NaturePlast
Bioplastics Expert

Bioplastics/ By-products

First of all, a bit of vocabulary:

Circular economy

Circular economy is an economical model that produces **sustainable** goods and services, **limiting the consumption and waste of resources** (raw material, water, energy) as well as the production of waste. The goal is to **break the linear model** (extract, produce, consume, throw away) and replace it with an economical “circular” model.

By-products

A by-product is an intentional and inevitable material created during the same production process as the main product. For the manufacturers, the valorization of waste and by-products is a **major environmental and economical spreading issue**. Those by-products and the vegetable fibers come from French territory. The goal is to incorporate this material in various polymers in order to work on the concept of circular economy and waste valorization. **For ex**. Rice hulls coming from food industry waste.

Bioplastics

The term “bioplastic” refers to two types of material. On one hand, **biobased plastic materials** (made from vegetal resources) and, on the other hand, **biodegradable plastic materials**, including compostable ones.

Who are we?

2007
Supplier of bioplastics

NaturePlast
Bioplastics Expert

Expert in the field of plastics made form renewable resources and biodegradable; since 2007, with its R&D center BiopolyNov, accompany manufacturers in the development of new valorization ways of their by-products in the plastic industry.

2010
R&D Center

BiopolyNov
Bioplastics R&D

By-products are processed by the R&D center, where they are going through different preparation steps: drying, grinding, micronization and sieving. The material is thus valorized in plastic industry (development of compounds and transformation by injection or extrusion). BiopolyNov is equipped with processing equipments and a characterization lab.

Founder, CEO,
Domestic Sales Executive

Export Sales Manager

Technical Manager
Collaborative Projects Manager

R&D Manager

Project Manager
Quality Manager

Project Manager

Workshop Manager

What do we do?

Circular Economy

1 **Bioplastic raw material :**
The only European supplier of all bioplastic produced over the world.

Bioplastic compounds:
Production of customized compounds. 2

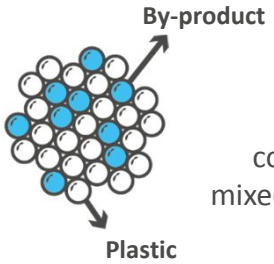
3 **Fibers and by-products biocomposites:**
Production of compounds using vegetal fibers or by-products from French industries.

Trainings and market studies

1 **Acquire** the fundamentals of bioplastics, their technical properties, their advantages and their limits.

