

# FNADÉ does not support bio-based and biodegradable plastics

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## FORWORD

The progressive phasing-out of single-use plastic materials has led, among other things, to the emergence of new resins known as "bioplastics", as a substitute for 100% fossil-based plastics. These "bioplastics" must have a minimum content of plant material (corn, wheat, sugar cane, sweet potato, etc.) and/or be biodegradable.<sup>1</sup>

The term "bioplastic" can in fact refer to both :

- "biobased" plastics (= produced at least from "*certain amount*" of natural materials), but which can be both degradable resins (e.g. cornstarch bags), and sustainable/recyclable resins (e.g. biobased PET). The notion and quantity of "*certain amount*" should be therefore clearly defined, the objective of these biosourced plastics being to reduce fossil fuel consumption.
- "biodegradable" plastics (= that degrade under specific conditions), whether produced with natural or synthetic resins.

Bio-sourced and biodegradable plastics	Bio-sourced and non biodegradable plastics	Conventional (petrochemical) biodegradable plastics
<ul style="list-style-type: none"> <li>• PLA (polylactic acid)</li> <li>• PHA (polyhydroxyalkanoates)</li> </ul> <p>Frequently used in the manufacture of packaging (plastic bags and food trays among others) and surgical material (suture materials, implants...)</p>	<ul style="list-style-type: none"> <li>• bio-PE (bio-polyethylene),</li> <li>• bio-PET (bio-éthylène téréphtalate)</li> <li>• bio-PTT (bio-Polytriméthylène terephtalate)</li> </ul> <p>Frequently used in the manufacture of bags, films, bottles, Tupperware-type boxes, prostheses, textile fibres, etc.</p>	<ul style="list-style-type: none"> <li>• PBAT (polybutylène adipate-co-terephthalate)</li> <li>• PBS (polybutylène succinate)</li> <li>• PCL (polycaprolactone)</li> </ul> <p>Present in many sectors and products</p>

Thus, some bioplastics can be both bio-based and biodegradable, but not all bioplastics are necessarily bio-based and/or not necessarily biodegradable. **This lack of clarity should lead to ban the term "bioplastics"** in any technical or regulatory reference, in order to avoid any confusion on the real characteristics of these new plastics.

It should also be noted that the term "biodegradable" can itself be a source of confusion: it does not mean that the material can degrade on its own in nature, nor even that it will degrade in all biological processes (local composting, anaerobic digestion, etc.), but only that the material fulfills a degradation standard in laboratory pilots that reproduces industrial composting. In this respect, ADEME (the French agency for ecological transition) recommends

<sup>1</sup> <https://www.ademe.fr/particuliers-eco-citoyens/produits-ecoresponsables/dossier/questions-conso/biologique-biosource-biodegradable-nest-meme-chose>

indicating "do not litter in the environment" and no longer using the term "biodegradable" in communications to the general public in order to avoid any confusion.<sup>2</sup>

Furthermore, FNADE does not support the use of these bio-plastics because their benefits are not demonstrated and they lead to substantial issues for recycling industry as well as for agronomic recovery of biowaste.

## 1. SPECIFIC IMPACTS ON THE RECYCLING INDUSTRY

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Currently during the sorting process, biodegradable plastics are directed towards the residual fraction. The modification of the sorting process and/or the design of packaging (integration of digital markers in particular) are necessary to allow efficient sorting and recycling of these new plastics. and

**These biodegradable plastics hamper the high-quality recycling of other polymers:** for example, the undesired and exceptional presence of PLA, even in a very low proportion in a batch of PET to be recycled, affects the physical & mechanical properties of the recycled PET and therefore leads to crucial issue for plastic recyclers and converters. The same thinking applies to biodegradable plastic bags, which can be found, for example, in the fruit and vegetable section of many supermarkets, and which are not compatible with non-biodegradable PE films intended for mechanical recycling.

On the other hand, it should be noted that "sustainable" (= non-biodegradable) bio-based resins, which have the same chemical structure as fossil-based resins (such as PET or PE), **do not harm recycling processes and can be recycled in the same way as non-bio-based resins:** the same optical detection, the same composition, the same reprocessing processes and the possibility of mixed recycling of bio- and fossil-based resins.

It is therefore urgent to define "material standards" for these new packaging materials and for each of the bio-based and biodegradable resins, in order to guarantee their composition and ultimately their recycling potential. Eco-design for household packaging and soon commercial packaging must evolve to integrate these marketing standards. EPR schemes and associated fees should finance the additional sorting costs.

