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The rejection of commercial seeds and adoption of open-pollinated maize by groups of French farmers: a discussion around their motivations

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Abstract:

The reappropriation of open-pollinated maize in France began at the start of the 2000s at the instigation of Agrobio Perigord (a rural development association). Groups of farmers were rapidly formed into *Maisons de la Semence* (House of Seeds) groups to collectively manage this resource, by putting in place equipment, sharing the task of characterisation, conservation, multiplication, diffusion or the pooling of knowledge.

This article seeks to discuss the factors around the emergence of certain farmers choosing to work with open-pollinated maize in the 2000s, the origin of the concept of "*semences paysannes*" (farmers' seed systems), then the evolution and the diversification of their motivations for cultivating *semences paysannes*.

Keywords: keyword 1 farm seed; keyword 2 open pollinated maize; keyword 3 farm autonomy; keryword 4 rural development

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The rejection of commercial seeds and adoption of open-pollinated maize by groups of French farmers: a discussion around their motivations

The reappropriation of open-pollinated maize in France began at the start of the 2000s at the instigation of Agrobio Perigord (a rural development association), through a vast collection of a number of long-lasting varieties in the country, the importation of foreign varieties (Spanish, Italian and Romanian), and inventory clearance from INRA. Groups of farmers were rapidly formed into *Maisons de la Semence* (House of Seeds) groups (in 2007 in Dordogne) to collectively manage this resource, by putting in place equipment, sharing the task of characterisation, conservation, multiplication, diffusion or the pooling of knowledge [1].

Today we know of around ten formalised collectives in France which share open-pollinated maize seeds and knowledge (ADAGE 35 [1] , CIVAM 44, CBD

[1] Numbers in brackets after proper nouns refer to the postcode of each French *département*

Poitou-Charentes (16 & 87), AgroBio Périgord (24), ALPAD (40), BLE & Arto Gorria (64), le collectif maïs population du Gers (32), ARDEAR Centre, ADDEAR 42, and Semeurs pour l'avenir (70)).

This article seeks to discuss the factors around the emergence of certain farmers choosing to work with open-pollinated maize in the 2000s, the origin of the concept of "*semences paysannes*" (farmers' seed systems), then the evolution and the diversification of their motivations for cultivating *semences paysannes*.

I. Introduction

1. A seed offering inappropriate for organic farming

The arrival of hybrid varieties of corn in the 1930s is seen by many para-agricultural institutions (research, education, seed companies etc.) as a change in the approach towards variety selection and the beginning of the concept of "modern varieties" [2]. Produced in huge quantities by larger and larger companies [3], F1 hybrids allow lines to be developed which are marked by a homogeneity and a stability which correspond to the criteria defining "modern varieties". However, Paull (2006) points out that these aspects contrast with the priorities of organic farming movements, such as local markets and farm autonomy [4].

Indeed, the International Federation of Organic Agriculture Movements (IFOAM) defines four major principles for Organic Farming: (i) the principle of health (the improvement of soil health, plants, animals, humans, and the planet, (ii) the principle of ecology (agriculture based on living ecological systems and cycles), (iii) the principle of equity (integrity, mutual respect, justice, and good management of a shared world), and (iv) the principle of responsibility (the protection of nature and the transmission of resources to future generations) [5].

According to Chable *et al.* (2014), the emergence of the need for seeds which were adapted to organic agriculture emerged at the end of the last century, after a progessive breaking-down of the seed industry with the principles of organic farming, and became a reality due to the combined effect of several factors [3].

Firstly, the varieties selected for conventional agriculture are poorly adapted to organic systems. Hybrid seeds, through their homogeneity, do not enhance the recognised effect of diversity on disease and pest control, abiotic stress, and the stability of production levels [6]. Murphy *et al*. (2005) show that the performance of open-pollinated wheat seeds is lower when the selection environment is distanced from the production environment [7]. The dissociation of selection environment and production environment appears to be a factor which can explain the lower adaptation of hybrid systems for organic agriculture. This analysis was notably made in Mexico where hybrid seeds are used in lower proportions in the most marginal agricultural environments [8].

