BRILIAN
Circular Future for Rural Areas

ADVISORY BOARD OF FARMERS - 3rd meeting

Speaker: CIRCE, BIOEASTHUB CZ, NOVAMONT, DTI, EBB

Online meeting – October 16th, 11:00–12:00 CET

Circular Bio-based Europe Joint Undertaking

Bio-based Industries Consortium

Co-funded by the European Union

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Advisory Board of Farmers - Agenda

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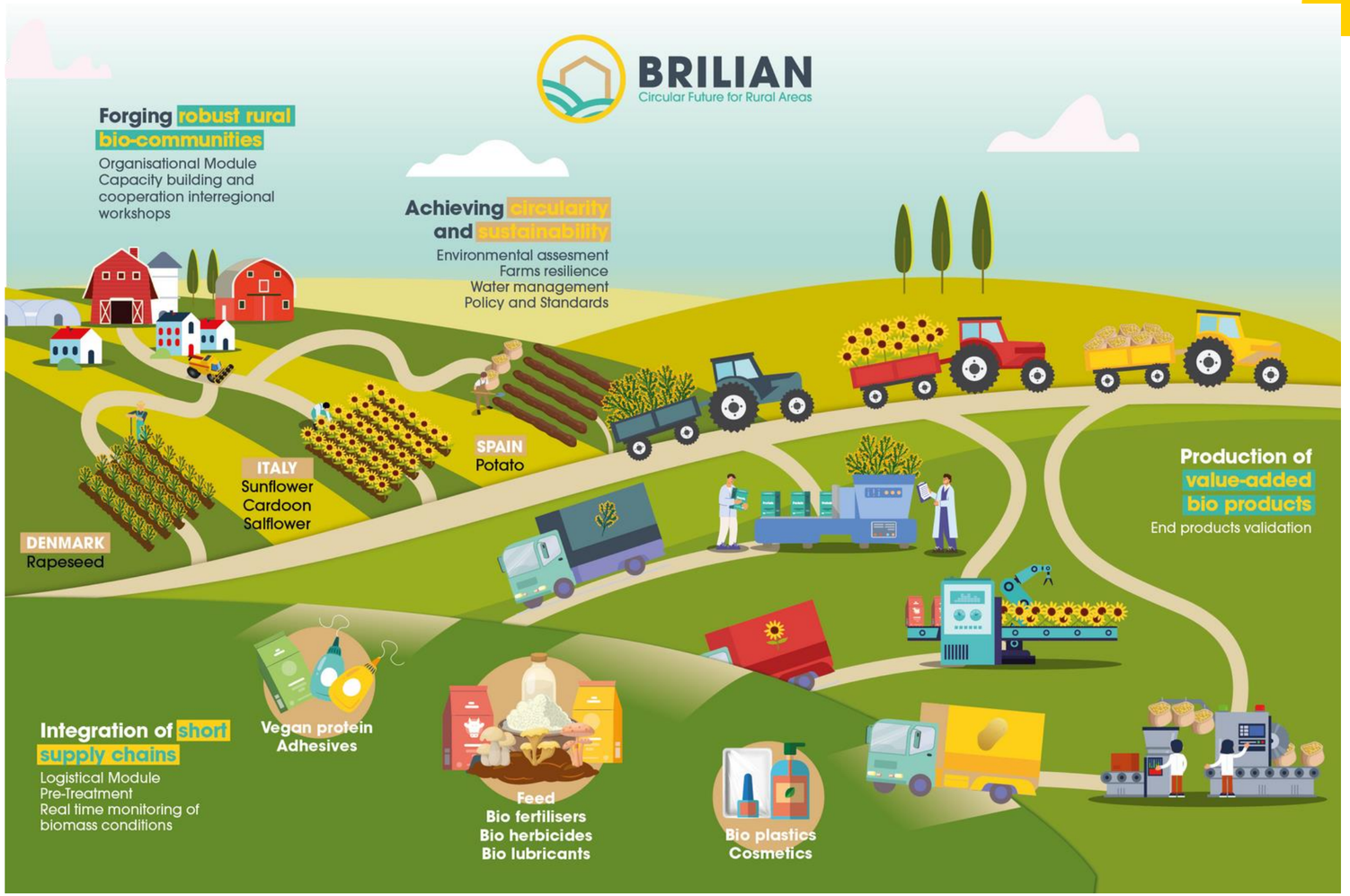
10:00 (5 min)	**Round of introductions**
10:05 (10-15 min)	**BRILIAN Intro** - CIRCE OR BHCZ **Pilot sites status** (1-2 slides each): Brief about the current status of the pilots and the outcomes we have reach so far. - CIRCE or Pilot partners ◦ Italian Pilot ◦ Spanish Pilot ◦ Danish Pilot
10:20 (20 min)	**Policy Updates** - EBB • Future Common Agricultural Policy (CAP) • Upcoming EU Bioeconomy Strategy • Consultation on the Circular Economy Act
10:40 (15 min)	**Discussion**
10:55 (5 min)	**Opportunities to engage and closing**



