



Organic World
Congress 2020

FRANCE

SEPTEMBER 21ST TO 27TH, 2020 IN RENNES

AT THE COUVENT DES JACOBINS • RENNES MÉTROPOLE CONFERENCE CENTRE

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OWC 2020 Paper Submission - Science Forum

Topic 5 - Political and economical frameworks as drivers for a vibrant development of the organic sector

OWC2020-SCI-1311

CROP ORGANIC SEEDS AND VARIETIES IN FRANCE: AN OFFER TO BE DEVELOPED?

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Preferred Presentation Method: Oral or poster presentation

Full Paper Publication: Yes

Abstract: The diversity of organic farming systems (“formal organic”, agroforestry, permaculture, etc.), the long rotations usually implemented, the diversity of processing (industrial, handmade) and marketing systems (supermarkets, short chain, on farm, etc.) generate a huge diversity of demands in terms of crop species and varieties adapted to organic agriculture.

However, in France, farmers have a limited choice of crop varieties specially bred for organic conditions (only one durum wheat variety and 5 bread wheat varieties). So, they must sow organic seeds of “conventional” varieties. These organic seeds are largely those of foreign varieties (not listed in the French Catalog but in the EU one) and are therefore not the best suited to the local conditions and needs. It seems urgent to raise awareness among all the actors so that they can get involved in breeding programs to develop varieties and seeds for organic sector, through participatory approaches.

Introduction: In France, very few breeding programs are dedicated to organic agriculture. Only two field crops cases have been the subject of a registration in the national catalog. The first case was a durum wheat variety called *LA1823*. It was the first variety resulting from a participatory breeding program involving organic farmers from the south of France (Camargue and Lauragais). The farmers have largely contributed to selecting this variety well adapted to their constraints. This variety, particularly efficient in using soil nitrogen and very competitive against weeds, was proposed for registration in 2005. But at that time, no organic official field trials were proposed and this variety was not registered in the list A of the French catalog. However, it is still one of the most widely used durum wheat varieties in French organic farming *via* contract. The other case is that of soft wheat, where 5 varieties have been selected and evaluated in the recent organic network set up by the CTPS,¹ and are registered in the list A of the catalog. Organic farming is not enough considered as a target into breeding programs. Till today, breeding companies were claiming that the market is not yet profitable enough. For instance, for soft wheat, the French certified organic area was only 80 000 hectares in 2017, while conventional areas

¹ The Permanent Technical Committee for Plant Breeding (an advisory committee of the Ministry of Agriculture)

reached five millions hectares in the same year. Combined with the time required for creating a variety (between ten and twelve years), this explains the current situation.

However, access to varieties adapted to organic agriculture is necessary and urgent to allow the development of Organic farming in France, development affirmed in the plan Ambition Bio 2022 (15% SAU bio in 2022). And also to accompany the reduction of inputs essential in conventional agriculture.

What is the offer in terms of variety available to organic farmers in France?

Material and methods: It is not easy to have access to precise data concerning the number of varieties whose organic seeds are produced in France or imported. Data provided by the GNIS² Study and Statistics Data Service are significantly different from the data provided by the suppliers and presented on the site (<http://www.semences-biologiques.org/pages/agriculteur.php>). Moreover data are changing very often.

Data on derogations were also taken into account. The European regulation obliges organic farmers to use seeds that have been multiplied into organic conditions. But there are, for some species, still some possible derogation to use conventional seeds when there is a lack or an insufficient availability of organic seeds.

Results: On the basis of a compilation of the two data bases (last access nov. 2018), we gathered the crop species according to the following cases:

