

The farmer and researcher may be lost soul mates, but reuniting them may not be an easy task. Having been compartmentalised and isolated for decades, they now speak different languages and have contrasting worldviews. But there is an urgent need to bring the farmer back into the research arena, particularly in the arena of public research, which is running the risk of subjugating itself completely to industry's agenda. Challenging though this will be, the rewards will be many – for consumers, the environment and biodiversity.

Science meets its Soul

The promise of participative breeding

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For many decades, farmers and researchers have been isolated from each other as agriculture became more specialised. Today both groups realise the limits of conventional selection in terms of the diversity of varieties and crops being generated, the quality of products grown, and their adaptability to soils and to agricultural systems. As wide as the divide has got between them, many researchers and farmers would welcome the idea of working together in participative breeding. The hyperspecialisation of varieties developed for industrial agriculture is not satisfying farmers or consumers, and their dissenting voices are getting steadily louder. This dysfunction is felt particularly strongly by those employed in independent, small-scale, organic, low-input farming (and 'amateur' growers), or farming practised in difficult terrain or for new markets.

But the concept of participative breeding remains ambiguous and the source of deep controversy, even where it has been put into practice in recent decades. This has been especially the case in countries of the South where participative development was brought in to solve conflicts of post-independence authoritarian initiatives. The term "*participative breeding*" is meaningless on its own; its execution needs to be described to establish whether it has any value.

Does participative breeding encourage real and democratic participation of farmers? At what point in time and in what form is the farmer involved? What is the role of the researcher? Are researchers ready to share control of key decisions in relation to plant selection? How do we ensure that farmers and civil society have better control of the orientation of public research?



Words are not enough

For the last twenty years, numerous experiments in participative breeding have been documented in the South. These testimonies invite us to question what needs to be done in Northern countries where there is a different context for farmer agriculture. How can we integrate the formal improvement of plants and the local selection of seeds so as to maintain biodiversity in the fields and allow democratic control of the first link of the food chain? How can we bring about the necessary changes in institutions, organisations and individuals to promote the emergence of knowledge based on dialogue and collective reflection? Today the opportunities for participation – be they in drawing up policies, formulating projects and rules, setting up implementation exercises or the evaluation process – are restrained by state institutions, by regulations and by professional bodies. At best we have some partial sequences where participation is

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meaningful, but rarely are these processes allowed to extend from one end of the research chain to the other.

The nature and origin of spaces for participation must be questioned when assessing how meaningful it is. There is a big difference between a carefully crafted space created at the invitation of the authorities to probe public opinion or legitimise its policies, and spaces created by civil society where people come together on their own initiative, in solidarity and mutual concern. Taking participation seriously also means taking it to a new level and institutionalising it. Extending methods established in micro-initiatives (project/local) to the macro level (policies/national) means questioning long-held practices and retraining, which are major challenges for the individuals and organisations involved.

Breaking down the walls to participation

It is not possible to take an interest in participative breeding without broadening our interest to the larger agricultural development model. Researchers have a fairly narrow perspective on what participative breeding means; the farmer's reality is more global. 'Something that nourishes us is beauty, beauty in our fields', says a farmer. Will researchers be able to incorporate this perspective into their research strategy? Could subscription to a common goal be a final objective? A goal that takes account of the product's destination, the perspectives of all the actors (without enslaving any of them), and the sustainability of the

agricultural system. Producing wheat to make bread to feed people requires engaging with the farmer, the miller, the baker, consumers and health professionals ...approaching the field as a whole. Participative breeding must put all these people around the same table. To undo the fragmentation of knowledge, we need to create a new space.

When considering plant selection, terms like 'improvement' and 'partnership' are very subjective. Goals are equally subjective. What we improve relates to the goal that has been set – does that make other goals any less worthy? For example, when deciding how to deal with a predatory insect requires a global approach to the ecosystem that should call on many different actors. Do we need to eradicate a pest causing a problem or should we change the ecological niche it occupies? If we are examining allergies to gluten, we need to ask: Is the allergy the result of selection? Is it caused by standardising the transformation process of the wheat? Is leavening the cause of allergies? To answer these questions it is necessary to bring together the work of the plant breeder, the farmer, the miller, the baker, the doctor, the psychologist, and the sociologist. The relationship between the ground, the plants and their natural and human environment is essential. It is also necessary to allow the researcher and the farmer, conditioned by centuries of reductionism, to take part in an exercise without dividing walls.

Changing roles and unlearning behaviour

For two centuries, we have settled into a division of labour wherein researchers research, plant breeders select and 'untrained' farmers merely apply or consume the results of this research. If a question arises, the 'experts' are called on to answer. Participative breeding requires a change in attitude in which each understands a share of reality that the other one does not know, each has his own abilities, his own vision of the world, which is recognised by one and all, and there is no hierarchy in knowledge levels between scientists and farmers. The researcher rejects his omniscient status and becomes the moderator, revealing the knowledge and know-how of the farmers, while at the same time proposing a methodology. Each accepts that his own knowledge be questioned, modified and shaped by the knowledge of the other.