- **CBE JU contribution**: €6,167,721 million
- **Duration**: June 2023 – May 2027
- **Feedstock:** Cardoon, safflower, sunflower, potato and rapeseed

BRILIAN will support the adoption of sustainable and cooperative business models in rural areas in three pilots located in Italy, Spain and Denmark.

- Support the adoption of sustainable and cooperative business models in rural areas
- Enabling a smoother transition towards bio-based economies.
- Revitalizing these regions
- Promote sustainable economic and social development by transforming primary producers into active players in the supply chain.

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BRILIAN aims to support the adoption of sustainable and cooperative business models in rural areas in three pilots located in Italy, Spain and Denmark.

Consortium of 13 partners led by CIRCE (Spain).

Feedstocks: cardoon, safflower, and sunflower (in Italy), potato peel(in Spain), and rapeseed (in Denmark) as feedstock.

The sustainable business models will encompass a wide range of high-value-added bio-products, such as bioplastics, biolubricants, vegan proteins, bioadhesives, bioherbicides, products for animal feed or the cosmetic sector.

BRILIAN will minimise environmental negative potentials of bieconomy by setting-up and optimising 10 bio-based value chains.

Increase in the products portfolio of primary production by valorising waste and by-products will enable primary producers to diversify their income while reducing risk, with associated new jobs creation.

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Project lead: CIRCE (Spain)

3 RTOs

3 SMEs

3 Large Companies

4 Clusters & Associations

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Pilot Key Results

ITALIAN PILOT

Aims to improve the adoption of regenerative agricultural practices through the cultivation of low-inputs oil crops (cardoon, safflower and sunflower) on marginal lands, to be valorised to produce added-value bio-based products.

SPANISH PILOT

Aims to recover starch from the process water and potato rejections, which would otherwise be lost while contributing to decrease the levels of organic matter by physical methods without the need to add chemicals therefore minimizing water consumption required in the potato processing and the environmental footprint of the potato processing industry.

DANISH PILOT

Aims to develop a process for protein extraction from hot and cold rapeseed cake, aiming at a protein product suitable for food applications and for bio-based adhesive applications.

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Italian pilot

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Farmers engagement procedure

Cooperation agreement established between Novamont, Coldiretti (Italian farmers'union), Filiera Agricola Italiana (Italian Agricultural Supply Chain) and Consorzi Agrari d'Italia (Italy's Agricultural Consortium) to disseminate the cultivation of drycrops among farmers.