Secondly, the increased use of biotechnology in selection methods is seen as incompatible with the principles of organic agriculture. Lammerts Van Bueren et Struik (2004) define as "biotechnology" all techniques which affect species' natural barriers and reproduction processes [9]. This is particularly the case with cytoplasmic male sterility (CMS), a technique which involves genetic modification and which modifies organisms at the cellular level.

Finally, European regulations make the use of certified seeds obligatory for a farm to be certified organic (EU regulation 1452/2003). However, this regulation reduces the spectrum of varietal choice, therefore is too restrictive for certain cultivated species and means that organic producers must justify their reasons for requesting an exemption for conventional seeds which are not treated after harvest. This new rule has led to widespread control over the origin of seeds by certification bodies. Among the farmers concerned, some cultivate and exchange seeds which are not registered in the catalogue. As long as these exchanges, commercial or not, are not legally recognised, tensions arise around certain inspections [1].

2. The emergence of the concept of *semences paysannes*

In 2003, the day before the adoption of European regulation 1452/2003, which aimed to only authorise certified organic seeds, the Auzeville conference was held by La Confédération Paysanne, Nature&Progrès, La Fédération Nationale d'Agriculture Biologique des Régions de France, Le Mouvement de Culture Bio-Dynamique, Bio d'Aquitaine, Le GDAB Midi-Pyrénées, Le Syndicat des Semences and Plants bios du Languedoc-Roussillon (Actes d'Auzeville 2003). The practice of the production of *semences paysannes* comes from anonymity, and the creation of the Reseau Semences Paysannes (RSP - Farmers' Seed System network) confirmed the feelings of the groups present at the Auzeville conference on the importance of preserving access to "local" variety seeds, not registered in the catalogue, for small-scale, organic farming [1].

The concept of farmers' seed systems emerged with the creation of the RSP network and presented numerous evolutions compared to the principles of "*semences fermieres*" championed by the CNDSF (Coordination Nationale pour la Défense des Semences de Ferme - the national coordination group for the protection of farm seeds). A first definition of these seeds was proposed by the RSP in the beginning of the 2000s and was subject to an updated definition in 2019 by its members.

(Before 2019) « *Semences paysannes* are selected and reproduced by producers in the farms and gardens practising small scale organic or biodynamic farming. As opposed to standardised industrial seeds, non-reproducible or GMO seeds, these are diversified and progressive populations, from natural selection and renewal methods, non-transgressive and easily accessed by farmers. Reproducible and non-appropriable by a title deed, they can be planted and replanted by the farmers and the gardeners who cultivate them, in accordance with the usage rights defined by the collectives who select and conserve them. Their characteristics make them essential to adapt to the diversity and variability of the land, the climate, the farmers' practices and human needs. Thanks to their hardiness and their

adaptability, they allow reduced use of chemicals and help us respond to the challenge of providing healthy food while protecting the environment." [10]

Above the simple production of seeds at farm level (*semences fermieres*), the term *semences paysannes* integrates the notions of rights (intellectual property), along with notions of genetics (appropriation of the principles of natural selection, domestication, the evocation of selection techniques), concerns about the preservation of the environment, and questions around the democratic management of communal resources ("usage rights defined by the collectives")

The new definition proposed in 2019, keeps most of these elements:

(2019) « *Semences paysannes* are a common part of coevolution between cultivated plants, communities and lands (...) they come from dynamic populations (...) reproduced by the cultivator, within a collective which has seed autonomy as its objective. They are and have always been selected and reproduced through non-transgressive methods, from the plant cell to the final product, in the fields, gardens and orchards involved in small-scale organic or biodynamic farming. These seeds are reproduced by successive multiplications in free pollination and/or by mass selection, without forced self-fertilisation over several generations. *Semences paysannes*, and the knowledge and know-how associated with them, are freely exchangeable in accordance with the usage rights defined by the collectives who sustain them.