To get to this point, big hurdles need to be removed. We live in a world where science continues to progress by questioning its own past certainties, yet is presented as the sole, unique and absolute truth, while in parallel the image of the farmer, his knowledge and his know-how have been



degraded. Today's researcher, even the most open and motivated, comes from a background where the stability of social hierarchies is measured by the durability of its dogmas, and of an educational system which has imprinted a very Cartesian vision of the world. When approaching this new concept of his own role within research, he must learn to put into question a large part of his benefits and social status. For his part the farmer must also make an effort to escape from his role of a simple, untrained novice. His knowledge is certainly different from that of the researcher, but it has as much value. Only if both parties recognise this can the collaboration be more than a dialogue of the deaf.

Square pegs into round holes

For the last two centuries, selection has replaced variety and diversity with uniformity. The approach to selection demanded by the seed industry follows the logic of cloning and the logic of expropriation. The plant breeders have applied industrial standards to living things, making them more predictable, measurable and ownable. The market, contrary to the culture of exchange, cannot bear goods that are not "identified". A population of plants resulting from farmer selection, cultivated in conditions that are not homogenised by fertilisers and pesticides, is heterogeneous and unstable. These plants cannot, by definition, be identified by the industrially-oriented criteria of Distinctiveness, Uniformity and Stability (DUS)¹ that have pervaded the selection process, nor can they be protected by intellectual property rights (IPR). Because of this, so the thinking goes, they must be eradicated. This is not the case for a pure line, a hybrid or a clone. We can think of these as a sort of "living-dead", varieties made into objects by their stability and homogeneity, and which can be protected by a Plant Variety Protection (PVP) certificate² or a patent. 'Stability' is a very subjective term, of course. Genetically modified organisms (GMOs) represent the pinnacle of this logic, to the extent that their extreme genetic instability is completely ignored in their stability assessment.

Seeds developed and selected by farmers are not made for industry, but for farmers. Instead of asking to what extent these seeds can adapt themselves to industry, we should be looking to industry to adapt itself to the diversity of the living, even if this means changing the scale of operations. For example, gluten allergies are a public health problem because the modern wheat used in bread is selected for its ease of industrial processing, rather than what consumers might want. Many organic farmers cultivate wheat which is deemed

by industrial breadmakers to be 'unsuitable for making bread'. So they make the bread themselves, or have small organic bakers bake it, and have no problems at all with their 'unsuitable' wheat, so long as they use more traditional methods. Farmers' seeds go hand in glove with a change in language and a relocation of the economy.

The products of participative breeding – farmers' seeds – are illegal today thanks to industry-oriented regulations that public research has helped put in place. Public research controls the criteria for DUS that farmers' seeds cannot conform with, it sets the official catalogue that farmers cannot afford to register their seeds with, and it collects biotechnological patents and multiplies its agreements and contracts with private companies which seek to stamp out farmers' seeds.

The damaging impact of the official catalogue is clearly illustrated by a current concern. If the catalogue is applied to Eastern Europe now that these countries have joined the European Union, there will be a dramatic loss of biodiversity and cultural heritage, since most of the varieties presently used there are extremely diversified, and would not have access to the catalogue. How can we keep these varieties alive if all exchange is forbidden? How can we prevent private companies from appropriating them? A new system of description, based on different criteria from DUS must be developed. More freedom must be allowed for exchanges of heterogeneous and non-standard varieties, while at the same time they must be protected from piracy by private interests.

The realm of IPR is a particular challenge to the quest for participative breeding. Who owns the products of participative breeding: the research establishment, farmers, or the 'public' who finances 'public' research? What are the mechanisms for ensuring exchange and experimentation are possible without opening doors to piracy? Questions concerning IPR must be settled before and not after the realisation of projects. To defer these critical questions until later will generate inevitable conflicts.

Participation is not a pipe dream

Despite the many challenges presented by participative research, credible approaches to participation keep multiplying all over the world, in the shape of citizen's juries, consensus conferences, and so on. In France today traditional

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¹ The DUS criteria are requirements a variety must meet for a breeder to be awarded monopoly control over a variety under a PVP regime (see below).

² PVP is a strong, patent-like form of IPR developed specifically for plants under the International Convention for the Protection of New Varieties of Plants (UPOV Convention), which now has 55 member countries.

seed propagators have set up knowledge exchange circles on seed selection and propagation with groups of farmers. One positive outcome of these meetings is rediscovering the families of kitchen garden vegetables. Market gardeners and farmer-plant breeders in Germany and Switzerland are also working together to share their methods and create varieties. Biodynamic farmers are often pioneers in these fields. To move ahead, there are four key areas we can focus on addressing:

1) Resituating the researcher and the farmer

There is a problem of language that recurs in the course of debate on participative breeding. The farmers question the definition of 'researcher'. Since they experiment daily in their fields, are they not researchers? If the term 'researcher' is reserved for scientists remunerated by institutions and who have this as their unique role, then the pertinence of this researcher to farmer selection is in turn questioned. Research must be done in the field of the farmer, where the farmer notices and takes account of the existence of 'scientific aberrations' and inconsistencies. But farmer-researchers also admit that they too can learn from the researcher's

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skill and knowledge – perhaps to gain an understanding of the genetic background to the selection process, or to take advantage of the facilitated access seed banks the researcher might have, or to learn about different methodological approaches.