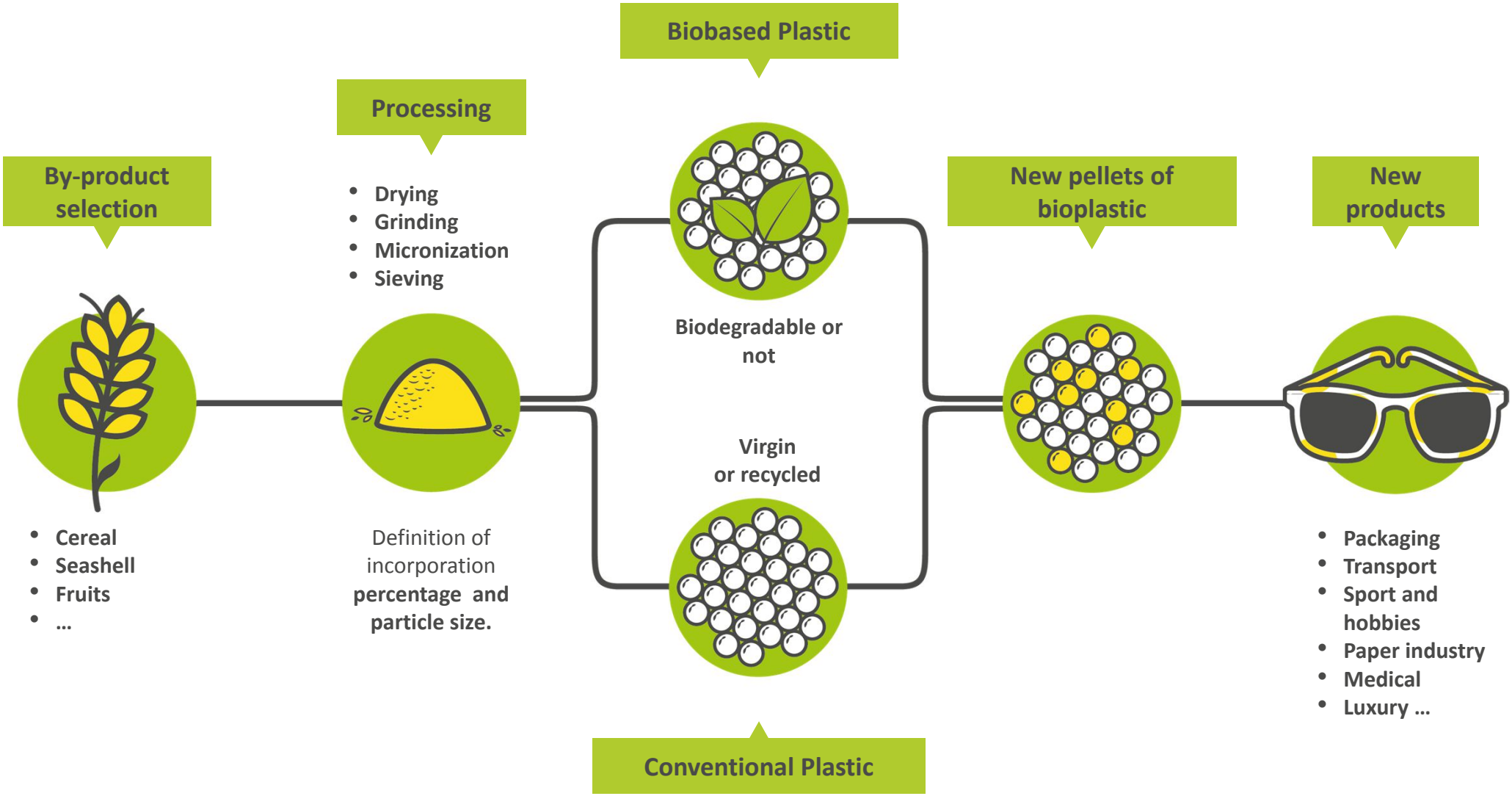
R&D bioplastics

1 **Development of customized formulations**: Improving and optimizing properties of an existing bioplastic in order to adapt it to given specifications.



