

Promotion of the cultivation of beans in Catalonia through the innovative canning of the DOP Mongeta del Ganxet (ganxet bean, Protected Designation of Origin – PDO)

Summary

Ganxet beans are a quality legume much appreciated by consumers, but rarely sold as preserves. This is because the techniques used in its preservation, especially sterilisation, significantly alter its organoleptic properties and make it sensorily similar to other bean preserves, whereas they would present significant sensory differences if cooked using conventional methods. Accordingly, as consumers cannot recognise their quality, they are not willing to pay a higher price for these beans. Given that the end product reaching the consumer is the result of many factors, it may be possible to take action at different points to reduce the effects of heat treatment and possibly conserve objective sensory differences between a preserve of an excellent raw material and one of lesser quality. With this aim, the project started in 2018, working along two main lines: firstly, selection of the raw material and, secondly, the treatment for producing the preserves.

The results from the project have permitted: a) greater understanding of the agronomic behaviour of the Ganxet bean and in order to optimise its production; b) the development of new protocols for a heat treatment of Ganxet bean preserves that is less aggressive to the raw material; c) a higher quality end product by combining germplasm and the optimal treatment; and d) development of models for raw material quality control.

Objectives

The general objective of the project is to optimise both the crop and the heat treatment of Ganxet bean preserves, in order to obtain a product that is objectively identifiable by its sensory qualities, fully maintaining the characteristics of the PDO Ganxet bean when cooked using traditional methods. This new preserve presentation should allow the companies in the Operating Group presenting the project to enter the bean preserve market and make the most of the Protected Designation of Origin seal awarded to the legume, both locally and internationally.

Description of the actions carried out in the project

1. Quantitative determination of the objective sensory differences between the various commercial formats of Ganxet bean.
2. Multi-site testing, establishing different genotype and environmental combinations for optimising the crop, taking into account associated problems, such as fungal diseases.
4. Study of the ideal preservation method by sterilisation in glass jars.
5. Spectroscopic study of raw material quality parameters.
6. Consumer tests to assess acceptance of the new product.

Final results and practical recommendations

The summary of the results from the project is included in the following points.

The sensory analysis performed using a trained tasting panel objectively determined the sensory differences between the commercial samples of the Ganxet bean. At the same time, the analysis made it possible to identify the typical aroma and taste characteristics of Ganxet as the key elements to be considered in the process of preserving Ganxet beans with autoclaved heat treatment. The overall aim is to obtain a final product as similar as possible to the traditionally cooked product.

Studies carried out on five varieties over two years and in eight localities indicate that all varieties of Ganxet have similar and acceptable production values. However, because production is environmentally influenced, it can fluctuate from year to year. It seems that when yields are higher, differences between varieties intensify, while they are more diluted with low yields.

The evaluation of seed morphology indicates that there is variability in the curvature and size of the seed. The five varieties studied are a good representation of the combination of both characteristics.

The joint analysis of agronomic and morphological parameters shows that, contrary to what was believed, varieties with more curvature do not have a lower yield.

The evaluation of the physicochemical parameters and the sensory analysis carried out by a trained tasting panel on preserves prepared from different varieties and origins (different localities) indicates that neither the variety nor the origin of the Ganxet bean has much effect on the sensory quality of the final product when the preserves are cooked using the Ferrer conserve company's usual heat treatment.

During the project, six different protocols were designed for the heat treatment of Ganxet bean preserves. The study of the physicochemical and sensory parameters on samples prepared with different varieties and the six treatments indicates that the production of Ganxet bean preserves sterilised with the new protocols provides a better quality preserve than obtained with the protocol used up to now. It study confirms that the new protocols are less aggressive to the raw material and therefore maintain the quality.

The use of NIR spectroscopy provides an alternative tool for raw material quality control. The tests permitted a model for accurately predicting the degree of curvature to be developed. Given the relationship of this characteristic to the nutritional and sensory qualities of the Ganxet bean, applying this technology would allow batches that do not reach a minimum standard to be discarded in industrial production, thus ensuring the quality of the end product.

Initial models from the preserve liquid control registry indicate that NIR spectroscopy also appears to be a good alternative for assessing dry matter, soluble solid content, colour and antioxidant capacity in Ganxet bean preserves.

A new label has been designed for the packaging of the new Ganxet bean preserve that includes all the innovations incorporated.

The results from the consumer study indicate a significantly higher acceptance for the new Ganxet bean preserve, in terms of both smell and taste and the external appearance of the product.

Conclusions

The actions in this project have provided a better understanding of the behaviour of the Ganxet bean, in both agronomic and in sensory and culinary terms. In addition, a new protocol has been developed for the heat treatment of Ganxet bean preserves, which is less aggressive to the raw material. In conclusion, thanks to the combination of both aspects, the main objective of the project has been achieved, to obtain a final product with an objectively superior quality.

Leader of the Operational Group

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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)
The scope of the project is the province of Barcelona.	Bages and Maresme

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

The execution of this project has enabled the Miquel Agustí Foundation to continue its research into the Ganxet bean. A scientific article is planned, containing the most notable results.

The results have been made available to the members of the Operating Group through several working conferences. In the case of the Progrés Garbí Cooperative, the Cooperative's technicians were in charge of transferring the results to producers in the area.

The project also participated in the conference "Exchange of experiences between Operational Groups and Innovative Projects on Improvement in the Agri-food Industry" which was held on 16 June 2020.

Project website

www.fundaciomiquelagusti.cat

More information on the project

PROJECT DATES	TOTAL BUDGET
Start date (month-year): June 2018	Total budget: €208,820.00
Completion date (month-year): September 2020	DARP funding: €85,340.40
Current status: Executed	EU funding: €64,379.60
	Own funding: €59,100.00

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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/1868/2017, of 20 June, announcing the call for the grant.



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Departament d'Agricultura,
Ramaderia, Pesca i Alimentació



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