



CONSORZIO NAZIONALE PER IL RICICLO  
ORGANICO DEGLI IMBALLAGGI IN PLASTICA  
BIODEGRADABILE E COMPOSTABILE

**COMPOSTABLE BIOPLASTICS:**

# **10 FAKE NEWS**

**that damage the environment**



Biorepack operates under the umbrella of the CONAI system for the end-of-life management of EN 13432-certified compostable bioplastic packaging: from the promotion of labelling to recognisability of the packaging, and from its correct disposal by citizens in the separate collection of food waste to guaranteed achievement of recycling targets through composting. The Consortium works with municipalities and sector operators to increase the quantity and quality of separate collection of the organic fraction of waste, helping to bolster Italy's leadership in the circular bioeconomy.

COMPOSTABLE BIOPLASTICS:

# 10 FAKE NEWS

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The production of commercially available compostable bioplastics does not take anything away from agriculture or food for humans and animals.

Quite the opposite, compostable bioplastics can be regarded as innovative safe materials with many uses - and, on top of this, they can be processed in composting and anaerobic digestion plants without giving rise to any problems.

Of course this is what the scientific evidence says, but it is confirmed by the day-to-day experience of those in the industry. At the same time this is also recognised by Italian legislation, and it has long been regulating them and promoting their use and joint recycling with organic waste (better known in Italian homes as 'wet waste').

This is how they can be turned into compost, a natural fertiliser that can be used in place of chemical fertilisers, which puts **nutrients into the soil, restoring its fertility.**

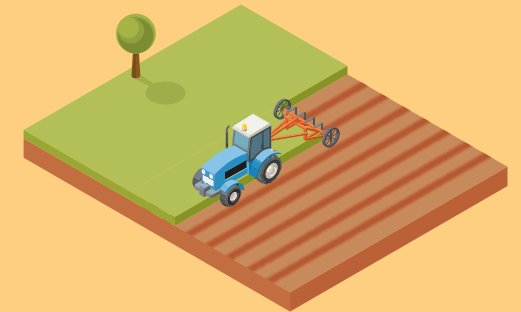
Something not at all insignificant when we remember that **Italy, together with Spain, is the EU country having**

**the most degraded soil. Soil that is desertified and at further risk of desertification, as reported by the World Atlas of Desertification produced by the European Union publications office.**

Major expansion in the sector has helped us become increasingly familiar with these materials and the many flexible and rigid packaging materials of which they are made today - from the now famous bio shopping bags, to bags for the collection of wet waste, plates, crockery, cutlery, beakers/cups and beverage capsules.

**And yet, despite everything, many false beliefs still persist,** and at least partly affect the way in which these products are generally perceived. Whether this is through ignorance or deliberate deception is of little consequence. We must therefore take a close look at the most contentious issues and provide what is needed for them to be properly discussed. Accordingly we have focused on 10 particularly frequent untrue statements. Let's look at these in detail.

# 01



**“Producing compostable bioplastics means diverting land away from agricultural production for food”**

In 2021 it was estimated that the amount of land used for the production of bioplastics was 0.01% of the world's agricultural area<sup>1</sup>, that is just 700,000 hectares. To put this figure into context, the number of hectares used for plant crops for industrial purposes is enormously higher. Worldwide, a forest area of 1.15 billion hectares, i.e. 1,640 times more, is used just for timber and other products<sup>2</sup>.

What is more, the bioplastics industry has always been committed to developing technologies that use waste and scrap to produce such materials.

