



Influence of location and human selection on two soft wheat populations

Problems

For many years, French farmers have developed farm varieties for organic farming with high diversity, by using mixtures (dynamic populations) or crosses (CCP). What are the factors that influence the agronomical behavior and the phenotypical diversity of the populations created thanks to those two methods (see PA#57 "Comparison of two breeding strategies for soft wheat populations")?

Solutions

Two populations coming from two different breeding strategies (mixture and manual crossing) both were cultivated in two different farms since 2015. Manual crossings were conducted two by two for each variety, meaning that every variety was used as male and as female in the creation of the populations. Each population has undergone a mass selection by farmer and two bakers in 2018, each one of them choosing 60 spikes with their own criteria. The agronomical behavior of the populations and their phenotypical diversity were followed, based on criteria such as the height of the straw and spikes, the color of the spikes, the number of fertile spikelets or the yield.

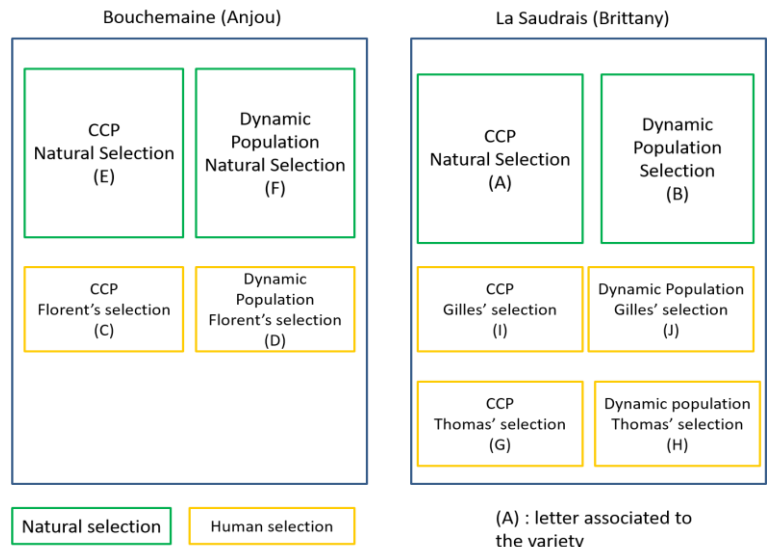


Figure: Experimental plots on the two locations

Practical recommendations

- This experiment shows that the environment of a population is a more important factor than the breeding strategy (manual crossing or mixtures). It is even more important in organic farming where we do not seek for a homogenized environment.
- Human selection (as it was conducted by the actors involved in this experiment) seems to be the most important factor on the evolution of a population, at least for the first year after the selection. Mass selection can enhance the agronomical criteria without reducing the diversity of a population.

Further information

1. Comparison of two strategies for creating diversified populations of soft wheat, adapted to organic farming (in French): <https://orgprints.org/37983/>
2. PA#57 Comparison of two breeding strategies for soft wheat populations

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