

GO COLOR 4.0

Summary

The losses associated with the lack of colouring in bicoloured apples is a problem that occurs every year, and as a result, a significant part of the production does not reach the threshold for the coloured surface of the fruit and is collected for conversion to juice, or in the worst case scenario, remains in the field.

A number of new tools are available to improve the colouring of apples. One of the primary requirements is to determine the areas in the field that have the worst conditions for colouring in commercial fruit. Remote sensing is one of the most powerful tools for categorising the vigour of plantations in a fast, robust and economical way, which offers scalability of the system. It is possible to determine of different management areas where it is possible to intervene to correct the parameters of the vegetation and thereby improve the colouring of the apples thanks to remote sensing. This technology is at a very advanced stage of development and is currently in use with grapes for wine production, but its use for sweet fruit is at a very early stage.

The project aims to improve the colouring of apples by differentiating areas in plots based on the vigour reported by remote sensing. Different cultural techniques will be implemented using this new methodology, depending on the vigour of each area. In other words, each plot will be treated with its characteristic variability or heterogeneity, and not as a homogeneous unit.

Other options to improve the colouring of bicoloured apples will also be considered. Some are used in other countries, but their effectiveness in Catalonia's unfavourable growing conditions is unknown.

Objectives

The main objective of this project is to improve the colouring of bicoloured apples, and the Gala and Pink Lady cultivars in particular.

This general objective is broken down into the following specific objectives:

1. Correlate and validate the information from remote sensing with the field variables for each variety, in order to establish a zoning criterion for the vigour of plantations based on the parameters of the canopy.
2. Assessment of additional colour improvement strategies.
3. Definition of individual strategies for each plot and zone according to their vigour.

Description of the measures planned in the project

1. Categorise the vigour of the plots and undertake zoning based on those categories.
2. Analyse the effectiveness, cost of implementation and economic benefits of cultivation techniques to improve fruit colouring.
3. We will seek to establish a roadmap based on the first two points, which will define the cultivation techniques to be established in each area and/or plot, based on the following points:
 - Vigour categories.
 - Cost, effectiveness and expected benefits of cultivation techniques.
 - Characteristics of the plot: Size, potential for subdivision, size or area of each category of vigour.

Expected results and practical recommendations

The tests above will determine the category of vigour that contributes to improving the quality of the fruit and therefore provides a greater economic yield for the farmer. Zoning and creating a database for each plot (which will be accessible to the farmer through the E-Stratos platform) will be a very useful new management tool, for information purposes as well as management and optimisation of resources. In addition, the various tests to evaluate the corrective measures and their combination will provide a series of strategies to be followed, which will lead to a management protocol for each category, depending of initial vigour and objective vigour after they have been related to the vigour of each plot. The results obtained can be listed in specific terms as:

1. Categorise the different levels of vigour of the plots.
2. Determine the relationship of variables of vigour with fruit quality variables, and especially colour.
3. Define differential management strategies to regulate vigour at pre-established target levels.

Influence fruit quality variables, especially in terms of calibre (fruit diameter) and colour by regulating vigour.

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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

<input type="checkbox"/>	Energy management
<input type="checkbox"/>	Waste and by-product management
<input type="checkbox"/>	Biodiversity and environmental management
<input type="checkbox"/>	Food quality/processing and nutrition
<input type="checkbox"/>	Supply chain, marketing and consumption
<input type="checkbox"/>	Competitiveness and agricultural and forestry diversification
<input type="checkbox"/>	General

Geographical area(s) of application

PROVINCE(S)	REGION(S)
Lleida Girona	El Pla d'Urgell El Segrià Les Garrigues La Noguera L'Urgell L'Alt Empordà El Baix Empordà La Selva El Gironès El Pla de l'Estany

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

Various initiatives will be carried out to disseminate the OG at different levels and in different types of publication:

- An information sheet from the OG will be sent to technical publications working specifically in the target sectors.
- The members of the OG will raise the group's profile using their dissemination networks, including newsletters, seminars, websites and social networks.

More information on the project

PROJECT DATES	TOTAL BUDGET
Start date (month-year): July 2019	Total budget: €158,950.00
Completion date (month-year):	DARP funding: €64,951.50
Current status: Underway	EU funding: €48,998.50
	Own funding: €45,000.00

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Order ARP/133/2017 of 21 June, approving the regulatory bases for grants for cooperation for innovation by promoting the creation of European Association for Innovation operational groups in the areas of agricultural productivity and sustainability and the execution of innovative pilot projects by those groups, and Resolution ARP/1282/2018, of 8 June, announcing the call for the grant.