Development of a tool for detecting myopathies and defects in chicken carcasses and reducing the incidence through production strategies (DetRed-Miopaties)

Summary

The poultry industry has made great strides in breeding animals faster and more efficiently thanks to intensive and successful selection programmes, together with obtaining better knowledge of nutritional and environmental needs and developing the most appropriate feeding and management techniques for these animals.
However, the incidence of meat myopathies and lesions in chicken has increased considerably over the last decade, being closely related to fast-growing animals with high meat yields. The three myopathies that have biggest economic impact today are white striping, wooden breast and spaghetti meat. These mainly affect the breast, which is the most valued part of the chicken, particularly in Western markets. This makes meat with myopathies unsuitable for the cuts market and the production of certain meat products, so it has to be sent to produce trimmings, minced meat or other lower value products.

In this context, the poultry sector is carrying out an intense search for solutions to reduce and/or eliminate the presence of chicken myopathies and defects. Short-term actions involve modifying diets and management techniques. A number of producers are currently detecting and classifying these defects by visual and manual inspection, where a trained operator observes and touches the chicken or removed breasts. This is a slow, subjective and cost-intensive procedure. The industry needs to find inspection systems that are accurate and (semi-)automatic, and which can work at high speeds (the line can reach processing speeds of 13,000-15,000 chickens per hour and more than 200 breasts per minute).

This project aims to address both aspects of this problem in the industry by defining non-invasive technologies for detecting and quantifying defects in chicken meat and assessing multidisciplinary strategies to reduce their incidence.

Objectives

The overall aim of the project is to develop an objective, non-invasive detection and classification system for the main breast myopathies and defects in chicken that can potentially be applied on the production line and, at the same time, to assess strategies applied in farms to reduce the incidence and severity of these problems.

This main objective will be achieved through the following specific objectives:

1. Study the potential of different inspection technologies to identify and classify chicken myopathies and defects objectively and non-invasively, with the potential for online implementation.
2. Assess the effects of genetic lineage, diet and different management practices on the incidence and severity of chicken myopathies and defects.
3. Characterise the quality of the carcass and meat obtained from poultry from different genetic lines, fed different diets and subjected to different types of management.
4. Assess inspection equipment to detect chicken myopathies and carcass defects in the slaughterhouse/processing hall.

Description of the actions planned in the project

Four actions will be carried out to implement this operational group, corresponding to the four specific objectives of the project:

- Action 1: Assessing different inspection technologies to identify and classify chicken myopathies and defects objectively and non-invasively.
- Action 2: Assessing the effects of genetics and diet on the incidence and severity of chicken myopathies and defects.
- Action 3: Assessing the effects of management factors on the incidence and severity of chicken myopathies and defects.
- Action 4: Assessment by an inspection team in the slaughterhouse/processing hall.

Expected results and practical recommendations

The expected results of the project are:

- Knowledge of the accuracy and robustness of the different technologies assessed for detecting and classifying chicken myopathies and defects and their potential for automation and implementation at the slaughterhouse or on the cutting line
- A proposal for corrective measures to reduce the incidence and severity of chicken myopathies and defects in farms by testing the effects of genetic lineage, dietary nutritional supplementation and the type of farm management.

Leader of the Operational Group

ORGANISATION: AVICOLA SANCHEZ, SL

Coordinator of the Operational Group

ORGANISATION: AVICOLA SANCHEZ, SL

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

ORGANISATION: AVÍCOLA MIMPER, SL

ORGANISATION: AGROPECUARIA SAUS

ORGANISATION: IRTA - Institute of Agrifood Research and Technology

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	Baix Llobregat
Girona	Baix Empordà

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

Different dissemination actions are planned to effectively explain the project and communicate the results and to reach all the public included in the scope of the project through the company's periodical publications and social networks.

Project website

https://www.vallcompanys.es/ca/actualitat/20221027_avicosan_miopatias.html

More information on the project

PROJECT DATES	TOTAL BUDGET
Starting date: July 2021	**Total budget:** €117,048.00
	DACC funding: €53,373.89
Current status: Under way	**EU funding:** €40,264.51
	Own funding: €23,409.60

With funding from:

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Order ARP/113/2021 of 20 May, 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 ACC/1660/2021, of 27 May, announcing the call for the grant.

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