Farmers engagement procedure:

1) Meetings and site visits of each agricultural land.
3) Sharing cultivation protocols with the interested farmers, adapted based on pedo-climatic conditions of the growing areas.
4) Assessment of technical issues (eg equipment and logistical aspects) for each site.
5) Signing cultivation agreements

→ THE PROCEDURE HAS BEEN VALIDATED ALSO FOR THE 2025 AGRICULTURAL SEASON

Phases accomplished

1) Selection and involvement of primary producers.
2) Soil preparation, sowing and plant protection treatment. ⟶ demonstrated management of > 100 ha of targeted oil crops
3) Monitoring of agricultural data and monthly field inspections. ⟶ Weather conditions, crop health and protection status, scheduling of agricultural operations
4) Seed harvesting and storage

NEXT STEPS: seeds crushing → monitoring agro-feedstock and biomass quality → Valorising feedstocks in Biorefineries

Outcomes 2024/2025

- AGRICULTURAL SEASON 2024-2025: Cultivation of 97 hectares of safflower, 51,5 ha of cardoon and 10 hectares of sunflower.
- CRUSHING: Processed all seeds produced in the agricultural season 2024 → Mechanical seed pressing → oil and oil cake production;
- FEEDSTOCKS CHARACTERIZATION (2024): cardoon oil and oil cake, safflower oil cake;
- FEEDSTOCKS VALORIZATION INTO BIO_BASED PRODUCTS:
- Oxidative cleavage process performed to produce building blocks for biorefinery
- Plant protection application: trial with a benchmark bioherbicide evaluated the efficacy of pelargonic acid as desiccant yielding good results;
- Animal feed: good results on the quality and quantity of milk production in a group of buffaloes fed with percentage of cardoon oil cake;

Italian pilot

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Safflower fields

Cardoon fields

Sunflower fields

Safflower fields

Cardoon fields

Sunflower fields

Italian pilot

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Ryegrass before the treatment with pelargonic acid

Ryegrass after the treatment with pelargonic acid

Group of buffaloes

Feed with cardoon cake

Spanish pilot

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Value chain steps

- Starch Extraction: Installation of starch extraction facility to recover starch from potato rejections and process water. This facility significantly contributed to reduce water consumption and COD of the water used in the potato processing industry.
- Starch Valorisation: The extracted starch is then processed into thermoplastic starch (TPS) through extrusion processes.
- Bioproduct Development: The TPS will be used to develop bio-based blends for shrink films (packaging) and mulching films (agriculture).

Phases accomplished

1) Defining piping and instrumentation diagrams.
2) Installation and commissioning.
4) Plant operation and fine tuning.
5) TPS production at AITIIP facilities: pretreatment, TPS production and testing.
6) First tests for bioproduct development by TECNO have been performed.

Outcomes

After two batches of testing, the following key findings were reached:

- Starch Recovery: The extraction plant is fully operative. The starch extraction process enabled to achieve a significant reduction in water consumption and COD (decreased 62%), BOD (decreased 78%) and suspended solid (decreased 93%), demonstrating its potential for improving the environmental sustainability of the potato processing industry.
- TPS Production: TPS formulation has already been selected. The produced TPS showed good processability thermal stability.
- Bioproduct Development: TPS-biopolymer formulations showed good processability. However, the formulation has to be optimized to fulfill the necessary mechanical characteristics.

Spanish pilot

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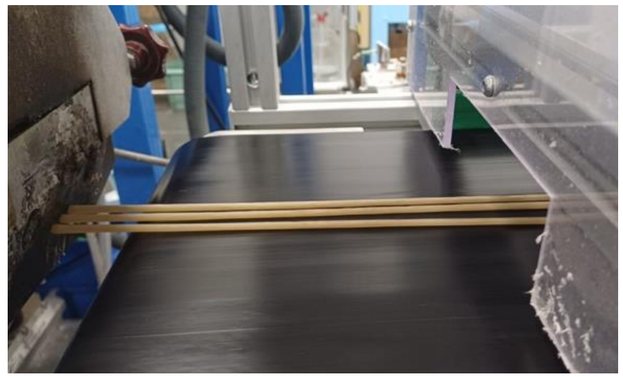
Potato rejections

