

SWEDEN

Agri-food chain integration & quality

Location

Nationwide

Programming period

2014 – 2020

Priority

P3 - Food chain & risk management

Measure

M16 – Cooperation

Funding

RDP budget 7 647 164 (SEK)

Project duration

2017 to 2019

Project promoter

RISE Research Institutes of Sweden AB

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www.ri.se/sv/vad-vi-gor/projekt/megalegumes-svenska-proteingrodor-som-industrivarva

An EIP-AGRI Operational Group used CAP funds to test the requirements for protein crop production and processing in Sweden.

Summary

The Operational Group performed field trials to produce fava beans and sweet lupin beans as raw materials for the Swedish food industry. The feasibility of large-scale production was explored, as was the geographical suitability of different parts of Sweden for growing these crops. The project also looked at how these crops



could be used in the food industry by experimenting with ways of processing the raw materials into food ingredients and developing new food product prototypes.

Project Results

The cultivation experiments resulted in good yields for all bean varieties tested. All crops grew equally well in the different climate zones, but the broad bean beetle was identified as a potential threat to large-scale organic production.

The project showed promising results for the use of protein crops in food production and there are now at least five potential product variants that could be launched using Swedish field beans and sweet lupin.

Lessons & Recommendations

- ❑ Infrastructure was identified as a major setback. Sweden does not yet have the capacity to process these raw materials in large volumes into a flour or protein concentrate, for example. While this remains the case, an entirely Swedish production chain is not possible.
- ❑ An additional problem is the broad bean beetle, which has become more common in Sweden since the unusually hot summer of 2018. That pest would pose a challenge to the large-scale cultivation of either crop, especially in organic production.

Context

This project was conceived as a response to changing societal priorities in Sweden around the environmental impact of food production. An increased demand for plant-based protein sources is accompanied by a growing awareness of the need to replace imported soy as a raw material in foods and feed.

The project was part of the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI). Project coordination and research development was overseen by the Research Institutes of Sweden AB (RISE), and the food companies Nordisk Råvara, Veggi, So Fungy, and Lantmännen Cerealia participated in the development and testing of new products. Nordisk Råvara and Hushållningssällskapet Väst also carried out cultivation experiments, and the latter was also involved in the development of meal concepts for catering and commercial kitchens.

Objectives

This EIP-AGRI project aimed to develop sustainable and innovative solutions throughout the food chain (including growers, actors in the food industry, and product and recipe developers) to support the increased use of Swedish-grown fava beans and sweet lupin beans in the production of vegetarian food products. The project set out to develop at least three new product prototypes.

Activities

Activities implemented by the EIP-AGRI Operational Group included:

Field trials - Tested different seed varieties, their production needs and yields, as well as their culinary qualities and production challenges.

Raw material processing - Examined the processing of raw material to produce food-grade ingredients free of toxins or dangerous substances:

- Fava beans: the project partners worked on the production of dry beans, de-hulled beans, flour, and fresh harvested green frozen beans.
- Lupin beans: the project partners focused on the production of dry harvested whole lupins, de-hulled beans, flour, and lupin protein isolate.

The Operational Group also provided estimates of the necessary facilities and infrastructure for upscaling production as well as the anticipated costs.

Product development - The Operational Group developed new food prototypes.

Financial viability and marketing - The Operational Group conducted economic planning and calculations and handed over the prototypes to commercial operators.

Main Results

The cultivation experiments resulted in good yields for fava beans and sweet lupin beans.

The crops were grown at demonstration farms in different climate zones: Skåne, Bohuslän, Uppland, and Västerbotten. The results showed that the crops grew equally well in all climate zones.

The project showed promising results for the use of protein crops in food products. Sweet lupin beans were suitable for making gluten-free pasta and fava beans worked well in a range of snacks.

The project also worked on developing meal solutions for catering and commercial kitchens, such as stews with whole beans and hummus.

The food production company partners tested the various processed raw materials in some of their own product ranges, and there are now at least five potential product variants that could be launched using Swedish fava beans and sweet lupin.

Key lessons

Infrastructure was identified as a major setback. Sweden does not yet have the capacity to process these raw materials in large volumes into a flour or protein concentrate, for example. While this remains the case, an entirely Swedish production chain is not possible.

The flavour could be further developed to get rid of any negative taste from the protein crops.

An additional problem is the broad bean beetle, which has become more common in Sweden since the unusually hot summer of 2018. That pest would pose a challenge to the large-scale cultivation of either crop, especially in organic production.

“Sweden has every opportunity to become a leader in sustainable production of protein crops and development of innovative and climate-smart foods from these. Today, the innovative vegetable foods on store shelves are usually of imported origin.”

Lina Svanberg, Project leader and researcher at RISE Agriculture and Food institute

The Project promoter/beneficiary is an EIP-AGRI Operational Group

<https://ec.europa.eu/eip/agriculture/en>

Additional sources of information

www.ri.se/sv/press/vision-fler-svenska-producenter-av-gront-protein

<https://greppa.nu/vara-tjanster/nyheter/arkiv---nyheter/2019-11-15-projekt-om-matlupin-och-akerbona-gar-mot-sitt-slut>

www.landsbygdsnatverket.se/pagang/nyheter/nyhetsarkiv/pastaochsnacksavsve-nskaljvaxter.5.341a6d7171e33d0f42cf9ac.htm