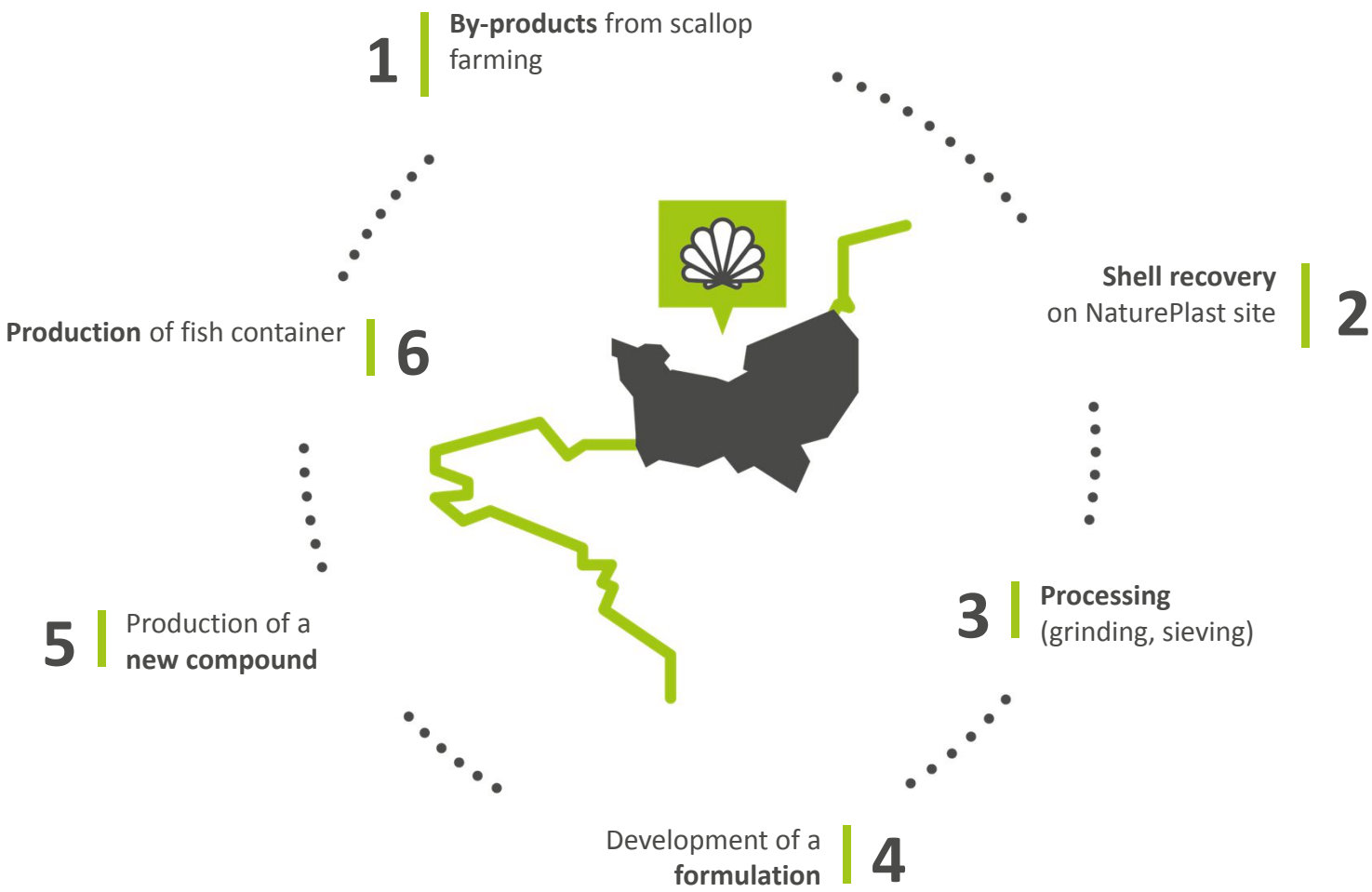
Valorization of by-products :
Development of formulations containing a specific by-product mixed with a plastic or a bioplastic. 2

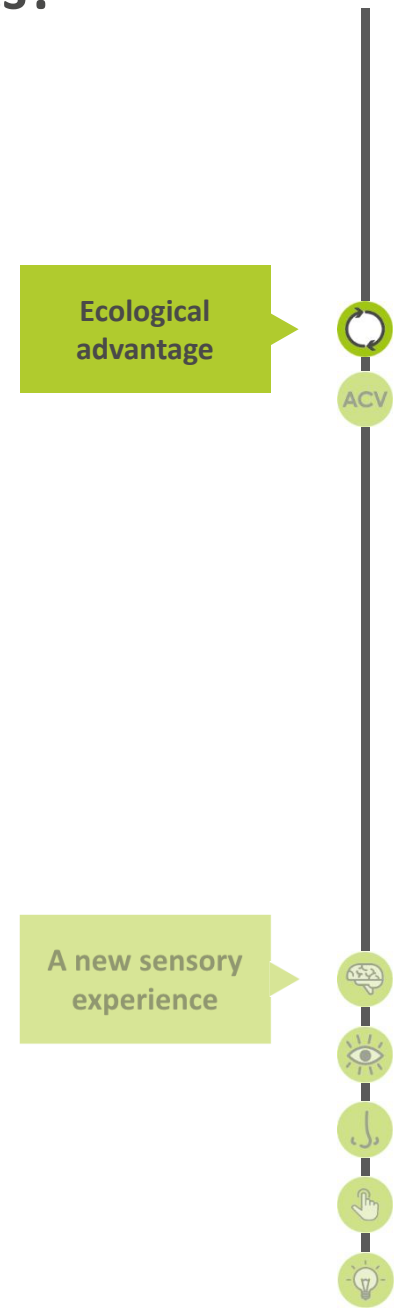
Our development approach:



What is the interest of producing plastics with by-products?