Starch in drying process

Thermoplastic starch (TPS) pellets

Starch converted into film

TPS production by extrusion compounding



Danish pilot

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Value chain steps

Pilot tests have been performed to validate and optimize protein extraction from rapesseed cake. Although the two tests were very promising, the final products did not meet the objectives of protein content and protein yield (neither for CPR nor HPR). Therefore, a set of experiments in lab scale, in which different conditions during enzymatic hydrolysis are tested, were designed to optimize the parameters that can increase the efficiency of protein extraction from the raw material. The protein powder obtained is also tested to manufacture protein-based resins aiming to reach the highest phenol replacement ratio possible while fulfilling the standard comparing to a reference formulation.

Phases accomplished

1) Rapeseed harvesting and dried for long-term storage.
2) Oil pressing performed: hot pressing and cold pressing. Agroindustry provided these 2 types of rapeseed cake for the biotransformation activities.
3) Aqueous extraction with or without enzymatic hydrolysis aiming at a scalable process.
4) Several process optimization activities have been done: pilot scale validation and lab-scale optimization of enzymatic hydrolysis with both types of cake.
5) Manufacture of pilot scale plywood panels to evaluate the performance of protein-based phenolic resins. 6 Rounds have been completed, reaching 60% of phenol substitution by both CPR&HPR with successful results
6) Physicochemical properties measured to determine if the plywood panels fulfill the standards requirements.

Outcomes

- Two pilot trials have been conducted in the BRILIAN project to validate and optimize the process with HPR and CPR.
- There are slight differences in the protein and fat content between HPR and CPR, both at the starting material and the final product.

>CPR: Protein yield was lower, 18.6%, compared to 28% when using HPR. The protein content (48.6g protein/100gDM) still needs further optimization (targeted at 90g protein/100gDM).

>HPR: tprotein content on the first pilot trial (45.9 g protein/100gDM) very close to the target (50 g protein/100gDM), and the protein yield was only 12% lower than the target.

- The centrifugation step was tested to remove any remaining oil in the liquid and small particles that could hinder the filtration process.
- An enzyme-assisted aqueous extraction was tested in pilot scale.

Danish pilot

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Tank for wetprocessing of biomass

Rapeseed cake added to the tank

Tank and decanter centrifuge in the Danish pilot

Danish pilot

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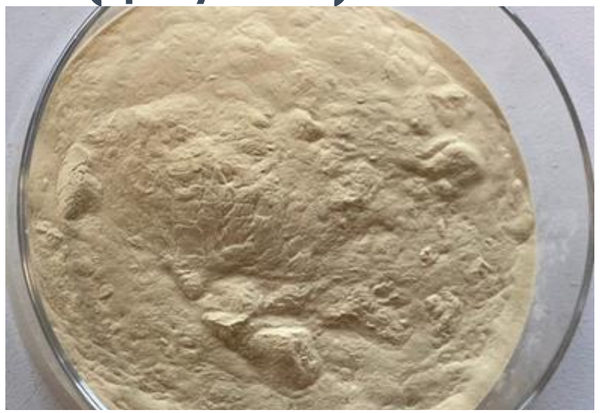
Cold press rapeseed cake (CPR)

Hot press rapeseed cake (HPR)

Protein extracted from CPR (spray dried)



Protein extracted from HPR (spray dried)

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Future Common Agricultural Policy (CAP)

Future Common Agricultural Policy

The Commission published its proposal in July 2025, with the aim to support farmers who embrace bioeconomy innovations and sustainable practices and help them diversify their income sources and contribute to emerging bioeconomy value chains. To encourage this shift, greater simplification, flexibility, and cooperation among farmers—who are also viewed as entrepreneurs and providers of both food and public goods—will be essential.

The new CAP will facilitate investments in technologies that promote the local and regional utilization of agricultural and forestry by-products, residues, and biomass waste. Additionally, existing EU instruments such as Cohesion and Innovation policies will support the development of new models for shared infrastructure, investments, and market integration.

