AGRESTIC

The LIFE AGRESTIC project has received funding from the LIFE programme of the European Union

www.agroservicespa.it

Short technical note

Genetic improvement of legume species

Legume species are becoming increasingly important for new agricultural models based on sustainability. They are soil-enhancing crops, as they are capable of nitrogen fixing. They are also a source of proteins with a lower environmental impact than those of animal origin. However, the areas cultivated with legumes in recent decades have seen a progressive decline, mainly due to the difficulty of obtaining satisfactory productions, resulting from the scarce availability of varieties adapted to the climate change, as well as to the lack of knowledge of adequate agronomic techniques.

It is very important for researchers and breeders to valorize the existing biodiversity for these species, identifying and developing new, more performing varieties.

In the LIFE AGRESTIC project, legume (chickpea, lentil, protein pea) genetic resources have been evaluated in order to identify new, improved varieties to be included in the Efficient Cropping Systems developed in the project.

Problem

The European agricultural market is poor in productive and stress-resilient legume varieties. As a result, their diffusion in cultivation is still limited.

Solution

The development of new varieties, more adaptable to the changing cultivation conditions, could encourage their inclusion in rotations.

Impact

Legume species are soil-enhancing crops, and source of sustainable plant-based proteins. Thus, their diffusion in cultivation will have a positive impact on environmental health.

Practical recommendation

Public and private research institutions are working intensively to explore available legume species' biodiversity, in order to identify sources of stress-resistance genes, as well as genomic assets linked to higher productivity and better nutritional quality. These materials will be the starting point for the development of a new generation of legume varieties with higher performances, that will represent a fundamental part in the modern, efficient cropping systems.

Including legume species in crop rotations (which one to choose depends mainly on the geographical area and the growing season) means improving soil management in terms of texture, presence of organic matter and nitrogen, resulting in lower GHG emissions.

Applicability box

Theme

Genetic improvement of legume species

Keywords

Legume, protein pea, chickpea, lentil

Geographical coverage

Italy

Application time

Whole year

Required time

New varieties in the National registration process

Period of impact

Cropping season

Equipment

Usual equipment for legume cropping

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Picture 1: Comparison of the agronomic performances of different chickpea lines in Osimo (AN) – Italy. June 2022.

Picture 2: New protein pea variety identified in the LIFE AGRESTIC project. Osimo (AN) – Italy. May 2022.

Further information

- LIFE AGRESTIC web page www.agrestic.eu
- ISEA-Agroservice web page www.agroservicespa.it

About this short technical note and LIFE AGRESTIC

Authors: Sofia Ghitarrini, PhD. R&D legume-oilseed crops ISEA Srl

LIFE AGRESTIC (LIFE17 CCM/IT/000062) - Reduction of Agricultural GReenhouse gases EmiSsions Through Innovative Cropping systems. The LIFE AGRESTIC project aims at fostering the adoption by EU farmers of innovative and efficient cropping systems with a high climate-change mitigation potential, and spreading innovative views and tools for climate ready and resource efficient agriculture.

Project website: www.agrestic.eu

Project partners: Horta srl; ART-ER S.Cons.p.a; ISEA srl; New Business Media Srl; Scuola Superiore di Studi Universitari e di Perfezionamento Sant'Anna; Universita' Cattolica del Sacro Cuore