This new definition, while very similar, presents several notable changes. Firstly we notice that all assertions and allegations from the first definition have been removed; the guarantees of "hardiness", "reduced use of chemicals" and even "respond to the challenge of providing healthy food" are no longer mentioned, and the promise of "adaptability of varieties" is replaced by "coevolution of plants and humans". We can also note the addition of two concepts: that of a "commonality" and that of sharing "knowledge and know-how": *semences paysannes* are not only a natural asset but an ensemble of physical resources, cultural elements, and moral and democratic engagements. We can still note the rejection of GMOs: "non-transgressive methods", not directly named this time, but also the rejection of hybrids: "without forced self-fertilisation over several generations", apparently evoked in the first definition behind the term "standardised industrial seeds". Thus, with these changes, the definition proposed by the members in 2019 focuses solely on the obligations of means (who does it, in what conditions, by what methods), and no longer focuses on the guarantee of results.

In practice however, those in the small-scale farming world who use the term "*semences paysannes*", do not necessarily agree with this definition and on the limits it imposes [11]. In addition, there are many reasons which push farmers to produce *semences paysannes*, and these are not limited to a simple technical dimension. Nearly 20 years after the Auzeville conference, there are many users of *semences paysannes*, and the motivations which push them to this decision have changed and diversified. This article aims to analyse this aspect,

complementing the work undertaken by Hélène Proix (CIVAM BLE), Marion Charbonneau (UMR Passages, Université de Pau et des pays de l'Adour) and Romane Guillot (intern) in the context of PEI CUBIC[2].

The following analyses come from four years of personal experience as a presenter and researcher within a group of farmers using open-pollinated maize, and from participation in various meetings, symposiums, presentations, training and debates, within the agricultural and para-agricultural industry. The conduct of an experiment on the quantitative evaluation of mass selection carried out as part of the CASDAR COVALIENCE project[3] (first results to be published in 2021) constitutes a large part of this professional activity.

II. Farmers' motivations and values in their choice of *semences paysannes*

The motivations which push farmers to work with *semences paysannes* are varied. Guillot (2019) researched several collectives in the South-West of France and through his study pulled out six key motivators: (i) the quest for autonomy and the political battle, then the techno-economic battles which we break down here into (ii) economic motivation, (iii) agronomic motivation and (iv) technological motivation, (v) the safeguarding of cultivated biodiversity, (vi) the improved recognition of the work of farmers, and (vii) the need for collective actions [12].

(i) The first concerns the quest for autonomy from the monopoly of industrial seed producers. This defiance towards seed institutions comes from a combination of factors. Apart from the fact that the varietal offer is unsuitable for certain agricultural models, a lack of trust arose in the 2000s after GMO contaminants were found in commercial maize seeds. A report by AFFSA (Agence Francaise de Securite Sanitaire des Aliments - the French Agency for Food Safety), confirmed in 2001 that in a series of inspections carried out in 2000 and 2001, 41% of samples were contaminated [13].

"*Before open-pollinated maize, we made our own hybrids, we crossed two hybrids, we detasseled one and left another. So we still depended on seed producers, which annoyed us a little, that's also why we started with open-pollinated maize. It's not necessarily financial, it's more political in terms of GMOs, it's those things which led us to wanting to bypass the seed producers who don't give a damn about us, who are just there to do business*" (livestock farmer from Loire-Atlantique (44), heard during a meeting of a collective in Dordogne (24) - September 2020).

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[2] Le PEI CUBIC is a research and development project which aims to develop collective dynamics of participative selection of farm varieties, with an agroecological approach. It brings together 13 partners from the Nouvelle Aquitaine region. Supported by the Nouvelle Aquitaine region and the European Union. 2019-2020.

[3] Co-design selection management tools on allogams for local adaptation and agroecosystem resilience - in the case of maize - participative selection on open-pollinated maize. A French project led by ITAB (Frédéric Rey) and INRA (Laurent Hazard). Supported by the French Ministry of Agriculture (CASDAR). 2018-2021.