- **Focusing on the circular economy**

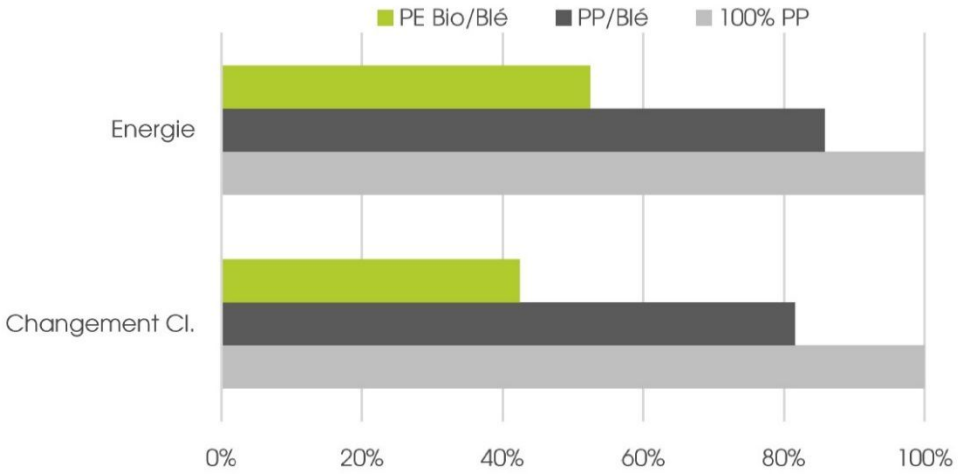




What is the interest of producing plastics with by-products?

- **A conclusive lifecycle analysis**

We have requested O2M Conseil to **compare the environmental performance of our different by-products and matrices.**



The use of by-products coming from agricultural activities represents a **way of eco-conception**. It allows to improve in all cases the environmental performance of biocomposites in terms of **greenhouse gas emissions** and **consumption of oil-based energy**.
Certain points, concerning biomass production (aquatic eutrophication and air acidification) or its treatment (drying) still need to be improved.

An ecological advantage

ACV

What's a LCA?

Compilation and evaluation of incomings (water, raw materials...) and outgoings (solid or liquid wastes...), as well as the potential environmental impacts of a product system during its lifecycle. (ISO 14040)

ISO - The International Organisation of Standardization

In comparison with a 100% fossil-based solution:

15 to 20%

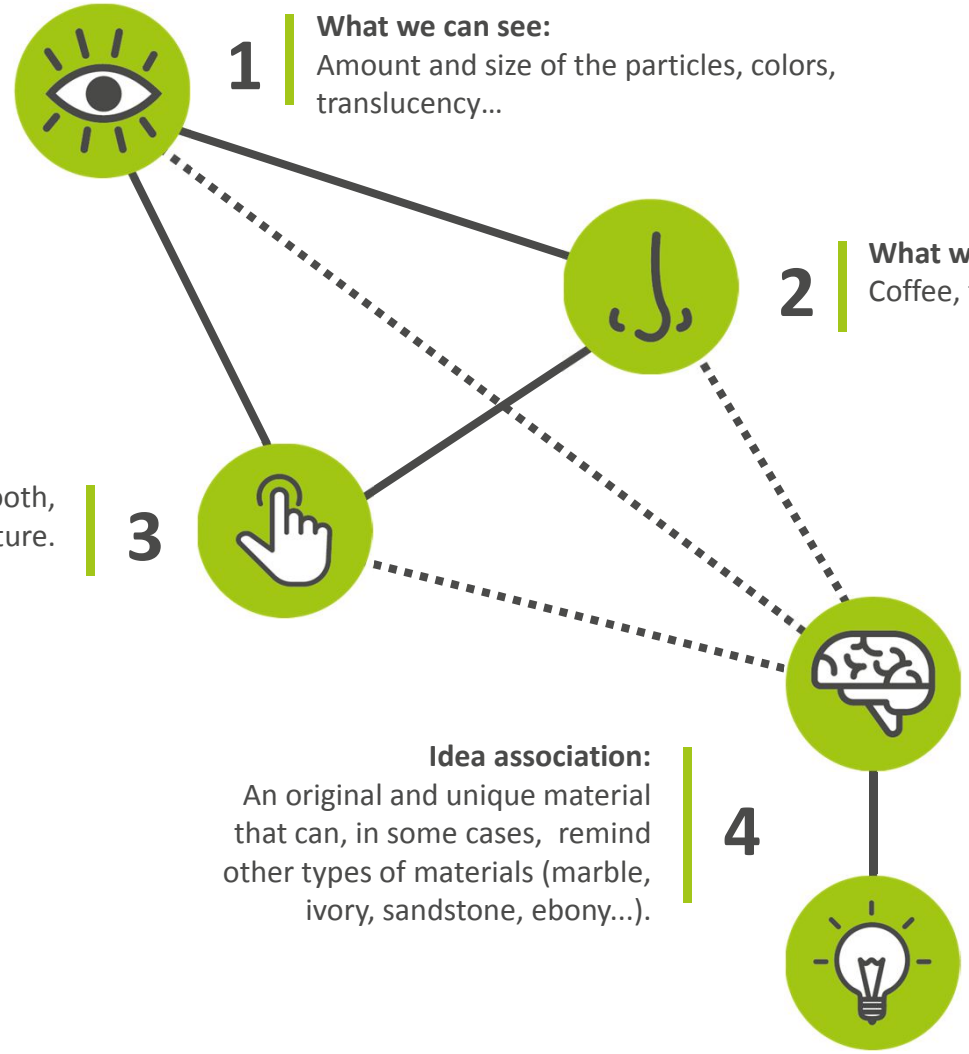
Of environmental benefit in the case of introduction of a by-product into a **fossil-based polymer.**

