

MoeBIOS Newsletter #5

Where Do Bioplastics Go After We Use Them?

Think of a plant-based coffee cup, a "bio" shopping bag or a T-shirt made from plant-based fibres. They sound like the greener choice. But what happens to them once you throw them away?

For now, there is often no clear answer. Most recycling systems in Europe were built for regular plastic, not for these newer materials. So a product that started out "bio" can still end up as waste.

That is the problem MoeBIOS is working on. We are testing ways to sort these materials and recycle them into something useful again, in three areas of everyday life: packaging, clothing and textiles, and farming.

This autumn we did a lot of listening. We asked farmers, textile makers and packaging companies what would make them trust a recycled bioplastic. We heard from the organisations that run recycling systems in different countries. And we checked in with our partners in their labs. Here is what we learned.

We asked. Three sectors answered.

On 14 October, MoeBIOS ran three interactive webinars under one question: are recycled bioplastics the future? One session each for agriculture, textiles and packaging. They were

organised by Euro-Funding with European Bioplastics and technical partners from our consortium. Participants did more than listen. They answered live surveys about what would make them trust a recycled bioplastic.

The answers differed by sector, but some worries came up everywhere: whether suitable waste streams exist, how to collect and sort them, whether the result can compete on price, and whether it performs.



Different sectors, shared challenges. What participants told us during the three MoeBIOS webinars on 14 October.

Agriculture asked for affordable materials that hold up in real field conditions. Textiles pointed to a harder starting point, because you cannot recycle what you cannot identify and sort. Packaging wanted proof of technical performance, plus collection and sorting that fits the infrastructure Europe already has.

These are early signals, not a verdict on whole industries. Still, they make one thing clear: a recycling technology is only half the job. The other half is a value chain where material producers, waste managers, recyclers and brands trust each other. That is the conversation we want to keep going. Thank you to everyone who joined and shared their views!

Siegburg: from "it won't persist" to "it stays in the loop"

On 24 September, at the Renewable Materials Conference in Siegburg, European Bioplastics organised a workshop that brought four EU-funded projects into one room: MoeBIOS, ReBioCycle, Be-Up and GRECO Project. The title said it all: "Rethink the circularity of your products! From Biodegradability to Recyclability."

Two MoeBIOS contributions stood out. Sergio Clemente Castro (ITENE) presented results showing that solvolysis, a chemical recycling route, can adapt to the polymer chemistry even in complex blends. In the results shared, 1,000 kg of pretreated PLA/PBAT blend yielded 640 kg of pure lactic acid and 100 kg of pure DMT under mild conditions.

The second insight came from the shop floor. In a survey by our partner Eroski, with more than 900 interviews in Spain, France and Italy, 76 to 85% of people recognised the word "recyclable". Their grasp of "bio-based" and of end-of-life instructions was markedly weaker. If consumers don't understand the label, even the best material can end up in the wrong bin.



Two MoeBIOS insights from the Siegburg workshop: chemical recycling of a complex blend, and what consumers actually understand on a label.

Thank you to Chiara Bearzotti and European Bioplastics for bringing this workshop together. All presentations are open access: european-bioplastics.org/rethinkcircularity and Zenodo.

Talking recycling fees with the people who set them

Who decides what a bioplastic package costs to put on the market? In large part, the Producer Responsibility Organisations that run Extended Producer Responsibility (EPR) schemes. On 30 September, MoeBIOS joined Prosper Bioplastics and ReBioCycle for an invitation-only webinar with EXPRA, the Extended Producer Responsibility Alliance of industry-owned packaging PROs. 32 participants took part.

Our coordinator Miriam Lorenzo Navarro (ITENE) presented MoeBIOS work on the quality of recycled materials. The most revealing moment came when the PROs described their own systems. They turned out to be very different.