- Crop Species for which there is no list (or no registered varieties) in the French catalog and no organic seed, but for which some farmers request derogations: *Starch Blue, Hengrass, Quackgrass, Small Spelt, Forage Lentil, Millet, Black Mustard, Deep-Sea Mustard, Niger, Sweet Potato^{3*}, Plantain Beef Horn, Quinoa, Serradella, Sesame, Tritordeum, Micheli Trefle, Trefle Bull In Bladder, Narbonne Vetch, Purple Vetch.*
- Species present in the French catalog but for which there is no organic seed : among them, some are major (*Sugar Beet, Fibre Linen, Rice, Forage Sorghum*) and others of lesser importance in terms of the number of varieties in the official catalogue but which are important in terms of crop diversification for organic farming (*Brown Top Common Bent Agrostis Capillaris L., Bromus Rescue Grass, Tufted Hairgrass (Deschampsia Cespitosa), Hemp, Fodder Cabbage, Fenugreek, Sheep And Red Fetucca, Bulbous Flower, Koelerie, Brown Mustard, Forage Shuttle, Skate*).
- Species for which farmers may found organic seeds, however the species are not listed in the French catalog, but are listed in the EU catalog: *Naked Oat, Cameline, Spelt, Fromental, Blue Lupine, (Melilotus Officinalis, Medicago Lupulina, Buckwheat, Rye, Forest Rye, Persia Clover (Trifolium Resupinatum), Trifolium Squarrosum*
- Species for which the number of varieties with organic seeds is greater than the number of varieties in the national catalog. This indicates a strong demand for organic products and a limited number of registered varieties in France: *Forage Rape, California Bluebell (Phacelia), Trefoil, Winter Forage Pea, Sainfoin, Alexandra Clover, Hybrid Clover and Incarnat Clover.*

Concerning derogations, clovers (all species combined) alone accounted for almost 30% of the requests for derogations granted. In total Fodder and Covered represented 72% of derogation requests. Cereals: 12% (mainly *Oats, Barley, Bread Wheat*); Protein crops: 6% (mainly *Fababeans and protein peas*) and Oilseeds: 6%

² French interprofessional organization for seeds and plants

³ *considered as arable crops on derogation list

(mainly *sunflower*); Maize and sorghum: 2% because the requests for derogation in maize are prohibited or very limited, industrial crops and tubers: 2% (mainly Potato). Concerning EU Catalog, requests are major for *winter forage rape (1173)*, *orchard grass (2061)*, *high festuca (2510)*, *hybrid clover (1579)*. Some cases have to be investigated: oilseed rape (119 varieties in list A, none multiplied in organic!), cocksfoot (*dactylis* (47 varieties) and tall fescue (98 varieties in list A).

- Species for which 100% of the varieties multiplied in organic are on the French catalog: *Forage beat*, *Durum wheat*, *industrial Chicory*, *Grain Sorghum*
- Species for which more than half of the national catalog is available in organic seeds: *Fababean*, *forage pea*, *Incarnat Clover*.

Discussion

In 2018, farmers could choose in the French catalog among 3128 varieties (all arable crops species combined) and only 10% of these French varieties were available as organic seeds.

Concerning the whole organic seeds catalog, farmers had access to 688 varieties (period 2015-2018), representing a choice of 22% compared to the national catalog. Among them, only 43% belong to the French Catalog. 57% of organic seeds available to French farmers come from foreign varieties (EU catalog)!

What is the problem in France? Are French varieties less suited to organic farming than foreign varieties? Do French varieties present a difficulty to be multiplied under organic conditions? Are French organic conditions not suitable for organic seed multiplication? Is it a reluctance of French breeders?

Conclusion

Organic farmers set up long rotations to control weeds and diseases, and to manage crop nutrient cycles. An increase number of farmers are looking for orphan species to diversify their market. They seek a great diversification not only of species but also of varieties within each species.

Organic farmers have obligation to use organic seeds. Only 10% of the French catalog is available with organic seeds, and for certain species, no organic seed is available.

When organic seeds are available, they come essentially (57%) from varieties that are not selected in France and whose adaptation to the national terroirs should be questioned.

The establishment of CISAB⁴, the trans-commission of the CTPS, is a first step towards raising breeders' awareness among and offering them methods for evaluating and qualifying their variety for organic conditions.

In addition, the involvement of a large number of actors in participatory breeding and evaluation programs can help increase supply. Now aware of the urgency of offering varieties and seeds adapted to the organic sector, the French seed sector aims to forbidden derogations and offer a larger range of organic seeds in 2025.

Disclosure of Interest: None Declared

Keywords: Participatory breeding, orphan species, seed sector, variety registration

⁴ CTPS Committee dedicated to organic agriculture