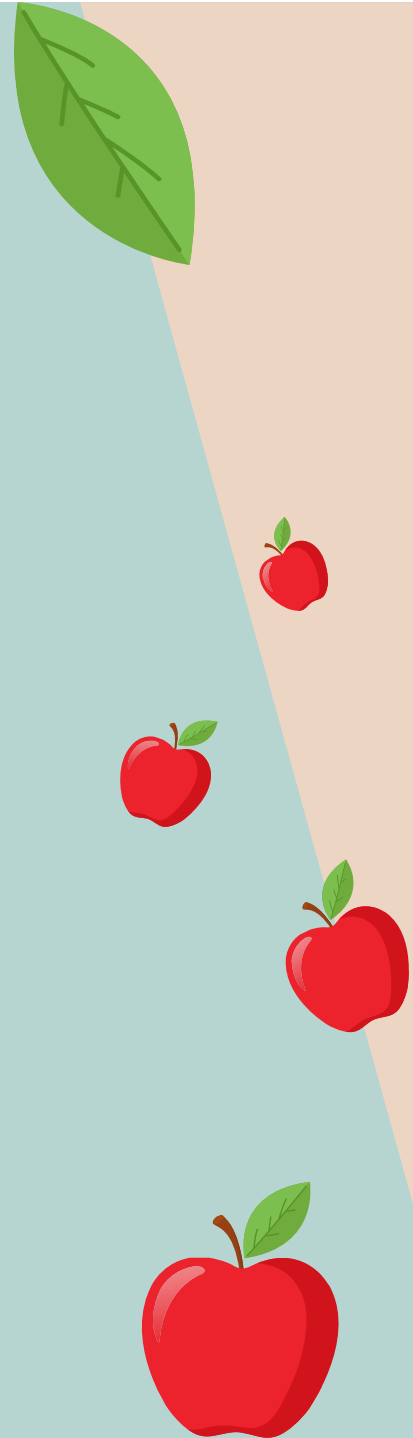
# 02

## “Producing bioplastics means diverting raw materials away from food for humans and animals”

It is often said that bioplastics use up valuable food raw materials. Most frequently mentioned is starch, a raw material that is also used by the Italian bioplastics sector. In this respect it should not be forgotten that **starch has always been used for non-food purposes.**

According to ‘Starch Europe’<sup>3</sup>, 44% of starch production in the EU and the UK is for industrial purposes. Of this percentage, the paper and corrugated products industries (32%) are the main users, followed by the pharmaceutical and chemical industries (7%) and other non-food sectors (5%).

Bioplastics are not even mentioned as a specific starch-consuming industry.



# 03

## “Compostable bioplastics contain significant percentages of polymers from fossil sources and hazardous chemical additives”

The distinctive and defining characteristic of compostable bioplastics is not their origin (their renewability), but their end-of-life (their compostability). There are many compostable bioplastics on the market that have a high renewable raw material content. It is to be hoped that European regulations will increasingly push for renewability so that the share of bioplastics derived from fossil sources is reduced. Unfortunately this is not how things stand at the moment, and this favours the market for monomers and polymers derived from fossil sources, often produced outside Europe.

Having said that, this would seem to be a rather odd accusation: **by the same logic we should also criticise hybrid cars because they run partly on petrol** (we are in a transition stage). In the same vein it is inconsistent to accuse bioplastics of competing with agricultural production, using up renewable raw materials, and at the same time accuse them of not using enough of these. In any case, whatever the origin of their components

(from oil or agricultural resources), bioplastics have to be fully compostable to meet the stringent requirements of standard EN 13432.

As for the presence of hazardous chemical additives: to be considered compostable products have to be certified according to EN 13432, which among other things includes an ecotoxicity test. This ensures that products (in their final form, that is including any additives) release no toxic substances or heavy metals that might compromise compost quality.

On top of this, many compostable bioplastics are naturally resistant to liquids and so do not need any chemical treatment when used to produce articles that are in contact with food<sup>4</sup>.



04

**“Producing and using compostable bioplastics has more environmental impact than conventional materials”.**

LCA (Life Cycle Assessment) studies refute this: Compostable and renewable bioplastics are an opportunity to **decarbonise the economy** and promote circular systems<sup>5</sup>.

If indeed they did have greater environmental impact than conventional materials, **it would be hard to explain why the EU is promoting the bioeconomy** and renewable and compostable products<sup>6</sup>.

In fact Europe provided **almost 1 billion euro** of funding for more than **130 research projects** on biobased/ biodegradable plastics between 2007 and 2020 alone.



