and gives us the required capacity and flexibility to address diverse environments, a changing climate and hunger in the world.

Our peasant seeds are better adapted to local growing conditions. They also produce more nutritious food, and are highly productive in agroecological farming systems without pesticides or other expensive inputs. But GMOs and hybrids contaminate our seeds and put them in danger of extinction. They replace our seeds in their places of origin and lead to their disappearance. Humanity cannot survive without peasant seeds, yet corporate seeds put their very existence at risk.

Let us not be mistaken. We are faced with a war for control over seeds. And our common future depends on its outcome. It is through this lens that we must analyze the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), in order to understand what is at stake and what positions we should take.

The International Treaty on Plant Genetic Resources for Food and Agriculture

First we must situate the Treaty in its historical context of constant attempts to steal our seeds. The industry and most governments are using the Treaty to legitimate the industry's access to those peasant seeds that are stored in collections around the world. The Treaty recognizes and legitimizes industrial property over seeds, thus creating the required conditions for theft and monopoly control. In the Treaty, the florid language used to describe Farmers' Rights entrusts individual states with the responsibility for their implementation. However, states do not apply them. Therefore

the mentioning of these rights is only an attempt to inoculate the Treaty against our possible protests and denunciations.

The result is a treaty that legitimates the World Trade Organization (WTO) and laws on industrial property rights. It is therefore legally binding with respect to industrial property rights and the rights of plant breeders, while allowing states not to respect Farmers' Rights. It is a contradictory and ambiguous treaty, which in the final analysis comes down on the side of theft.

This does not mean that all is lost. The Treaty can be amended from the peasant point of view, but the changes would have to be major and immediate. La Via Campesina affirms that:

- We cannot conserve biodiversity and feed the world while our rights to save, use, exchange and sell our seeds are criminalized by laws that legalize the privatization and commodification of seeds. The Seed Treaty is the only treaty to date to contemplate farmers' rights. However states do not respect these rights, in opposition to their respect of industrial property rights. **Therefore, the Treaty must give peasant rights the highest priority, and these rights must be legally binding. They must be guaranteed in every one of the 127 countries that have ratified the Treaty.**
- The Treaty itself contradicts farmers' rights when it promotes patents and other forms of industrial property over seeds. **All forms of patents; plant variety protection and its royalties on farm-reproduced seeds; as well as all other forms of industrial property over life must be banned in the Treaty.**
- Industry incurred an immense debt by appropriating our seeds and by destroying cultivated biodiversity in order to replace it with a few manipulated varieties. **Industry must repay this past debt, but doing so by no means gives it the right to continue appropriating our seeds. Industry must pay and it must also stop with the appropriation of seeds and the destruction of biodiversity.**
- The Treaty proposes the "sharing of the benefits" of the industrial property rights that it recognizes. These "benefits" result from the very theft of our peasant seeds. **We do not want to be offered the proceeds from the theft of our seeds; we do not want benefit sharing because we do not want industrial property rights on seeds.**
- **We demand public policies in favor of living, farmers' seed systems, systems that are in our communities and under our control. These public policies should promote reproducible local seeds, but not non-reproducible seeds, like hybrids. They should prohibit monopolies, and favour instead agroecology, access to land and good care of the soil. These policies should also facilitate participative research in farmers' fields and under the control of farmers' organizations, not the control of the industry. We call on our communities to continue to conserve, care for, develop and share our peasant seeds: this is the best form of resistance against theft and the best way to maintain biodiversity.**
- Centralized gene banks do not respond to the needs of farmers. They are seed museums for the benefit of biopirate corporations, and offer no real access

to peasant peoples. Moreover, our seeds are in danger inside these banks, threatened by genetic contamination and industrial property rights. We cannot trust governments or the Treaty to conserve them. **We refuse to turn our seeds over to the gene banks of the multilateral systems and of the industry as long as the following remain in existence: patents on plants, their genes or other plant parts; other industrial property rights systems such as plant variety protection which demand royalties on farm-saved seeds; GMOs.**