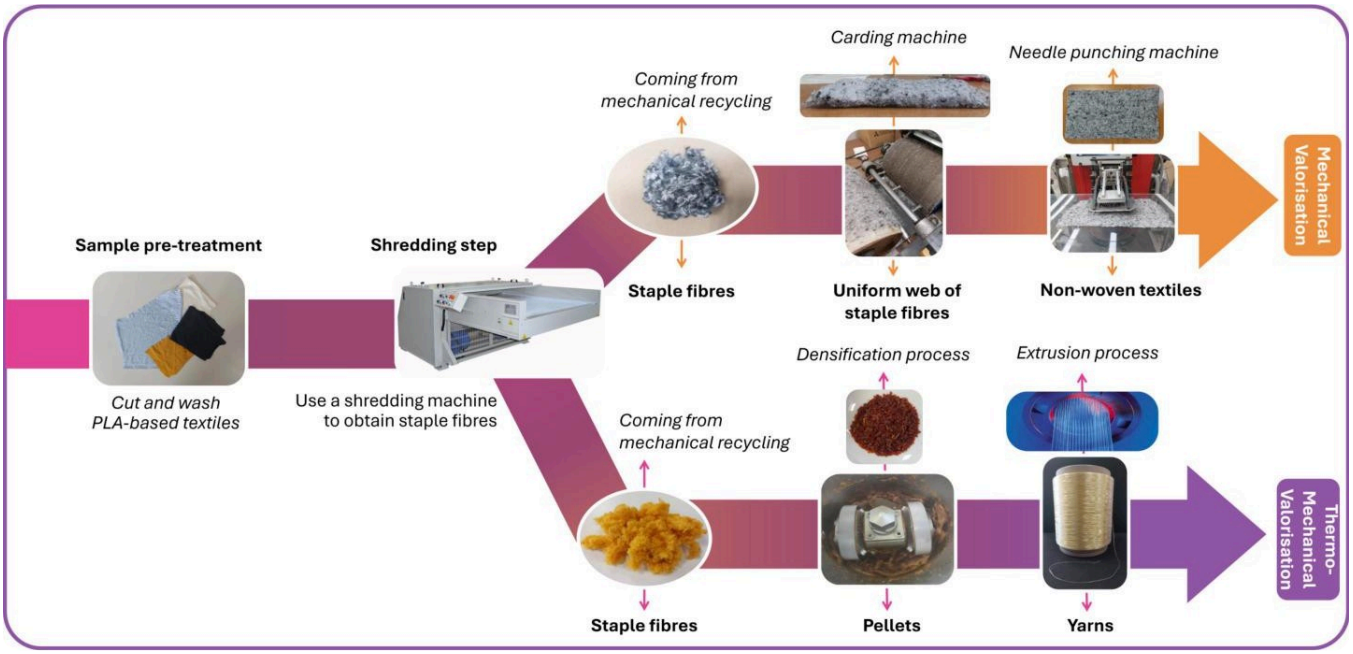


Three countries, three approaches. How national PROs currently treat bioplastics in packaging EPR.

Italy sends compostable bioplastics to organic recycling. Portugal handles them as regular plastic. The Netherlands plans a fee discount for qualifying bio-based packaging from 2027. With the PPWR review of bio-based packaging due in 2028, these choices matter, and the group plans to meet again in 2027. Presentations and summary: prosperbioplastics.eu

Inside the labs: what our partners are working on

Textiles. At Next Technology Tecnotessile, the team is finding out what happens when a bio-based textile reaches the end of its life. Since our Barcelona meeting in May, they have taken post-industrial bio-based textile waste through pre-treatment and shredding into fibres, then into their first nonwoven samples at lab scale. They checked each step with SEM, DSC and FTIR analysis to see how the material changes along the way. In parallel, they are testing fossil-based nonwovens from the market, so that the recycled material will have a fair benchmark. The target application is shopping bags. Next step: optimising the process and preparing for a larger scale.



Two routes for bio-based textile waste explored at NTT: mechanical valorisation into nonwovens, and thermo-mechanical valorisation into pellets and yarns. Image: NTT

> *"Although bioplastics are not yet widely used in textile applications, we need to explore their end-of-life options today to be prepared for tomorrow. This is exactly what MoeBIOS aims to achieve: developing and testing recycling solutions now to better understand how these materials can be recycled and contribute to a more circular future as their use continues to grow."*
>
> **Carlotta D'Aleo, Chemical Researcher, NTT**

Safety by design. Recycling a material is one thing. Making sure it is safe for the workers who process it and for the people who use it is another. ITENE leads the MoeBIOS Safe and Sustainable by Design (SSbD) assessment and has just submitted its intermediate report, applying the European Commission's revised SSbD framework across all three value chains. Over the next months, the team will measure air quality directly in pilot and industrial facilities and start feeding real pilot data into the project's life cycle and techno-economic assessments.

Packaging. Every sorting trial starts with real material. ABORGASE has been collecting bioplastic packaging and supplying it to PICVISA for sorting tests, and will keep looking for new bioplastic suppliers to feed the trials. Earlier findings from this work are already public in deliverables D1.1 and D1.3: moebios.eu/deliverables

Coming up: meet MoeBIOS in Berlin

On 30 November, the day before EBC26, MoeBIOS will take part in a side event hosted by European Bioplastics: "Packaging: What Consumers want, what Research delivers, what Regulations require." The session runs from 17:00 to 19:30 CET at the Titanic Hotel Berlin, followed by a networking reception with matchmaking. ITENE and Eroski will bring the research and the

consumer voice from MoeBIOS, alongside Be-Up, GRECO Project, ReBioCycle, BioPackMan and TERRIFIC. There is no registration fee. Details: european-bioplastics.org

Bioplastics events in Europe worth your calendar



Upcoming bioplastics and recycling events in Europe, November 2026 to June 2027.

Until next time

This autumn reminded us that the hardest questions about bioplastics are not only answered in the lab. They are also answered at the sorting line, at the supermarket shelf and in the rooms where recycling fees get set. We will keep asking them with you.

If this edition was useful, share it with a colleague in packaging, textiles or agriculture, and follow MoeBIOS for the next update. See you in Berlin!

Originally published on LinkedIn as part of the MoeBIOS Insights newsletter: https://www.linkedin.com/pulse/where-do-bioplastics-go-after-we-use-them-moebios-newsletter-mvite. Follow MoeBIOS on LinkedIn and visit moebios.eu.

MoeBIOS has received funding from the Circular Bio-based Europe Joint Undertaking (CBE JU) under grant agreement No 101157652. The JU receives support from the European Union's Horizon Europe research and innovation programme and the Bio-based Industries Consortium. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CBE JU. Neither the European Union nor the CBE JU can be held responsible for them.