50 to 60%

Of environmental benefit in the case of introduction of a by-product into a **biobased polymer.**

A new sensory experience

What is the interest of producing plastics with by-products?



1 **What we can see:**
Amount and size of the particles, colors, translucency…

2 **What we can smell:**
Coffee, flower, fruit…

3 **What we can touch:** smooth, soft or slightly rough texture.

4 **Idea association:**
An original and unique material that can, in some cases, remind other types of materials (marble, ivory, sandstone, ebony...).

An ecological advantage

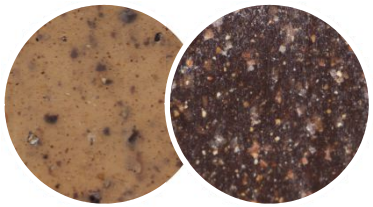
ACV

A new sensory experience

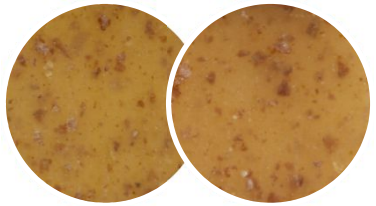
What is the interest of producing plastics with by-products?

Colors of the materials using coloring agents | 5

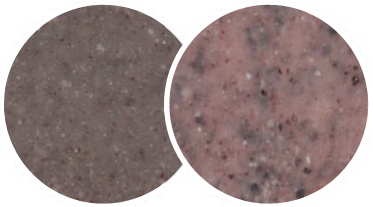
1 | **The incorporation rate** of the particles



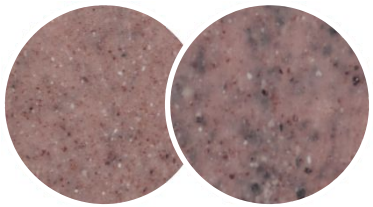
The unique nature of the part | 4



2 | **Colors** of the material depending on the processing temperature



Size of the particles | 3



An ecological advantage

ACV

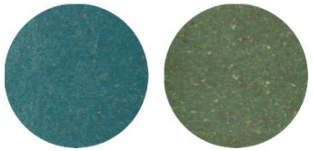
A new sensory experience

What is the interest of producing plastics with by-products?

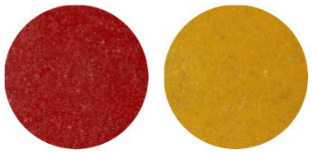
- **Coloring of fiber and by-product based compounds**