In resituating the farmer and researcher, we must also consider who moderates the show. Should it be the farmer, the researcher or a third party? Successful examples of participative breeding show that success is directly related to the quality and the transparency of the organisation and how participation is moderated.

2) Bringing skills together

We can start by bringing skills together, but the problem in research is that everything is partitioned, with different vocabularies used in different sectors. Laboratory researchers and field researchers have a hard time communicating with each other, so it is even harder for them to communicate with farmers with their global approach and hands-on knowledge.

Bringing skills together brings us back to the importance of a cross-disciplinary approach. Organic farmers seeking out varieties which can compete with weeds could use the assistance of an ethnobotanist to understand how and why the

weeds are there. If entomologists and historians worked together on phylloxera, perhaps they could find out why it does not present nearly the problem it did a century ago³. Developing interdisciplinary programmes means putting together adapted methodologies and vocabularies (e.g., defining 'selection', 'conservation' or 'propagation'), agreeing on quality standards (e.g., for bread making), setting up traceability methods for seeds that are cultivated on farms, and so on. In the absence of an official researcher, an independent plant breeder can also offer his services to local agricultural authorities on participative breeding.

3) Establishing codes of conduct

Codes of conduct help to avoid abuses by researchers resulting from the hierarchy of knowledge and the balance of power in existing vertical structures. Many such codes of conduct have been drawn up by farming communities around the world to this end. Interesting partnerships often spring up between researchers and farmers, but farmers may still engage in research alone, either because the code of conduct is not adhered to by researchers, because no researcher is willing to take on the work, or because the farmer chooses it that way. Other limits to participative research may also present themselves. Some species will likely be long time 'orphans' of participative research because regulations and techniques have established such a stranglehold that competition with the big seed companies is virtually impossible. In France, grapes, maize and non-hybrid vegetables come into this category. In the South, crops like millet, sorghum and quinoa are likely to be orphaned too, but for different reasons. Farmers are not solvent enough to finance research – however important – and nor is the public sector.

4) Revamping or replacing research institutions


To establish new relationships and switch from vertical to horizontal exchanges between knowledge pools, we need to consider the de-institutionalisation of agronomic research. Some progress can and is being made to transform institutional thinking and practice, but it may not be enough. In 2000, after a lot of lobbying, a committee on organics was set up at the French national research institute, INRA. Participative breeding is finally recognised as a tool of work within the department of plant improvement, but it is restricted to only one crop, durum wheat, and is tied to the needs of industry. Small gains like this are often more than counterbalanced by shifts in the opposite direction. Like many other public research institutions, INRA does not encourage participative research; it prefers to be at



³ Phylloxera is an aphid-like insect native to the eastern and southern U.S. The pest was inadvertently introduced to France from North America in 1860. By the end of the nineteenth century phylloxera had destroyed two-thirds of the vineyards on the European continent.

the competitive edge of the race for GMOs and IPR. After two years of consultation INRA finally decided to drop 65 of the 70 species on which it had been working on for varietal development, retaining a mere five species: wheat, organic durum wheat, grapes, pea, and rapeseed.

Civil society groups addressing issues related to food production – environmental impact, self-sufficiency, quality and mode of distribution and so on – are largely unaware that public research is abandoning the public. Many researchers are not happy with this shift, and there is very little time left to take advantage of the wavering and hesitation at INRA and other public research institutions. Common platforms of farmers, researchers and civil society must be launched to propose other points of view, changes in the methods of work (such as a code of conduct charter), and so on. These platforms must be concretely rooted in experimentation, and in safeguarding and nurturing biodiversity in

farmers' fields. It may prove necessary to get rid of institutions like INRA, to save them from the magnet of corporate money. Civil society can mobilise on this issue, just as it has over GMOs, food quality and food culture, and it can also contribute to financing these platforms. But it will only do so if it is informed of what is at stake. To move forward, we must communicate and act in all circles, as widely as possible. 

This article was translated and adapted from a paper entitled "La Selection Participative et la recherche publique en France" which was drawn up at a workshop organised by the Réseau Semences Paysanne at the Ferme du Moulon, INRA, Gif sur Yvette, France, on May 6, 2004. The paper highlights the important points in the debates and does not necessarily reflect the position of all the participants and guests to this workshop. The whole report of the workshop (in French) can be obtained from the secretariat of the Réseau Semences Paysannes (Peasant Seed Network): semencepaysanne@wanadoo.fr