**“The disposal of compostable bioplastics in domestic waste is an oddity particular to Italy”**

Putting compostable bioplastics in with the wet waste is simply a response to European law.

**In fact they were developed in response to the concept of ‘packaging that is recoverable in the form of compost’** in Directive 94/62/EC. If this is their purpose and their fate at the end of their lives, **then it is hard to see how they should be disposed of, if not specifically with domestic wet waste (OFMSW)**, with the production of compost.

The collection of compostable bioplastics together with wet waste is **explicitly envisaged by European regulations**<sup>7</sup>.

These envision the compulsory differentiated collection of OFMSW by 31/12/2023. Italy has brought forward the timing by making it compulsory from 1/1/2022. **ISPRA** reminds us of the **benefits of** this model (wet waste/ compostable bioplastics) in its annual report on urban waste<sup>8</sup>:

*“Growth in differentiated collection of the wet fraction has undoubtedly become a further stimulus to the use of biodegradable and compostable bags, as they are suitable for recycling organic waste. Thus the elimination of non-compostable plastic packaging may help to improve biological processes and increase the quality of compost produced by biological treatment plants”.*



**“Compostable bioplastics do not compost in processing plants and the EN 13432 standard does not guarantee real compostability”**

As part of the programme agreed between Assobioplastiche, CIC, CONAI and Corepla, tests to check the behaviour of compostable bioplastics have been carried out **on both a lab scale and under real conditions** (full scale, that is at processing plants) between 2016 and 2017. Both flexible and rigid compostable bioplastics **disintegrated and/or completely disaggregated** in both the lab scale and full-scale tests. The tests were performed in composting plants as well as in integrated plants (anaerobic digestion and composting).

**In 2021 the CIC** (Consorzio Italiano Compostatori) **carried out monitoring on behalf of Biorepack** at 30 organic recycling plants and came to the same conclusions.



**“Compostable bioplastics degrade too slowly to be compatible with the treatment of domestic wet waste”**



It has been demonstrated by a **study by the University of Wageningen<sup>9</sup>** that, in a Dutch organic waste treatment plant, certified compostable products tested to EN 13432 biodegraded within a maximum of **22 days**. **Even in the case of anaerobic digestion with a subsequent composting phase**, tests carried out as part of the programme agreed between Assobioplastiche, CIC, CONAI and Corepla have shown that **complete biodegradation occurs in approximately 55-63 days**.

It should not be forgotten that, as stipulated by BAT (Best Available Techniques), the right treatment time (9-10 weeks for composting plants) is crucial to quality organic recycling.

**Cycles that are too short** do not allow compostable materials to be degraded effectively, **increase plant waste** and **worsen the quality of the compost** produced.



08

## “In Italy, the organic fraction is mainly treated by anaerobic digestion and compostable bioplastics are not degraded in such processes”

48.1% of the organic fraction is treated in composting plants and 46.8% in integrated plants (in which the composting stage follows the anaerobic digestion stage). Only 5.1% is treated in anaerobic digestion-only plants (ISPRA data). So **94.9% of treatment processes are suitable for composting and biodegrading compostable bioplastics** according to the data and tests (lab scale and full scale) carried out according to the programme agreed between Assobioplastiche, CIC, CONAI and Corepla, and the monitoring by CIC/Biorepack in 2021.

In addition, there are articles<sup>10</sup> which demonstrate that **even under anaerobic conditions** (both full scale and lab scale) **the main bioplastics currently**

**on the market degrade to biomethane with an excellent yield.**

A recent study by an international team of researchers has noted the strategic role of bioplastics for quality recycling of the organic fraction (*“The bioplastics within organic municipal waste are a critical component for the future of waste management with particular reference to the quality of the final products, i.e., digestate and compost”*<sup>11</sup>).

In any event, integrated treatment is the most beneficial because it ‘closes the circle’. Not only does it not stop at energy recovery, it brings about true organic recycling with the production of compost - and this, as is well known, is the preferred option in the pecking order of treatments being championed in Europe.