"*The basic objective was to protect ourselves from the GMO seeds which were found in commercialised hybrids, and therefore to become independent in terms of seed production*" (grain farmer from Dordogne (24), surveyed in August 2017).

"*The development of GMO plants seemed to him to be a new and final attempt on the autonomy of farmers*" (extract from a portrait of a goat farmer in Vienne (86)) [14].

These three accounts show that hybrids and GMOs are often associated, in terms of representation, in the reports, although these two selection methods are very different. They confirm that the arrival of GMOs was a trigger which brought about a more general question around "non-farm varieties" and of the seed model. In these three statements, we note that becoming a seed producer was not an end in itself, but a way of protecting oneself from GMOs.

Moreover, a number of legal changes have been felt by certain farmers and agricultural organisations as the extortion of plant breeders, against the fundamental right of the people to retain control of their food resources.

"*What's at stake today is that the political decision-makers are becoming aware that seeds are the basis for guaranteeing food sovereignty for future generations*" (grain farmer from Dordogne (24), speaking in 2011) [14].

In this respect, we can cite the prohibition of the triage profession on 4th July 1989, the rejection of the request by UPOV (Union Nationale pour la Protection des Obtentions Végétales - The National Union for the Protection of Plant Varieties) in 1991 to ban farm seed which resulted in the establishment of an "optional dispensation" (where farm seed is authorised as long as the breeder is remunerated) [15], or indeed the implementation of the Official Catalogue system which structurally excludes genetically diverse varieties due to the establishment of a marketing authorisation on the basis of DHS studies (Distinction, Homogénéité, Stabilité - differentiation, homogeneity, stability), which are supposed to guarantee "to the user that the variety he has chosen is perfectly identifiable and therefore distinct from all other varieties already registered in the Official Catalogue", and from VATE studies (valeur agronomique, technologique et environnementale - agronomic, technological and environmental value) in the case of agricultural species, which should guarantee that "the variety has a cultural value and sufficient usage" [16]. It is therefore forbidden, to any economic player, to commercialise seeds which are not registered in the Catalogue.

"*The industry has gone through this and uniformity has colonised the fields, making this immense collective wealth disappear, due to a vertical and pyramidal structure. Farmers' creativity has therefore given way to a military discipline of rules, machines, and chemical weapons*" (extract from an editorial by Patrick de Kockko, former coordinator at the RSP, now an artisan baker) [17].

"*The aim of my conversion to organic was to break with these agricultural suppliers, and therefore to stop the chemistry, but also to no longer depend on the seed producers*" (livestock farmer in Dordogne (24), speaking in 2010) [14].

"*I think that as a farmer, it's in our interest to be able to grow what we want, what we choose*" (vegetable farmer in Dordogne (24), filmed in 2020) [18].

Thus, certain farmers began cultivating *semences paysannes* after a reappraisal of the seed-production model, provoked by the introduction of GM maize in Europe. They therefore sought autonomy regarding the seed monopoly, often defending a so-called "peasant" agricultural model, or even a societal organisation rejecting certain principles of capitalism, such as the intensification of production, ultra-specialisation, the race for productivity, private property or the accumulation of wealth.

(ii) The second motivation is economic. Numerous growers mention the elevated cost of commercial seed and reveal that this cost does not justify the differences in yield between commercial varieties and *semences paysannes*. These statements should be put into perspective depending on the agricultural systems: real estate pressure, the level of intensification, pedoclimatic conditions, production needs for other areas of the farm, production valuation systems, pest pressure (birds and big game), and the frequency of heatwaves are all factors which make generalisation impossible and economic models not very robust.

"*Semences paysannes lets you produce animal or human food products at a lower cost*" (livestock farmer from Landes (40), filmed in 2020) [18].

"*The job we chose to do, we don't see any sense in it anymore, we feel crushed by this huge machine and the only economic alternative available to us, besides the social and environmental aspects, is through the reappropriation of semences paysannes*" (grain farmer from Landes (40), filmed in 2020) [18].

