

Local trial network for organic wheat A French multi-actors research project from grain to bread

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Author's Background

They develop participatory research and cultivated biodiversity for Organic Farming at the French National Institute for Agronomical Research.

Summary

In West of France, the association Triptolème aims to develop farm seeds and cultivated biodiversity for organic agriculture and natural products for environment and human health. Scientists and practitioners of this association have built a participatory research project around wheat (PaysBlé) in order to explore diversity at different levels from grain to bread and try to link them.

Background

Organic Agriculture needs specific varieties for (i) an adaptation to a diversity of soil management practices and environments; (ii) the respect of the natural characteristics of species; (iii) products which promote « terroir » characters and actors' know-how. Organic farmers from small scale and innovative farming, with often a farming-baking activity, locally organized in the association Triptolème, promote cultivated biodiversity by breeding it, cultivating it and processing it. They called out to researchers in order to understand what happens in the fields, during bread making processes, and to study the final organoleptic qualities of their breads. Together, practitioners and researchers created and participated in a local research project (PaysBlé), developing an experimental network from grain to bread. The two main objectives of this network were (i) to study the genotype x environment interactions in production conditions from fields to bakeries (building bridges between disciplines) and (ii) to involve different stakeholders (scientists, practitioners and consumers) in the scientific process (building bridges between stakeholders). This project lasted from spring 2010 to summer 2014 and was funded by the Britain Region and the European Union (local project PaysBlé was included in the FP7 project SOLIBAM).

Main chapter

The project started by a common seminar to discuss the general experimentation plans. Farmers, bakers, experts, associations' animators and researchers (from agronomy, baking process and organoleptic quality) participated in. Three varieties were chosen as representatives of different wheat genetic diversity in order to compare their behavior along the bread making process and to assess the interests of biodiversity for organic agriculture. The three varieties were a modern pure line, a single population and a mixture of 11 populations. A panel of practitioners (farmers, millers and bakers) agreed to realize the experimentations in their own production conditions and different scientists were in charge of data collecting (sometimes together with practitioners) and analysis. Groups of practitioners and scientists were built in order to organize each step of the experimentation (farmers and agronomic engineers for fields; miller, bakers and baking process specialist for baking process; bakers, consumers and PhD student for tastings). Data was collected in the fields (agronomic parts), on the grain produced, during and after baking process and during tastings.

One of the challenges of this project was to find compromises between production conditions and scientific needs (replicates...) without a total standardization (finding the "minimum level" of standardization). Discussions were necessary in order to have a common vocabulary and to be aware of the possibilities of the different stakeholders before finding the compromises and draw the trials.

Fields trials were planted 3 consecutive years and baking and tasting trials were realized from harvests of fields trials during spring after harvest. At each step of the experimentation, practitioners worked together with "specialized" scientists. The final objective is to link all the data, from grain to bread, linking the different disciplines.

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Core messages and conclusions

The objectives of this project are ambitious and it will take time to enhance all the results. However, the work already done allows us to draw some first trails especially in terms of bridges between stakeholders.

From a scientific point of view, this project brings a new approach. We try to study the processes in real conditions and so we don't have the same trial design as in conventional research. The replicates are the different practitioners (or fields) and we have to describe the different parameters at each of them instead of making some identified parameters change in one trial with replicates. As a consequence, we need to collect and treat a great number of descriptive variables. For statistical treatments, we need to find specific tools able to analyze data with few individuals and numerous variables instead of the contrary. The results will design trails more than strong conclusions but they will be closer to reality, which seems very important for organic agriculture where environment and practices cannot be stabilized by inputs.

In order to study the processes, the practitioners had to respect a minimum level of standardization. They decided it together with the associated scientists and had to be very rigorous in respecting the protocols they validated. Their practices were not changed but they had for example to note all their impressions during baking, which was not common for them and needed more attention than only making bread.

Both scientists and practitioners have to adapt and understand each other in order to reach the objectives of the project and make it really participative. This new work is necessary in order to build strong bridges for a research better adapted to organic farming.