Wheat

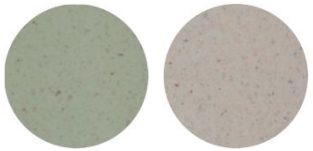
2% blue 1% blue



1% red 1% yellow

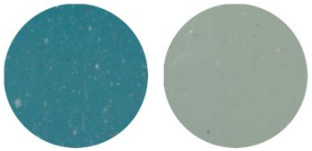


2% green 3% white

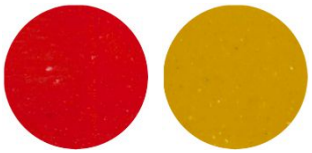


Oyster

2% blue 2% green



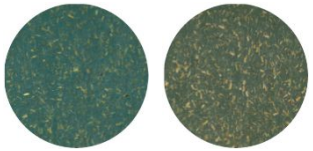
2% red 2% yellow



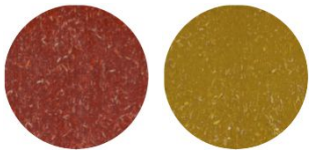
2% white

Flax

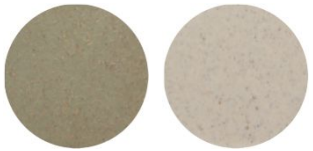
2% blue 1% blue



1% red 2% yellow



2% green 2% white

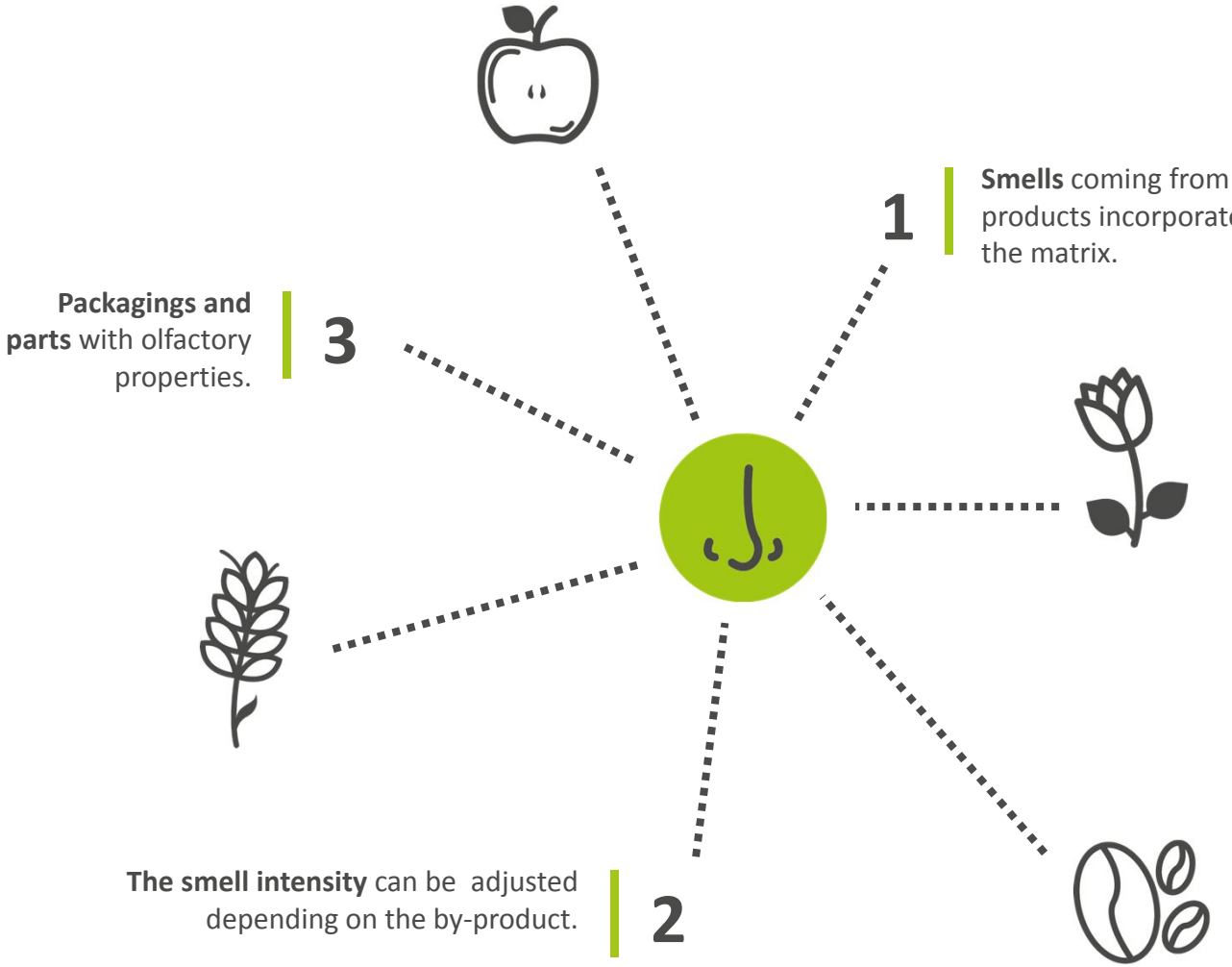


An ecological advantage

ACV

A new sensory experience

What is the interest of producing plastics with by-products?



An ecological advantage

ACV

A new sensory experience

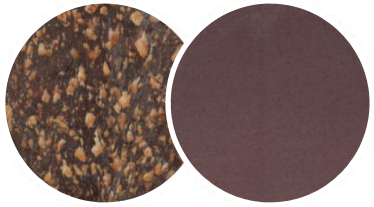
What is the interest of producing plastics with by-products?

Rigidity or flexibility of the material depending on the matrix used.

1

2

Softness or roughness of the material depending on the filler.



An ecological advantage

ACV

A new sensory experience

What is the interest of producing plastics with by-products?

Sandstone, pebbels effect

Ivory effect

Coconut effect

Ebony effect

Pink marble effect

An ecological advantage

ACV

A new sensory experience

The main by-product ranges:

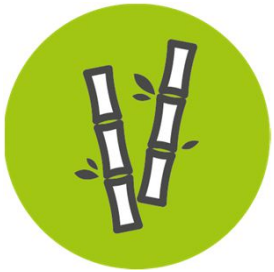
This list is not exhaustive, it is possible in some cases to identify and to use new type of by-products, defined according to a precise need.

Marine spirit

Meadow spirit

Fruit spirit

Vegetal fiber spirit



Floral spirit

Textile spirit

Your project

By-products range: marine spirit

Oyster

Originating from shellfish aquaculture

Mussel

Originating from shellfish aquaculture

Scallop

Originating from shellfish aquaculture

