

ZERO WASTE SCOTLAND 2020

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Valorisation of vegetable processing industry remnants into
high-value functional proteins and other food ingredients

Grant Agreement Number: 720728



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1. INTRODUCTION:



“Valorisation of vegetable processing industry remnants into **high-value functional proteins** and other food ingredients.”



The project is now getting closer to its end date

Start date:

1 September 2016

54 MONTHS

End date:

28 February 2021

GREENPROTEIN

GA: 720728

Call: Bio Based Industries Joint Undertaking. VC3. D5-2015

Overall budget:

€ 5.546.519,33

EU Contribution:

€ 4.227.361,37

Coordinated by:

**KONINKLIJKE COOPERATIE
COSUN UA
(THE NETHERLANDS)**

Project Partners

GreenProtein project counts with **7 project partners** from **4 different countries in Europe**.

The Netherlands (NL), France (FR), Spain (ES) and Serbia (RS).

4 Private for profit organizations

2 Research Organizations

1 Higher or Secondary Education Establishment



GREENPROTEIN PARTNERS- LOCATION IN EUROPE

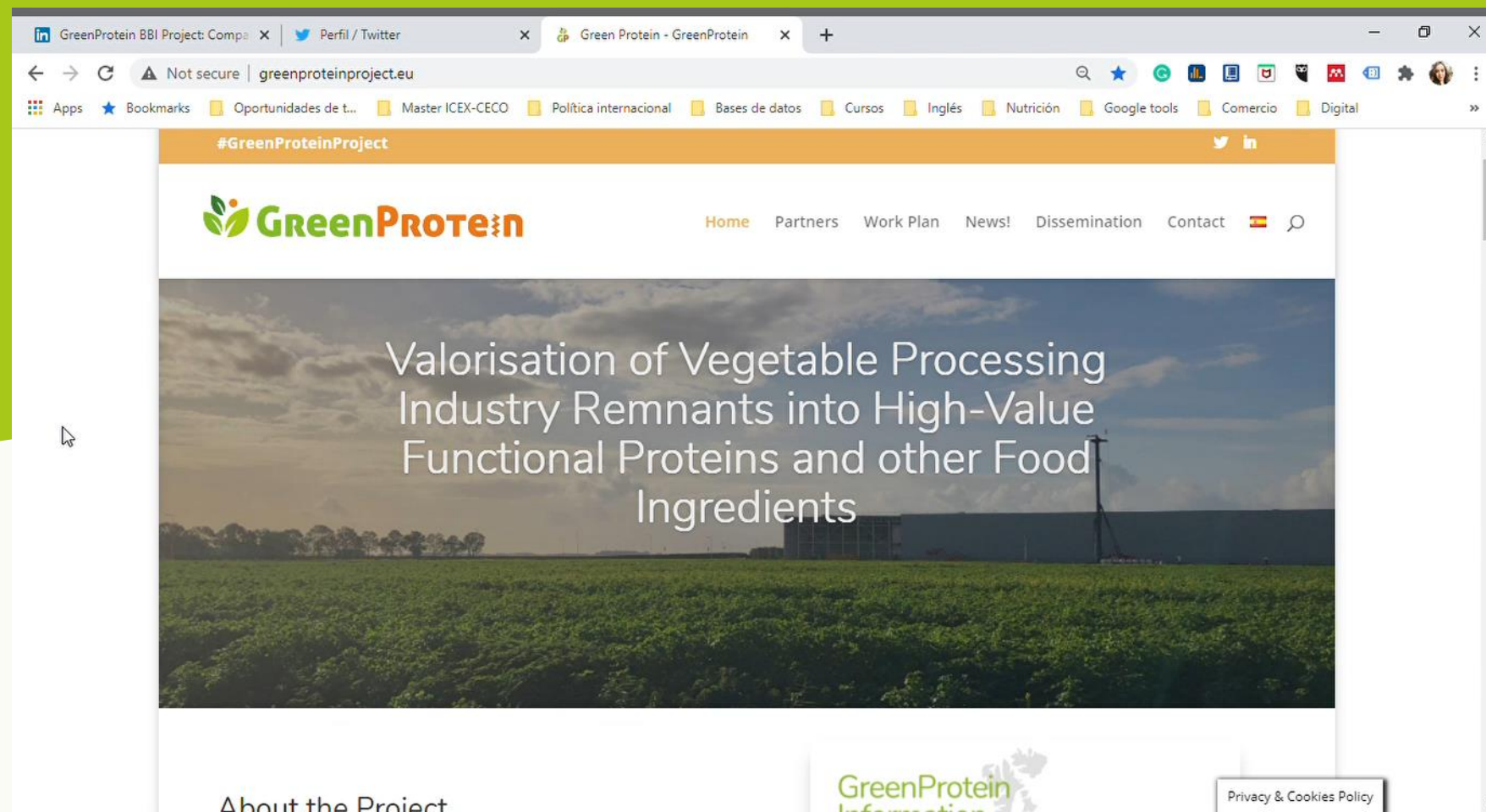
7 PARTNERS
4 EU COUNTRIES

Project Coordinator: ROYAL COSUN



Digital channels

GreenProtein's webpage



GreenProtein is active in **Twitter** and **LinkedIn!**



@GreenProtein_EU
548 followers



**GreenProtein
BBI Project**
294 followers



2. WHY RuBisCo ?

Why RuBisCo?



Source: Royal Cosun, <https://www.cosunbeetcompany.com/products/food/protein>

Properties

1. High amounts of essential amino acids.
2. Emulsifier, foaming and gelling agent.
3. It can be used as a **substitute for wheat or eggs**

The potential of RuBisCo

Properties

1. High amounts of essential amino acids.
2. Emulsifier, foaming and gelling agent.
3. It can be used as a **substitute for wheat or eggs**

Potential

1. RuBisCo is a very good candidate for **food applications**
2. Perfect for very different kinds people such as **pregnant women, sportsmen, celiac and dairy/egg intolerants**
3. Also suitable for **vegan, Kosher and Halal diets.**



3. GOALS OF THE PROJECT & RESULTS

Project Objective

What is GreenProtein?

GreenProtein is an industrial demonstration project that aims to produce high-added value, food-grade proteins and other ingredients from vegetable food by-products.

Primary objective

The primary objective will be to extract and purify food-grade, fully functioning, **RuBisCo protein** on an industrial scale using greenfield waste.