"*Growing hybrid maize nowadays, when we don't irrigate and with the droughts we've experienced, that becomes stupid, while if we manage to produce open-pollinated maize and make it profitable through our breeding, that is for me the guarantee of farmer autonomy*" (livestock farmer from Landes (40), filmed in 2020) [18].

Let us note however that *semences paysannes* are far from being profitable in all agricultural systems. Apart from the differences in genetic performance, the production of seeds on the farm requires specific equipment, knowledge and know-how which are not always mastered. A bad quality farm-produced seed often leads to a loss of vigour and poor emergence. Though techniques may vary, all farmers in Garçon's (2021) study are unanimous on the importance of conservation, which seems to be the most crucial aspect [19].

"*We didn't know how to produce maize for grain, we have learnt everything and we're still experimenting and developing today*" (statement from a duck farmer in Dordogne (24), heard during a collective meeting, cultivating open-pollinated maize for 10 years).

(iii) The third motivation identified by Guillot (2019) and Charbonneau *et al.* (2020) is of an agronomic nature. Certain collectives study the agronomic qualities of *semences*

paysannes, and in particular their capacity to adapt to different soils, but also to the practices and wishes of the farmers. This dimension appears to be a key consideration for collectives [11], [12].

It is interesting to see that in publications by the RSP from 2003-2004, the argument in favour of *semences paysannes* stipulated that the diversity of farmer-cultivated varieties allowed them to find varieties which were adapted to their practices and the local pedoclimatic conditions [20]. This affirmation seems in part to be validated by the results in the literature. Indeed, interactions of cultivar x environment in several publications show this "adapted" character of certain varieties, notably in systems using fewer inputs [7], [21]–[24] but rarely in mechanical routes (ploughing / without ploughing) [25]–[27].

This link between the arguments of diversity and adaptation seems to have evolved rapidly and we can read in publications several years later that the genetic biodiversity of open-pollinated varieties guarantees a capacity to adapt to local conditions [14], [17]. Despite a broad appropriation of this argument by collectives and farmers, we believe it is debatable. The capacity of farmer-cultivated varieties to adapt to the land rests on principles of natural selection [28], and would need scientific validation to discuss this claim on a farm timescale (10 years). However, the diversification of strains of open-pollinated varieties under the effect of farmer selection was observed on several occasions and over short time periods (1 to 3 years) [29], but the agronomic improvement of these varieties, in accordance with the farmers' objectives, remains to be seen [30]. The idea of "adaptation to soils" returns therefore to a process where the multiplication and selection of seeds, from the same initial variety, in geographically close yet different environments would lead to effects from the interaction strain x farm, such that strain B selected on farm 1 would, on farm 1, be better than strain A selected on farm 2; and strain A, observed on farm 2, would be better than strain B, this taking place over short time periods (10 years of selection "in situ"). To our knowledge, no experimental protocol of this type has been described in the literature.

(iv) Despite everything, certain technological and organoleptic characteristics, specific to certain developments, only seem to be found nowadays in open-pollinated varieties. Farmer collectives have, therefore, identified within certain varieties of open-pollinated maize, highly-appreciated flavours, colours and textures of polenta, or interesting rheological behaviours during certain food-producing stages (such as the example of a semolina pudding in Dordogne).

"*When I ground this maize in a mill to make flour and to make taloas with it (a Basque corn pancake), I found them better than usual. That's where I got the idea to try and develop this maize for human consumption*" (statement from a Basque grain-producer on the development of the local brand Arto Gorria) [31].

"*Nowadays we have clients who are fans of this particular product, who come to the farm especially to buy their corn meal. It's a pleasure to share this discovery and to know people are open to this food culture*" (livestock farmer from Vienne (86)) [31].