- The commodification of seeds is seriously threatening our peasant seeds in Asia, Latin America and Africa. But in some of our countries, especially in Europe and North America, the commercial monopoly of industrial seeds has already done away with the majority of local varieties. In these countries, we can no longer carry out farmer selection using the varieties that are commercially available, because they are manipulated in such a way that they will not grow well without chemical inputs or industrial processes. They have lost much of their nutritional value and are increasingly modified genetically. We cannot select our new peasant varieties based on the seeds of our parents which are locked up in gene banks. **We must have unconditional access to the banks of the multilateral system because it is our seeds that are kept there.**
- We farmers can keep our seeds first and foremost in our fields, but also in our granaries, seed barns and local community seed saving systems which also constitute small “ex situ collections”. We put these “ex situ collections” as close as possible to our fields so that farmers maintain control over them, responsibility for them and access to them. To paraphrase the Treaty, we farmers construct our own “multilateral system”. This is the basis upon which we can collaborate with the Treaty by reminding it that it is not the only entity carrying out seed conservation. **If the Treaty wants to collaborate with us, it must respect our rules and our rights, and forbid Industrial Property Rights and GMOs.**
- Since the process of the Treaty is carried out within the United Nations, it is national states that have the responsibility to protect peasant seed systems. Yet, the World Trade Organization (WTO) renders the rights of plant breeders legally binding, while the rights of farmers are not respected. We demand that farmers’ rights be mandatory and that the rights of breeders be subordinated to these farmers’ rights. This necessarily entails the repeal of seed laws that privatize and commodify seeds and deny peasant rights. We demand the adoption of national laws that recognize Farmers’ Rights. La Via Campesina calls for the rapid **approval and ratification of an international convention on peasant rights in the United Nations. Agriculture and seeds have no place in the WTO and Free Trade Agreements.**
- This Treaty is but part of a series of challenges that peasant and indigenous peoples are facing today. The Rio + 20 process is a clear confrontation between ‘greenwashed’ capitalism, and peasant agriculture, agroecology and our peasant seeds. **La Via Campesina will act to defend agroecology and farmers’ seeds which represent hope and are the future of humanity. As we have shown, sustainable peasant agriculture can both contribute to the cooling of the planet and feed the world.**

- If governments commit to reforming the Treaty by effectively and actively defending Farmers' Rights, we are willing to collaborate with the Treaty, including in a parallel committee, modeled on the Committee for Food Security that accompanies the FAO process in Rome. But we do not want to open the door to a collaboration with the Treaty that will thrust us into interminable discussions while GMOs, hybrids and industrial property rights expel us from our fields. **Whether or not the Treaty recognizes those of us who are the stewards of biodiversity, we will continue to work within our own peasant seed systems, which have assured genetic diversity and fed the world in the past, and will continue to do so in the future. We are keeping seeds not only for ourselves, but also for our children. Peasant seeds are the heritage of peasant communities and indigenous peoples in the service of humanity.**

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Drawing on experience in Europe and the wider literature, this paper offers some critical reflections on how—and under what conditions—the EU might support the development of innovative participatory approaches for the management of agricultural biodiversity in Europe.

Recommendations for the European Union and its citizens are offered on how to address three challenges in particular:

i) transforming knowledge and ways of knowing for the local adaptive management of agricultural biodiversity and resilience in the face of climate change and uncertainty;

ii) scaling up and institutionalising participatory research and innovation in plant breeding, varietal selection, and agroecological research; and

iii) policy reversals for the participatory management of agricultural biodiversity.

This EU-wide transformation is all the more necessary *now* given that resilience, mitigation and adaptation to climate change directly depend on supporting innovative participatory approaches for managing agricultural biodiversity at the farm and landscape levels. The construction of a new modernity for food and farming in Europe also depends on such a transformation.



The *Reclaiming Diversity and Citizenship Series* seeks to encourage debate outside mainstream policy and conceptual frameworks on the future of food, farming and land use. The opportunities and constraints to regenerating local food systems based on social and ecological diversity, human rights and more inclusive forms of citizenship are actively explored by contributors. Authors are encouraged to reflect deeply on the ways of working and outcomes of their research, highlighting implications for policy, knowledge, organisations and practice. The *Reclaiming Diversity and Citizenship Series* is published by the Agroecology and Food Sovereignty Team at the International Institute for Environment and Development.

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