Results so far

The Greenprotein project has:

1. Developed a **biorefinery process** for the extraction of RuBisCo from sugar beet leaves.
2. Built and opened of a **DEMO plant in Dinteloord** (The Netherlands) at the headquarters of Royal Cosun.
3. Produced **odourless and flavourless RuBisCo powder**. Absence of flavour and taste are key aspects for use for foams, emulsifiers, and binding agents.
4. Efficiently used RuBisCo powder (leaf protein isolate) to cook a series of **bakery products**, similar in texture and flavour to their counterparts that use egg whites.
5. Developed a **Life Cycle Assessment** on the environmental performance of the system of RuBisCo protein extraction and isolation from sugar beet leaves.

GreenProtein DEMO Plant Opening

10/10/2019



GREEN PROTEIN

From sugar beet leaves to protein

Source:

<https://youtu.be/x498ZMPprSQ>

About the DEMO Plant



Plant activity

Extraction and purification of functional RuBisCo protein isolate from sugar beets leaves.



Installed production capacity

1,5 Ton leaves/hr
(with 1-2% RuBisCo in the leaves).



Commercialisation

Expectations: First product on the market for sale in 2 to 3 years.
Next steps: build a large-scale plant & EFSA.



Closer to our final goal: demonstrate the technical and economic feasibility of the revalorisation of green residues from existing agroindustry.



Example of bakery products

Odourless &
flavourless
RuBisCo
Powder

Source: Royal Cosun, <https://www.cosunbeetcompany.com/products/food/protein>

Life Cycle Assessment

Environmental performance of the system of RuBisCo protein extraction and isolation from sugar beet leaves

1. The only crop that has lower environmental impact than sugar beet leaves is **alfalfa**.
2. The results for RuBisCo were similar to that of the microalgae categories with the lowest environmental impact.
3. Egg protein concentrate: the comparison of **environmental impact categories of different protein concentrates indicated that protein powder containing RuBisCo affected environment less than egg protein concentrate..**

From farm to fork, involving farmers



...en met name dat plantaardige eiwitten een belangrijke bijdrage kunnen leveren aan deze transitie.

Source:
<https://www.youtube.com/watch?v=4xYxDnzffoU>

Collateral innovations, leaves harvest



Source:
<https://www.youtube.com/watch?v=jwAlrFbneEY&app=desktop>



THANK YOU!

If you have any questions, do not hesitate to contact us.

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