CLASCUIT – Development of a technological quality-based grading system for fresh ham to improve the yield of the production process and the quality of cooked ham

Summary

The overall objective of the CLASCUIT project is to develop a quality-based technological classification system for fresh ham in order to optimise the performance of the production process and quality of the cooked ham.
The new grading system is based on the information provided by multi-frequency magnetic induction technology (MFMI), combined, when necessary, with the measurement of other meat quality variables (pH, electrical conductivity and appearance at 24h post-mortem). The studies showed that good online grading of the raw material using only information on meat quality variables is not enough.

Objectives

- Assessing the distribution of the variability in the technological quality characteristics and multi-frequency magnetic induction parameters of fresh hams in companies.
- Defining five technological quality categories by classifying fresh ham on the basis of the parameters measured.
- Validating the technological quality categories of fresh ham by assessing the quality of the final product.
- Adapting the technological quality classification system for fresh ham to the reality of each cooked ham processing company.

Description of the actions carried out in the project

1. Assessment of the technological quality characteristics and multi-frequency magnetic induction parameters (MFMI) of fresh hams in companies and definition of the technological quality categories based on the parameters measured.
2. Validation of the technological quality categories of fresh ham by assessing the quality of the final product (cooked ham) in the IRTA pilot plant.
3. Validation of the technological quality classification system for fresh ham in cooked ham processing companies.
4. Dissemination of project results.

Final results and practical recommendations

The multi-frequency magnetic induction scanner (MFMI) means hams with more extreme PSE index values can be selected for a higher probability of success, provided that the hams are measured at a similar post-mortem time, and preferably 24 h or more post-mortem, when the hams have already reached chilling temperature and the transformation of muscle to meat is complete. Hams with intermediate values could not be classified as expected, mainly due to their intrinsic heterogeneity, mixing areas of low technological quality and normal ones. This would mean differing degrees of denaturation intensity and/or the extent of denatured areas could give similar index values but different technological qualities.

Conclusions

MFMI technology could probably be more successfully applied to measuring individual muscle pieces, which are more homogeneous in terms of technological quality. Equipment would therefore have to be adapted to measuring pieces that are less bulky than fresh ham, while possibly also requiring specific calibration for the different types of muscle pieces.

Leader of the Operational Group

ORGANISATION: Noel Alimentaria, SAU

Coordinator of the Operational Group

ORGANISATION: IRTA - Institute of Agrifood Research and Technology

Other members of the Operational Group (grant recipients)

ORGANISATION: Esteban Espuña, SA

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

ORGANISATION: IRTA - Institute of Agrifood Research and Technology

ORGANISATION: Catalan association for innovation in the pork sector-INNOVACC

Geographical area(s) of application

PROVINCE(S)	REGION(S)
Girona	Garrotxa

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

There were a number of transfer and dissemination activities for the project results. Dissemination actions included publicising the project via the online media of the participating companies and press releases in the sector, on social media and at PATT technical conferences, in order to reach specialised audiences and the general public. In addition, an explanatory video of the project was produced: https://youtu.be/WXrrmLPJE7U

Project website

- NOEL: https://www.noel.es/ca/noel-rep-un-ajut-per-a-lexecucio-dun-projecte-innovador-per-millorar-el-rendiment-en-el-proces-delaboracio-del-pernil-cuit/
- ESPUÑA: https://www.espuna.cat/espunya-participa-en-la-millora-de-la-classificacio-del-pernil-fresc
- IRTA: https://www.irta.cat/ca/projecte/go-clascuit-desenvolupament-duna-eina-de-decisio-per-optimitzar-la-classificacio-del-pernil-fresc-i-millorar-el-rendiment-del-proces-delaboracio-i-la-qualitat-del-pernil-cuit/
- INNOVACC: https://www.innovacc.cat/2022/09/15/projecte-go-clascuit-desenvolupament-duna-eina-de-decisio-per-optimitzar-la-classificacio-del-pernil-fresc-i-millorar-el-rendiment-del-proces-delaboracio-i-la-qualitat-del-pernil-cuit/

More information on the project	
PROJECT DATES	TOTAL BUDGET
Start date (month-year): July 2020	Total budget: €135,508.00
Completion date (month-year): September 2022	DACC funding: €71,819.24
Current status: Completed	EU funding: €63,688.76
	Own funding: €53,490.00

With funding from:

Project funded through Operation 16.01.01 (Cooperation for Innovation) through the Catalan Rural Development Programme 2014-2022.

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/1531/2019, of 28 May, announcing the call for the grant.

Generalitat de Catalunya
Departament d'Acció Climàtica, Alimentació i Agenda Rural

Fons Europeu Agrícola de Desenvolupament Rural:
Europa inverteix en les zones rurals