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About CERERE:

Through a balanced, multi-actor network of researchers and communities of practitioners, the project promotes innovation by producing and disseminating accessible end-user materials and training products for farmers, food manufacturers, consumers, researchers and policy makers.

EVOLUTIONARY POPULATIONS (EPS) CAN ADAPT TO CLIMATE CHANGE AND TO DIFFERENT AGROECOLOGICAL ENVIRONMENTS INCREASING FARMING SYSTEM'S RESILIENCE ENHANCING THE BIODIVERSITY.

PROBLEM

The narrowing of genetic diversity in crops is considered a real threat to food security. The homogeneous varieties (characterised by a very limited genetic diversity) are normally utilised within conventional agriculture, where the use of chemicals minimize the differences related to the soil and environment. For this reason, these varieties are not appropriate for low-input and organic farming management and moreover are generally more affected by negative uncontrollable factors (epidemics, temperature, etc.) related to the impacts of climate change

SOLUTION

Enhancing the diversity of the cultivated species represents the main adaptive strategies facing the effects of climate change. The coexistence between the increase of agrobiodiversity, the sustainable management of the farming system and food security in EU is a challenge where the use of heterogeneous populations (or EPs), can give a contribution to solve. The EPs are site-specific because they have evolved in specific environments, characterized by different climates, soils, landscapes, agricultural practices, processing techniques and oriented to specific markets and consumption habits.

Outcomes

The development on the field, research and the using of EPs will provide a strong contribution to the strategies aimed to reduce the risks related to climate change and, in the meantime, contribute to the sustainability of the agri-food system in Europe. Currently, the populations registered and available on the market are:

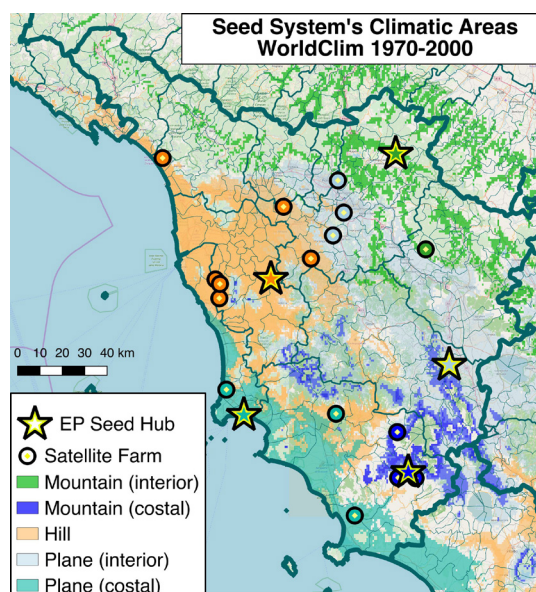
Crop	Country	Number of registered population
Barley	Italy	1
Durum wheat	Italy	4
Maize	Germany	5
Spring wheat	Germany	8
Winter wheat	France	2
	Germany	7
	Italy	3
	United Kingdom	1

Population registered and available on markets SOURCE : Liveseed Horizon2020 , December 2017

Practical Recommendation

A basic condition for the successful implementation of EPs is that the seeds must be developed in the same region and community that they will be used in.

Defining the boundaries of these micro-environments is, therefore, a key factor for the creation of networks of farmers which can assure the process' sustainability over the time.



Evaluation and sharing of the results

Use the comment section on the CERERE website to share your experiences with other farmers, processors, retailers, advisors and scientists. If you have any questions concerning this Practice Abstract, please contact the author by e-mail.

Project partners

The University of Reading (*United Kingdom*),
 The University of Florence (*Italy*),
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 Red Andaluza de Semillas (*Spain*),
 Formicablu (*Italy*),
 Organic Research Centre (*United Kingdom*),
 SEGES P/S (*Denmark*),
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 The University of Debreceni (*Hungary*).

Further Information

- European Commission (2014): COMMISSION IMPLEMENTING DECISION of 18 March 2014 on the organisation of a temporary experiment providing for certain derogations for the marketing of populations of the plant species wheat, barley, oats and maize pursuant to Council Directive 66/402/EEC (notified under document C2014 1681). Official Journal of the EU, 20.03.2014.
 - Ceccarelli, S. (1996). Adaptation to low high input cultivation. *Euphytica*, 92(1-2), 203-214.
 - Jacob van Etten et al. Crop variety management for climate adaptation supported by citizen science. *National Academy of Sciences* Mar 2019, 116 (10) 4194-4199; DOI: 10.1073/pnas.1813720116

Theme: Agronomic practices

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Crop: Cereal

Country: Italy

Related CERERE case study: Solina Wheat

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