Breeders of ducks for *foie gras* state for example that feeding ducks with open-pollinated maize, compared to hybrid maize, gives the ducks a more muscled profile without losing mass on the liver (no experimental validation can confirm this testimony, as far as we are aware). Moreover, the often "original" colours of the maize cobs (red, blue, white, green, orange) allows for a better identification of the product, which allows the farmers to add value in local food networks.

(v) The safeguarding of biodiversity is an aspect causing differing levels of concern among collectives producing open-pollinated varieties. This desire for protection only rarely takes the form of patrimonial protection, but more in the form of conservation and an increase of collectives' capacities to find and adapt the varieties which best suit the specific ecosystems; a "reservoir" of solutions. The erosion of cultivated biodiversity linked to the modernisation of agriculture has been identified since the beginning of the 20th century [32], despite the diversification of the seed producers' varietal offer, which seems directly correlated with the loss of genetic diversity in agricultural systems (such as the example of wheat in France) [33].

Among certain farmers, the concern over the conservation of genetic diversity within the plant population sometimes comes into conflict with the priorities of mass selection such as agronomic improvement. We have been able to observe several times mass selection practices consisting of keeping "extreme" phenotypes in a maize population (e.g. very late, giant, dwarf, small ears), and opposing the objective of improvement in the name of conserving biodiversity or in the fear of genetic degeneration. These practices often end in a stagnation of the phenotypic characteristics of varieties.

"*If the stems are green, that means it's not ripe, you don't take it. I personally take some for heterogeneity*" (extract of advice given to seasonal workers working for a grain farmer in Dordogne at the time of his selection of open-pollinated varieties in 2017).

We have often come across defiant reactions in training sessions, when we explain that mass selection within a population aims to reduce genetic diversity. But we have learned to explain that, even if this seems paradoxical, farmer selection is responsible for maintaining the increase in genetic diversity of cultivated plants [32], [34], because it is the diversity of farmer selections, the objectives, the affinities and the atomicity of situations where seeds are multiplied which produces cultivated biodiversity. To this end, Fenzi (2014) explains in his thesis the evolution of approaches relating to the conservation of genetic resources, concluding notably that "in situ" selection (in the farmers' fields), is more sustainable and democratic than "ex situ" selection (in banks of genetic resources) and the only guarantee of food sovereignty [35].

The following testimony clearly illustrates this possible differentiated genetic orientation of a farmer strain under the effect of mass selection, which has been partly guided by the personal sensitivity of the breeder.

"*Sometimes, you have a beautiful, light, round grain, which just stands out… the cob speaks to you, no but it's true, it speaks to you… you, you don't meet the criteria, but you want to live! That one, you feel something, and you think, OK, I'll keep it!*" (words taken during an exchange between farmers in the Basque country on the criteria for selection for a collective maize variety) [31].

(vi) The sixth motivation identified can be described as "the re-valuing of the role of a farmer" [12]. The farmers concerned often claim a great amount of pride and pleasure in working with *semences paysannes*.

"*It means allowing the farmer to ensure his main function, which is also as a guardian of life and who doesn't just have a mission of productivity; you have to see it through otherwise you lose the sense of life. Preserving your seeds, means to push life even further*" (vegetable farmer from Limousin, filmed in 2020) [18].

"*Cultivating semences paysannes is also a pleasure; the seeds are beautiful, the cobs are beautiful, the crops are nice to look at… these plants are so beautiful and so varied, we feel something much stronger than cultivating F1 hybrids or lines for wheat. And more than the technical or economic side, there is a reappropriation of seeds and of selection for a farmer; that's what's the most valuable to me today*" (livestock farmer from Vienne (86)) [18].

Autoproduction of seeds and farmer selection allow them to better master the cycle of production and the rejection of the system of privatised seeds sometimes comes along with it, in conversations with farmers, through the values of sharing and passing on of varieties as well as knowledge.

"*Semences paysannes means seeds that we have claimed ownership of, that we can replant, pass to a friend, without aiming to make money*" (livestock farmer from Landes (40), filmed in 2020) [18].

"*Semences paysannes are multiplied and selected by farmers and passed on to future generations, exchanged, passed to colleagues, neighbours, to perpetuate a local tradition*" (livestock farmer from Vienne (86)) [18].

