

Maturation: optimisation of the beef ageing system, based on selecting the most suitable raw material and real-time monitoring of the chamber conditions

Summary

The production of aged meat involves using the natural ageing process to obtain meat with high added value. The dry ageing process has a positive effect on tenderness, and in ageing of more than 30 days it also leads to the development of more intense aromas which can be described as "dry aged". These are considered desirable by an ever-widening niche of consumers, and are an opportunity for slaughterhouses and cutting plants to offer this type of differentiated product. Bovine carcasses for dry ageing must have certain characteristics: the cuts must come from animals of a certain age (over 5 years) and with a specific degree of fattening (≥ 4 in the SEUROP category). Animals such as culled cows at the end of their reproductive cycle are likely to enter the meat production chain, significantly increasing their value and consequently providing a greater financial return for the producer, enhancing the sustainability of the system.

The company MAFRICA is planning to adapt its facilities to start a new marketing line of dry aged beef, and this project aims to develop an innovative production system for aged meat that enables real-time monitoring of the characteristics of the pieces and decisions on the end point of the process to achieve an optimal product from the sensory point of view

Objectives

The main objective is to obtain beef with a high sensory quality by means of an innovative production system for aged meat that enables the environmental technical parameters to be monitored in real time.

The specific objectives of the project are:

- 1- Identify the optimal ageing conditions.
- 2- Optimise the raw material selection process.
- 3- Optimise a dry ageing system based on a prototype designed to monitor the technical parameters of the process in real time.
- 4- Apply predictive microbiology tools to minimise the risk of growth of pathogenic microorganisms.
- 5- Develop an integrated information system that facilitates decision-making during the process.

Description of the measures planned in the project

- 1- Identify the optimal ageing conditions and selection criteria for the raw material.
- 2- Optimise the selection of the most suitable culled cows for use as raw material in the dry ageing process.
- 3- Optimise the dry ageing system based on a prototype designed to control the technical parameters of relative humidity, temperature and weight, incorporating a real-time monitoring system of these parameters.
- 4- Apply predictive microbiology to minimise the risk of growth of pathogenic microorganisms.
- 5- Develop a system that can obtain information regarding the entire process and the decision-making.
- 6- Dissemination of the results obtained.

Expected results and practical recommendations

- The aim is to define the most appropriate overall strategy for carrying out an ageing process in the company MAFRICA, taking into account the type of animals, food, ageing method, the ageing format, and the technical and environmental conditions in the ageing chamber.
- Animals with the most appropriate characteristics will be obtained for the company MAFRICA to produce aged meat that meets its clients' demands to provide meat.
- A prototype that enables real-time monitoring of the environmental technical parameters of the ageing chamber will be developed.
- The results will identify and quantify the importance of the ageing factors in the safety of the process and resulting product. A predictive system for evaluating the process from the point of view of food safety in the ageing process will also be identified, and a guide to good practices when handling aged meat will be produced.
- Software that incorporates all the relevant and critical parameters that may alter the ageing process will be produced, enabling decisions to be made on the monitoring and duration of the ageing process.

Informative material to disseminate the results of the project will be produced, and a seminar will be organised which demonstrates the aged meat produced by MAFRICA, applying the innovative aged meat production system enabling environmental and technical parameters to be monitored in real time

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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	El Bages, El Berguedà, Osona.

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

1. Dissemination seminars for the meat sector, organised and run by the Meat Trades Foundation.
2. Informative article
3. Presentation of the project at the International Meat Products Course, held at IRTA-Monells every year.
4. Gastronomic Day open to the public, under the auspices of the restaurant Masia del Solà and the Cal Pepitu butcher's.
5. Two Dissemination Days for trainees (ECA).
6. Updated websites of each member, and social media (LinkedIn, Twitter and Facebook) for sharing experiences, photos and results.
7. Production of an information video in Catalan and subtitled in Catalan, Spanish and English for the YouTube platform.

Project website

<http://www.mafica.com/>

More information on the project

PROJECT DATES	TOTAL BUDGET
Start date (month-year): July 2019	Total budget: €211,448.85
Completion date (month-year):	DARP funding: €86,414.67
Current status: Underway	EU funding: €65,190.02
	Own funding: €59,844.16

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