09

## “Available plants are not adequate for the treatment of compostable bioplastics, in particular packaging and rigid products”

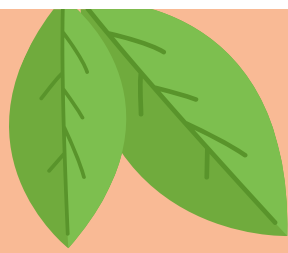
The CIC (Consorzio Italiano Compostatori) states exactly the opposite<sup>12</sup>: “The plants employed in the recycling of organic waste have been confirmed to be an appropriate and efficient system for dealing with biodegradable and compostable plastic packaging. Almost all plants (with a few exceptions, due to particular pre-treatment systems), both composting-only biological processes and integrated digestion/composting processes, accept and can deal without any problems with the compostable plastic products present in the organic waste stream coming to them”.

**The real question that then needs to be asked, is about the layout of some plants that** on closer inspection are found to discard not only compostable bioplastics, but also the biodegradable solid waste normally found in organic matter. This includes wood, nut shells and egg shells. These plants consciously decide to select only certain materials for processing, **discarding all the rest** (solids, including compostable bioplastics). Also we need to ask about plants that have **very high rejection rates** because of the **very large amounts of non-compostable materials** in the wet waste collected, or because of processing techniques or treatment times that do not comply with BAT (Best Available Techniques), and are forced to resort to pre-treatment systems that end up **preventing even compostable materials from being recycled. Approximately 15 per cent of materials for recycling are currently lost because of such pre-cleaning and separation operations caused by the presence of large amounts of non-compostable materials, or because of handling techniques and treatment times that are not BAT-compliant.**

Biorepack has conducted five video interviews with the managers of five composting plants in various parts of Italy<sup>13</sup>.

Just listening to what the managers of these plants themselves have to say is to understand that the claim that flexible or especially rigid bioplastics are a problem is wholly unfounded. On the contrary, they behave like grass cuttings and prunings and should be treated as such.

# 10



## **“Compostable bioplastics aim to replace conventional plastics completely and are sold as a solution to the problem of litter”**

No-one in the compostable bioplastics supply chain in Italy has ever promoted the total replacement of single-use plastics with single-use bioplastics.

On the contrary, only those products designed as specific solutions to the problems caused by the presence of non-compostable materials in wet waste (bags, dishes, capsules, etc.) have been promoted.

If we take the case of shopping bags, for example, - the sector in which compostable products are most widely used - the Italian legislation focusing on the combination of reusable bags/ compostable bags has brought about a 58% reduction in the total number of shopping bags in circulation between 2010 and 2021<sup>14</sup>.

A similar reduction also applies to the single-use products covered by the UAS Directive<sup>15</sup> in particular plates and cups, which saw a reduction in volume of 55% between 2016 and 2021.

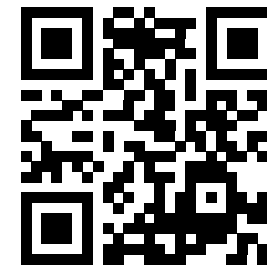
With regard to litter, the abandonment of waste in the environment, no products should be disposed of in the environment in an uncontrolled way. All products made of any material must be collected and recycled. Paper must be collected with paper, cans with aluminium, glass bottles with glass, etc. EN 13432-certified compostable bioplastics, with the appropriate disposal instructions, are designed to be collected together with domestic wet waste and composted in organic recycling plants, not to be disposed of uncontrolled in the environment.

This applies to all biodegradable materials. For example, there is no evidence that the biodegradability of paper (which consumers are well aware of) is a factor in its uncontrolled scattering. Neither does it appear that banana peel, or that of any other fruit, is thrown on the ground because it is biodegradable. On the contrary, such behaviour is immediately condemned by the public. Testing biodegradation in the sea for items used in fishing, such as mussel nets, is something else altogether. In this specific area, innovation in the field of inherently biodegradable plastics has made great strides.

## **SITOGRAPHY**

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