INTRODUCTION OF INNOVATIVE AGRONOMIC PRACTICES IN WINTER RAPESEED (*Brassica napus* L.) FOR INCREASING PRODUCTION AND QUALITY - PROCOLZA)

Summary

Over the last 12 years, the area given over to rapeseed in Catalonia has doubled due to growing demand, especially for oil production. Moreover, its cultivation has many advantages for the crops that follow it in the rotation: increased yield, control of resistant weeds, reduction of disease inoculum, among others. However, rapeseed faces many critical challenges during its development. For example, achieving successful establishment of the crop, ensuring sufficient vegetative development during the winter, controlling pests and diseases, flowering duration and quantity, harvesting at the optimum time, are just some of the main critical points that need to be controlled. In view of the growing demand and the difficulties observed, there is an opportunity to address some of these points by improving current practices, either using new technology, new working procedures or a more efficient management of the crop.

Objectives

The main objective of the project **is to introduce innovations in agronomic practices that help maximize the performance of the crop through environmentally sustainable management,** based on the following specific objectives:

- Assess the influence of the sowing date
- Determine the optimal sowing rate and planting framework for the crop
- Encourage inter-row cultivation with precision hoes for weed control
- Develop a good strategy for mildew control
- Assess crop yield and grain quality by pre-mowing the crop
- Study the influence of fertilisation on grain fat content

Description of the actions planned in the project

The activities to be carried out to properly implement the project and achieve its objectives are described below:

- Activity 1. Incidence of sowing date on crop development and yield. The influence of the sowing date on the yield of rapeseed in Central Catalonia will be assessed through sowing trials at different dates.
- Activity 2. Determination of the optimal sowing rate according to the planting framework. Determine the influence of sowing density in relation to the planting framework, on crop development and yield, by means of a replicated block trial design with different sowing densities.
- Activity 3. Promotion of inter-row cultivation with precision hoeing machines for weed control and yield improvement. Evaluate the effectiveness of new weed control strategies in rapeseed using precision hoes.
- Activity 4. Establishment of control strategies for powdery mildew (*Erysiphe cruciferarum* Opix ex L. Junell). During the 2021-2022 and 2022-2023 seasons, two trials will be carried out (one per year) for the control of powdery mildew in locations in the counties of Girona. Different treatments will be implemented based on a combination of different phenological stages of application and active substances representative of several fungicide families.
- Activity 5. Pre-harvest assessment of pre-mowing the crop to reduce grain losses and production quality. During the 2022-2023 and 2023-2024 campaigns, 5 commercial plots will be used to carry out an assessment and comparison of conventional direct harvesting and pre-mowing systems according to the practices included in windrowing.

- Activity 6. Increased fat content of rapeseed kernels. This activity will involve studying the usual fertilisation practices on commercial rapeseed plots and determining the optimal fertilisation strategy for the crop based on nitrogen and sulphur to increase fat and grain content.
- Activity 7. Transfer of the results to the sector. During this activity, the improvements obtain during the implementation of the project will be showcased during organised conferences and in the field.

Expected results and practical recommendations

The expected results of the implementation of this project are listed below:

- Determine the degree of impact of the sowing date in the central areas of Catalonia on rapeseed yield and grain quality
- Determine the influence of sowing density and planting framework on rapeseed crop development and yield
- Determine the most effective weeding strategy in rapeseed cultivation
- Demonstration of weed control using precision hoes
- Determine the most effective strategy in the application of fungicide products for the control of powdery mildew
- Determine the influence of pre-mowing on crop yield and grain quality
- Assess the usual fertilisation practices in rapeseed cultivation
- Determine the impact of nitrogen and sulphur fertilisation on the yield and quality of rapeseed
- Dissemination of the most innovative results obtained in the project, both at sectoral and scientific level
- Drafting of a guide on rapeseed cultivation

Leader of the Operational Group

ORGANISATION: GRANS DE LLUÇANÈS, SL

Coordinator of the Operational Group

ORGANISATION: IRTA - Institute of Agrifood Research and Technology

Other members of the Operational Group (grant recipients)

ORGANISATION: AGROQUÍMICS SALVI

Other members of the Operational Group (not recipients of the grant)

ORGANISATION: ADV CONREUS HERBACIS SOSTENIBLES

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)
Girona, Barcelona	Osona, Bages, Empordà

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

As the project develops, an activity will be carried out to disseminate the results obtained during the project in the fruit sector. This is provided for in Activity 7: *Transfer of the results to the sector*, which will involve several dissemination conferences at the end of each trial season. Field days, conferences and seminars will be held to transfer the results obtained in each phase of the project. Finally, using the results obtained at the end of the project, a practical guide will be produced with new guidelines for improving the yield rapeseed cultivation and preventing powdery mildew.

Project website

More information on the project

PROJECT DATES	TOTAL BUDGET
Starting date: July 2021	**Total budget:** €203,520.00
	DACC funding: €94,118.40
Current status: Under way	**EU funding:** €71,001.60
	Own funding: €38,400.00

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