EXCornsEED

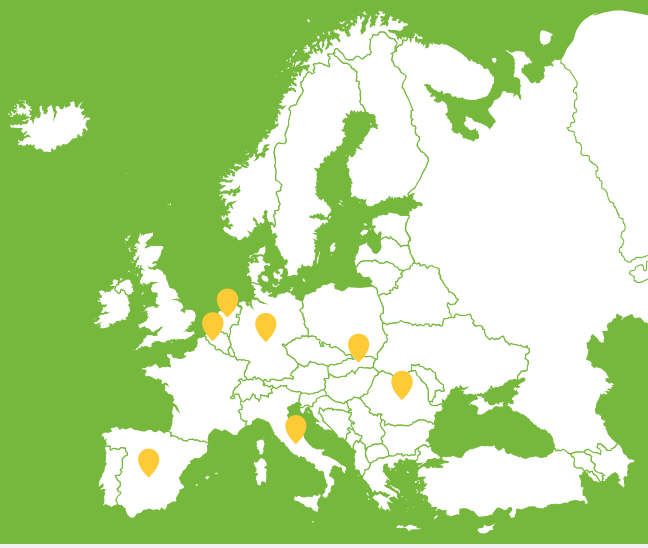
Enjoy reading the EXCornsEED newsletter!

EXCORNSEED: PROJECT'S PROGRESS

EXCornsEED celebrates its second year of implementation! The consortium has done lots of interesting findings and is quite close to pilot upscaling with optimistic results.

This is the focus of the fourth issue of the EXCornsEED project newsletter, which gives a brief overview of latest progress made from June 2019 – June 2020. The key achievements of the second year activities have been summarized and the technical solutions to exploit and valorise the side streams from bioethanol and vegetable oil production, namely corn oil and rapeseed meal, have been described.

Every smaller or bigger step forward for reaching the project's aims is always posted on EXCornsEED website and its LinkedIn and Twitter profile as well; but let's take a detailed look at them!



THE MOST APPROPRIATE EXCORNSEED EXTRACTION PROCESSES

The efficient and reproducible extraction/valorisation technologies at the laboratory scale have been conducted by SAPIENZA, consortium leader, together with technological partners. Optimal separation and fractionation methods were studied at the laboratory scale, namely: liquid-liquid techniques for the recovery of valuable compounds from corn oil and solid-liquid techniques for the extraction of proteins, peptides and other valuable products, including hydroxycinnamic acids from rapeseed meal.
Both processes have been demonstrated to be highly reproducible and the validation process is ongoing.
All this work has been done with tight cooperation with industrial end-users and essential feedback was provided by consortium partners NUTRICIA, P&G, BIOZOON and DR. LAURANNE.
In this framework, CTA and TECNALIA, with the support of the technical team, carried out a preliminary sustainability assessment and the overall yields and purity of the products are to be continuously assessed upon scaling up the process to the pilot scale.

UPSCALE FOR EFFECTIVE VALORISATION – GETTING CLOSER TO PILOT UPSCALING!

Technology experts from CELABOR are currently working hard on optimization and setting up the optimal upscale operation, namely:

- protein extraction and purification procedure from rapeseed meal ready to be transferred to the pilot scale, and
- a downstream processing of corn oil that aims to the purification of classes of high valued compounds such as carotenoids and sterols.

HIGH POTENTIAL OF EXCORNSEED TECHNOLOGY REPLICATION AMONG ALL BIOREFINERIES WORLDWIDE

A detailed deep qualitative and quantitative screening of selected industrial biorefinery side streams were performed, as a fundamental step for subsequent extraction processes and procedures. ENVIRAL, biorefinery partner, was involved in process to reach the objectives to effectively assess side streams for a full chemical characterization, and its related activities. The results achieved are well aligned with elementary analyses results performed by ENVIRAL on day to day bases and successfully guarantee the operational reproducibility of the EXCornsEED

investigated extraction process. The obtained data demonstrate that all selected feedstock composition is not varying during the year, that means that stable processing conditions and technology is used in ENV premises and presumably among all biorefineries worldwide. This assures high reproducibility of the EXCornsEED process with concomitant economic benefits and waste reduction for such biorefineries.

LONG-TERM COLLECTED RESULTS FOR DETAILED CHEMICAL CHARACTERIZATION PROFILE OF SIDE STREAMS

CREA carried out a chemical characterization of corn oil, thin stillage and rapeseed meal collected at ENVIRAL's biorefinery plants on a monthly basis during the first year of the project. The macronutrient, fatty acid and mineral profiles of the side streams, as well as a detailed deep study of bioactive molecules (polyphenols, tocopherols, tocotrienols, phytosterols, squalene and carotenoids) have been investigated. Results are available for stakeholders in two reported project deliverables. ICECHIM and HIGHCHEM complemented compound profile by detailed specific measurements of molecules within many different classes of compounds such as phytosterols, phenolic compounds, phospholipids, vitamins, glucosinolates, flavonoids and carotenoid as well as tocols etc. Consortium has successfully completed analyses of all side streams that provided data related to identification and quantification of proteins and at least 25 utilizable bioactive compounds.

CREA remains constantly monitoring the chemical composition and levels of biologically active compounds in all fractions obtained by EXCornsEED processing by partners during upscaling to have continuous overview about process impact on final products and co-products.

EXCITING EXCORNSEED NETWORKING EVENT AND CONFERENCE WAS HELD

In this unique framework, ICECHIM partner has organized in Bucharest conference and networking event "Valorisation of proteins and bio-active compounds from biorefinery side-streams". The project partners had the chance to present not only the EXCornsEED project and its achievement, but also to share ideas with other EU projects, stakeholders, and representatives from the bioeconomy sector and governmental institutions.

STAKEHOLDERS MAPPING AND MARKET ANALYSIS IS READY!

The EXCornsEED project is continuously exploring the potential of circular economy implementation to drive new, profitable business with a European focus. As of today, EXCornsEED's Stakeholders mapping and Market analysis is freely available to all the project stakeholders. Innovation Engineering, supported by Ciaotech (PNO Group), guided the task activity by defining around 80 keywords and used them to interrogate dedicated advanced informatic tools such as Wheesbee to search respectively for similar EU funded projects and relevant patents in order to select a wide range of stakeholders.
The information that this study is - and will be - highlighting will be used to identify the business models needed in order to commercialise project results.

Do not forget to register to our newsletter via our website and be informed about our latest news!

KEEP INFORMED

If you want to learn more about the EXCornsEED project or get in touch with one of the EXCornsEED partners, please visit the EXCornsEED website or follow the project on Twitter and LinkedIn.

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