"*It's the passing on of a variety, a culture, an agriculture, to the next generation*" (another livestock farmer from Landes (40), filmed in 2020) [18].

Moreover, products from these seeds are often transformed or even sold on the farm. The reappropriation of knowledge associated with this often technical autoproduction, seems to revalue the knowledge and capabilities of farmers, in their eyes as well as those of their consumers.

"*What restaurant owners like is the political project behind it, that of the reappropriation of semences paysannes, which makes them want to showcase the product*" (testimony from a producer of semolina from open-pollinated maize, selling his products to restaurants in Paris) [31].

(vii) The final motivation, probably one of the most important, reveals the importance of collective actions. The usage, diffusion, and selection of farmer varieties is for many a way to create a social link and farmer solidarity.

"*There's a really strong social, human side; it's just a little seed but we've been able to meet farmers from the other side of France*" (livestock farmer from Loire-Atlantique (44), overheard during a collective day in Dordogne (24) in September 2020).

"*Above the economic aspect, what's important to say for them, is that the open-pollinated seeds have no sense without a group and without sharing between producers. The interest is to get by financially but also to find a real motivation and find value in our work again*" (remarks from a trainer in Vienne describing a couple of sheep farmers) [1].

The evolution of the career of a farmer since the 1960s has provoked, for multiple reasons, a loosening of working relationships between farmers and an individualisation of the ways of exercising their profession, often increasing their social and economic vulnerability [36].

Farmers who are organised around *semences paysannes* often carry this notion of the "collective" as a strong value and even sometimes as a finality, the objective of "seeds" simply becoming a pretext to meet.

"*The fact that it's open-pollinated seeds, that social side, means that there's a pleasure to cultivating them, even a necessity, so we maintain it over and above its implementation on the farm compared to other possible sources of energy*" (livestock farmer from Loire-Atlantique (44), heard during a collective day in Dordogne (24) - September 2020).

In certain *Maisons de la Semence*, the participation in collective actions is sometimes even an obligation in return for the seeds.

"*We don't want farmers to take them as if it was a cooperative. If they don't have the collective side, for sure, they won't manage to cultivate farmer varieties and they will quickly give up*" (words from another livestock farmer from Loire-Atlantique (44) in 2020).

The terms "collective" and "collective action" regularly attached to the idea of *semences paysannes* often come into conflict with the term "autonomy", used in the sense of individualism. Certain farmers choose to cultivate *semences paysannes* to reduce their dependence on seed producers and do not necessarily wish to establish new forms of dependence, even to a local collective. Discussions around the management of *semences paysannes* in a particular area is sometimes the scene of a confrontation of values; between autonomy in the sense of self-sufficiency and individualism where certain farmers fear the loss of a specific variety under a local monopoly, and autonomy in the sense of a collective construction of freely agreed-to norms and rules to defend common interests.

III. Conclusion

Thus, firstly for political, economic or agronomic reasons, then for technical, philosophical and/or social reasons, certain farmers choose to resort to *semences paysannes*

from open-pollinated maize; non-commercial, free from copyright, reproducible, diversified and evolving.

This approach of reappropriating *semences paysannes* accompanies the challenges and concerns which have been felt across the French agricultural world for the last 20 years: ultra-specialisation, the loss of economic, technical or decisional autonomy, the need for resilience, the recurrence of climatic risks, environmental concerns, etc. The need to discover or rediscover the sense of the role of the farmer above the function of production is strong among farmers; to link their job to a land, a history, a philosophy of life, notably by the development of united networks to share seeds, knowledge, work and values, but also by local development and marketing and by the reappropriation by farmers of the added value of products. Thus, the motivations of farmers to adopt *semences paysannes* from open-pollinated maize evolve and diversify with time. We think that this choice of cultivation is a symptom of the changes taking place in certain areas, where the industrial agricultural model no longer allows farmers to live with dignity in their profession.

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