Algae

Originating from aquaculture and valorization

By-products range: meadow spirit

Wheat

Cereal and seed waste

Barley

Cereal and seed waste

Rice hull

Food industry by-product

By-product range: fruit spirit

Cocoa

Chocolate industry by-product

Grape seed

Winemaking industry by-product

Olive stone

Agriculture by-product

Coffee grounds

Restaurants and coffee houses by-product

By-product range: vegetal fiber spirit

Wood

Sawmill by-product

Cork

Capping activity by-products

Miscanthus

Miscanthus transformation by-product

Flax

Flax transformation by-product

Range of by-products: floral spirit

Lavender

Coming soon

Sorting waste from flower industry

Rose

Coming soon

Sorting waste from flower industry

Range of by-products: textile spirit

Leather

Leather industry
by-product

Your project:

It is possible, in some cases, to identify and to use **new types of by-products**, defined according to **a precise need,** and to develop **a customized formulation** according to your **specifications.**

Potential applications:

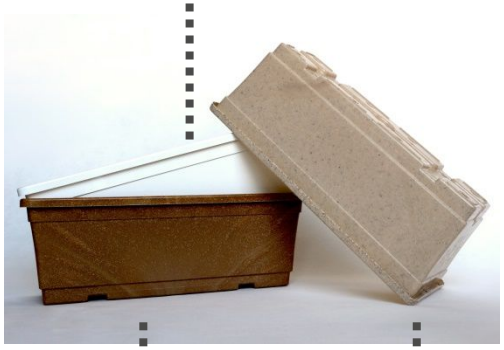
Activity sectors

- Packaging
- Transport
- Sport and hobbies
- Paper industry
- Medical
- Luxury products
- Cosmetics
- …

Processes

- Injection
- Extrusion
- Blowing
- Thermoforming
- Rotomolding

30% scallops + white



30% Flax

25% Oyster

Coffee grounds

Wheat

Wheat

Oyster

Cork

Olive stone

Coffee grounds

Wheat

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Bioplastics Expert

Contact us and we'll innovate together
by integrating biocomposites in your strategy !

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