

Implementation, study and valorisation of a new eco-sustainable cereal

Summary

Conventional agricultural practices such as irrigation and the use of chemical herbicides and the ecological impacts of global warming may affect crop productivity and reduce the land available for agriculture in the near future. Perennial crops have recently been shown to create a widespread increase in several key ecosystem services in comparison to annual crops.

Kernza (*Thinopyrum intermedium*) is a perennial intermediate wheatgrass crop that is currently being developed at the Land Institute (Kansas, USA), and can be used for both forage and grain in a single year. This type of double harvest can increase yields compared to a single (grain) crop, and involves the same growth by the roots. Its characteristics make it a very interesting crop, including: its ability to combat weeds, fix carbon (C) and reduce leaching and surface run-off.

An assessment of its potential under conditions in Catalonia, and an estimation of the final value of the harvested product (for both fodder and grain) and its potential for application in the food sector (which is very interesting) could create interesting synergies not only between members of the Operational Group, but also all over the country.

Objectives

The objectives of the project are to evaluate the productive potential of perennial wheat (Kernza®) under conditions in Catalonia, and the quality of the grain for producing flours for human consumption. Another objective is to assess the exploratory capacity of the Kernza® root system to estimate its environmental potential for both C-fixation and its possible contribution to reducing nitrate leaching into groundwater. At the same time, the optimal flour production technologies for obtaining "Kernza" flour will be studied and finally, the quality of the flour and its inclusion in various agricultural products and foodstuffs will be evaluated.

Description of the measures planned in the project

The actions to be carried out in this project can be divided into three main areas: the agronomic area, obtaining and analysing flour, and application and use in food products.

- **Agronomic area:** Activities related to studying management of the crop will be undertaken. All the crop-related variables will be studied over two growth cycles and compared with regular annual wheat.
- **Obtaining and analysing flour:** The different flour production technologies commonly used will be studied, and the most optimal one will be selected. The grain obtained from the agronomic area using the selected flour technology will provide the Kernza flour. Its quality and nutritional characteristics will subsequently be analysed and determined.
- **New product development:** New products will be developed using the Kernza flour obtained in the other areas, and a study made of any changes in the products due to the presence of the new flour, the organoleptic characteristics of the new products, and the commercial viability of the developed products.

Expected results and practical recommendations

The project "Implementation, study and valorisation of a new eco-sustainable cereal" expects to obtain three main results:

First, the project expects to obtain a good practices and management guide for the new crop, including the potential yield of Kernza; second, Kernza flour will be characterised and compared with wheat flour, and its forage yield for forages commonly used by Murucuc farms will be determined; and third, the project aims to obtain a product containing Kernza flour, and to determine its feasibility for launching in the market.

Leader of the Operational Group

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Subject area(s) of application

- Agricultural production system
- Agricultural practice
- Agricultural equipment and machinery
- Livestock farming and animal welfare
- Vegetable production and horticulture
- Landscape / Territorial management
- Pest and disease control
- Fertilisation and nutrient management
- Soil management
- Genetic resources
- Forestry
- Water management
- Climate and Climate Change
- Energy management
- Waste and by-product management
- Biodiversity and environmental management
- Food quality/processing and nutrition
- Supply chain, marketing and consumption
- Competitiveness and agricultural and forestry diversification
- General

Geographical area(s) of application

PROVINCE(S)	REGION(S)
Barcelona	Osona

Dissemination of the project (publications, conferences, multimedia...)

The new ideas and the results of the project will be presented at fairs, conventions and specific seminars in the sector.

BETA-UVic-UCC, the subcontracted research centre, will also play an active role in the dissemination of the results through the centre and through the scientific and technological platforms in which it participates. The results of this project will be published in specialist journals.

The knowledge generated during the project will therefore be shared with the scientific and agricultural community as a result of the presentation of papers at local, national and international conferences.

Project website

The project will be disseminated through the website of the participating centre (BETA-UVicUCC), which will provide a brief description of the project and the objectives and results obtained. The financial aid received from the European Union will also be emphasised.

More information on the project

PROJECT DATES	TOTAL BUDGET
Start date (month-year): July 2020	Total budget: €68,832.17
Completion date (month-year): June 2022	DARP funding: €28,130.28
Current status: Underway	EU funding: €21,221.09
	Own funding: €19,480.80

With funding from:

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