Future Common Agricultural Policy

One of the most tangible changes is the increase in the flat-rate payment limit for small farmers — from €1,250 to €2,500 per year. Farmers receiving up to that amount will no longer have to submit detailed applications, significantly reducing their administrative workload.

The proposal also allows Member States to allocate up to 3% of their annual CAP funds to create national crisis intervention funds. These funds could be used to compensate farmers affected by natural disasters, animal diseases, or plant pests — a particularly relevant tool in light of recent challenges across several EU regions.

At the same time, the Commission aims to introduce greater flexibility in implementing environmental requirements. While maintaining a high level of environmental ambition, Member States will now have more discretion to adapt rules to their national contexts.

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Upcoming EU Bioeconomy Strategy

Upcoming EU Bioeconomy Strategy

The strategy appears to be a very strong one favouring bioeconomy development. For example, it identifies **biopolymers and bioplastics** as a lead market with transformational potential for Europe's bioeconomy and a strong capacity for systemic decarbonisation. **The Circular Economy Act** will also play a role in addressing feedstock availability by improving waste collection and harmonising waste classification.

«The Commission will explore ways to increase biopolymers production volumes and improve their competitiveness through greater economies of scale. Measures will include establishing a clear definition for bio-based materials (Biotech Act), harmonizing certifications, and extended producer responsibility and take-back schemes which will contribute also to the circularity of such materials.».

The strategy will be presented in December and with the CE Act should play a decisive role in enhancing the bioeconomy.

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Consultation on the Circular Economy Act

Consultation on the Circular Economy Act

The Commission’s interventions are structured around two main pillars.

The **first** one focuses on **e-waste** — electronic and electrical equipment — which represents the fastest-growing waste stream in Europe, increasing by around 2% per year. Less than 40% of this waste is currently recycled. This part of the proposal will focus on improving collection and recycling and on generating market demand for the secondary raw materials contained in these products.

The **second pillar**, which is the one relevant to us, will include a set of measures aimed at fostering the s**ingle market for waste, secondary raw materials, and their use in new products.** Among others, this may include a reform of the end-of-waste criteria, the simplification, digitalisation, and extension of extended producer responsibility schemes, and the definition of mandatory and targeted criteria for public procurement of circular goods, services, and works to stimulate EU demand.

Consultation on the Circular Economy Act

We have seen from the leaked draft of the new Bioeconomy Strategy that the Commission is listening to what stakeholders are saying — which provides us with an opportunity to have an influence also in this process.

We therefore propose to prepare a coordinated response on behalf of the BRILIAN project. To do so, we'll invite you to share your views on the key points in the next slide. Based on the feedback received, we will draft a shared position that reflects the consortium's views and can be submitted as a single, consolidated contribution, which would carry greater weight in the consultation process.

Consultation on the Circular Economy Act

- Are end-of-waste criteria currently a barrier for the bioeconomy?
- Do extended producer responsibility schemes create confusion or overlap?
- What kind of public procurement measures could help develop markets for circular bio-based products?
- Should labelling, certification, or standardisation frameworks be reformed — and if so, in what way?
- And finally, could fiscal incentives, such as reduced or zero VAT on recycled or repaired products, make a difference?

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DISCUSSION

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HOW TO ENGAGE

WEBINARS

POLICY

Materials & Video

NETWORKS

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Working Group on Primary Producers

BIOECONOMY GIANTS

Working Group on Primary producers

- The new working group on primary producers aims to ensure that the agricultural, forestry, and fisheries sectors benefit from their involvement in innovative biobased value chains while contributing to sustainability and economic growth.
- What organisations can apply?
  - 👨‍🌾 Primary producers or organisations working closely with them, such as cooperatives and advisory services.
  - 🗺️ Regional stakeholders and networks representing primary producers.
  - 🌳 Entities engaged in fostering innovation in the agriculture, forestry, fisheries, and aquaculture sectors.

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THANK YOU!!!

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