**Non industrial seeds : practices of "cultivated biodiversity" call into question the "fixism" of the agricultural model**

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The aim of this paper is to summarize the current state of knowledge about non-industrial seed production in order to refine my research question. The idea is to understand how and on what foundations equivalences between seeds and are established and to compare this with the same processes for industrially produced seeds. I shall end by presenting some empirical cases that will enable me to cover my question.

Statement of the problem

Agriculture has been guided by productivist principles since the aftermath of World War II ([Bonneuil C. , Demeulenaere E. et al. 2006](#_ENREF_3)). In this system, seeds are considered to be set scientific objects that have been standardized by three criteria, namely, Distinction, Uniformity, and Stability (“DUS”). This is seconded by a legal framework that allows the movement only of the seed varieties that are registered in the catalogue. Internationally, the convention of the International Union for the Protection of Varieties of Plants (UPOV) organizes seed developers’ rights ([Boy 2008](#_ENREF_4)). So, the basis of the food system, namely, seeds, is enrolled in a system that is straitjacketed by scientific, legal, and trade provisions.

This model is being reconsidered by two conflicting dynamics. In one corner we find those who demand market liberalization and a demand-driven economy. This trend is incarnated today by the introduction of a non-DUS category in European legislation in order to institute mutagenesis ([Commission Européenne 2013](#_ENREF_9)). In the opposite corner are those who are calling for requalification of quality, local areas, and the environment, which challenges the various padlocks in the seed system. At stake are the re-appropriation of knowledge and the management of plant materials. The interaction between the genotype (G) and environment (E), i.e., G x E, along with each of its components, is being re-examined ([Desclaux, Nolot et al. 2008](#_ENREF_13)). The process consists of going from *varietal fixism* to *cultivated biodiversity* in order to stem the erosion of biodiversity and the farmer’s independence.

2. Cultivated biodiversity practices

In Europe, plant improvement is achieved basically through participatory plant breeding. This practice comes from organic agriculture ([Demeulenaere and Bonneuil 2011/2](#_ENREF_12)) ; ([Conseil and Chable 2009](#_ENREF_10)) and is inspired by Asian, South American, and African experiences ([Ceccarellin 2006](#_ENREF_5)) ([Chiffoleu and Desclaux 2006](#_ENREF_8)). It breaks with standardization and the delegation of innovation to scientists. E’s place in the G x E interaction is reconsidered, given that each E is particular. Connecting these singularities in a network makes generalization possible ([Demeulenaere and Goulet 2012](#_ENREF_13)). It makes it possible to build markets jointly ([Desclaux, Nolot et al. 2008](#_ENREF_13)), to control diseases through intra- and inter-varietal work ([Papy and Goldringer 2011](#_ENREF_15)). Networking raises questions of coordination and cooperation amongst the players ([Allaire 2004](#_ENREF_1)). However, let’s not fool ourselves. The concept of participation has limits when it comes to putting it into practice, one of these limits being the farmers’ degree of involvement ([Chiffoleau 2006](#_ENREF_7)).

Plant materials, knowledge, and know-how circulate within the network. Seeds become a go-between object that connects farmers in the wake of tests between the supplier and the requester ([Cheyns 2003](#_ENREF_6)) ([Demeulenaere and Bonneuil 2007](#_ENREF_11)) in order to achieve a relationship of trust within a small group or “club”. This club is based on the reputations of two things, the goods and the people (who produce them) ([Torre 2002](#_ENREF_16)). These practices, which are outside the market, are governed by the regulatory framework. Various initiatives try to circumvent this framework or to engage in civil disobedience. There are still others that find ways to protect their collective labour through a common licence ([Kloppenburg 2012](#_ENREF_14)).

3. Questions

To achieve internal and external equivalences, four types of qualification are established, namely, scientific, legal, seed circulation, and political. When it comes to the production of knowledge through participatory plant breeding and selection, it seems that the way that farmers and scientists produce knowledge together has not yet been studied. The same applies to the processes of equivalence between seed types and between types of methodology (*in situ* versus *ex situ)* in the scientific arena. Managing seeds as collective property raises the issue of governance. How do farmers organize to defend a good collectively from both the practical and legal standpoints? Does the way seeds circulate vary according to the collective’s aim, *e.g.,* conservation, marketing, or the development of a short circuit? On the political level, how are scientific, legal, and market qualifications mobilized to demand a change in the “varietal fixism” paradigm and how are they reflected in public policies? Finally, How does criticism develop (Hirscham’s “voice” versus “exist” ([Boltanski and Chapiello 1999](#_ENREF_2)))? Based on these questions, I developed the following research question: How do the projects that propose approaches other than the science-market-productivism triad connect up the various types of qualification to establish equivalence amongst non-industrial seeds?

4. Cases Studies

To answer these questions, I am working on a selected sample of cases that backs of each of these qualifications.

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| Qualifications | Cases making it possible to characterize these qualifications |
| Qualification of the plant material | - Participatory plant breeding by INRA (France)- Participatory plant breeding within *Associação do Semi-Arido* (ASA) (Brazil) |
| Legal qualification | - Criticism of changes in European legislation (Plant Reproductive Material Law, EU)- Kokopelli lawsuit (France/EU) |
| Qualification of the seeds’ circulation | - Kaol Kozh (France)- Croqueurs de carottes[[1]](#footnote-1) (France/Belgium) |
| Political qualification | - *Maison des semences citoyennes*[[2]](#footnote-2) (Belgium)- ASA (Brazil)- Bionatur (MST) (Brazil) |

I chose them on the basis of their strong typologies in order to provide inputs for each of the types of qualification.

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1. “Carrot Crunchers” [↑](#footnote-ref-1)
2. “Civic Seeds” Centre [↑](#footnote-ref-2)