FNADE is not in favor of the development of bioplastics but if they were to be used more widely, FNADE recommends limiting **the number of bio-based and biodegradable resins placed on the market, and taking into account their suitability for sorting and industrial processes.** This could be done by the sector's advisory bodies and further included in the specifications of relevant EPR schemes. These plastics could then be recovered in homogeneous batches by the suitable recovery process, namely recycling or the production of Refuse-Derived Fuels (RDF)

## 2. SPECIFIC IMPACTS ON AGRONOMIC RECOVERY

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- **PRIORITY SHOULD BE GIVEN TO RECYCLING AND MAKING IT EASIER FOR CITIZENS TO SORT PLASTICS**

First, we want to stress that plastics, even bio-based ones, are intended to be recycled and to be incorporated into new plastic products. Their production requires resources and energy, while recycling provides a real environmental benefit. In addition, these plastics have no added value in terms of agronomic recovery.

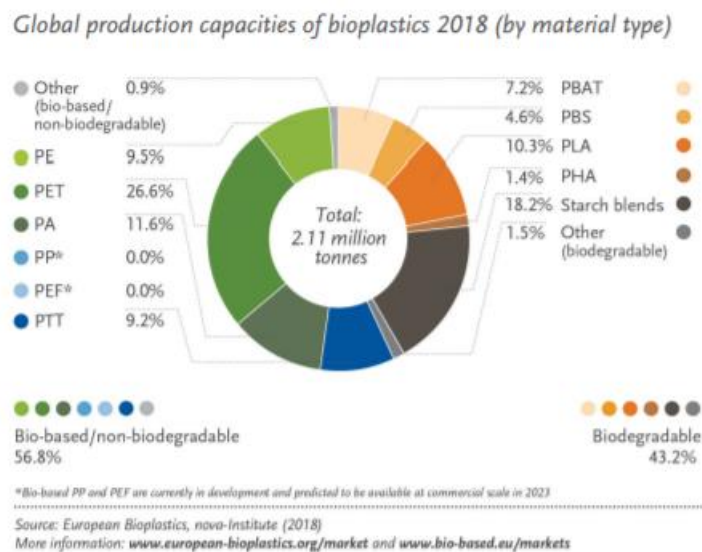
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<sup>2</sup> [https://www.ademe.fr/sites/default/files/assets/documents/avis-ademe-sacs\\_fruits\\_legumes-novembre2019.pdf](https://www.ademe.fr/sites/default/files/assets/documents/avis-ademe-sacs_fruits_legumes-novembre2019.pdf)

Furthermore, additional issues should discourage the use of bio-based plastics for agronomic recycling:

- **It is difficult for the consumer to distinguish between the different types of plastics:** origin, material and possible uses. Plastics of any kind are often more prone to poor sorting habits. Thus, it becomes difficult for citizens to distinguish bio-based and/or biodegradable plastics from regular plastics (fossil origin). This confusion will inevitably generate sorting errors.
- A bio-based plastic (derived entirely or in part from biogenic carbon) is not necessarily biodegradable but a non-bio-based plastic may be degradable. **There is a wide variety of such materials and each will have a very different biogenic carbon fraction and level of biodegradability** .
- **Impact of such materials in agronomic recovery**

Operators of composting and anaerobic digestion are generally against integrating bio-based and/or biodegradable plastics into organic recycling streams: first of all, the confusion between the different types of plastics will lead to sorting mistakes and then around 57%<sup>3</sup> of bio-based plastics are not biodegradable which can hamper the biodegradation process.



These plastics are produced with a great number of different materials and additives which means that biodegradability conditions and composting cycles do not always correspond to those of a regular industrial composting cycle or anaerobic digestion process. Moreover, the sustainability of the agronomic recovery sector depends on the high quality of the final product. The incorporation of such materials, composed partly of biodegradable material, but also partly of petro-sourced materials, can have a negative impact by lowering the quality of these fertilising materials. Some recent studies report some harmful molecules are present in plastics, even "bio" ones, and can be released through the composting and/or anaerobic digestion process. Additives in particular can end up in the soil (via the spreading of compost and digestates). An impact assessment should be carried out.

In the specific context of source separation of **biowaste** from households, FNADE would therefore recommend the use of either a bagless bio-bucket or paper or kraft paper bags, which are both 100% bio-based and 100% biodegradable in domestic or industrial composting conditions, as well as in anaerobic digestion and contribute to the production of energy (anaerobic digestion) and organic matter (compost, digestate).

<sup>3</sup> SPHERE, KANEKA, *Les bioplastiques biodégradables et compostables, état des lieux - Rapport d'Information*, juillet 2019

## CONCLUSION

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**As a conclusion**, the diversity of bio-based plastics, the difficulty for consumers to distinguish them from each other and/or from non-bio-based plastics, and the great variability of their respective biodegradation capacity, entails a significant risk for the performance of biological processes (unpacking, composting, anaerobic digestion) and the quality of the final products (composts, digestates or other fertilisers) if they are subject to a general collection/treatment instruction with bio-waste. It is therefore necessary to be very careful about the overall messages communicated on this topic, which could lead to errors in directing a plastic resin to the most suitable treatment channel.

**We therefore recommend avoiding bio-based and biodegradable plastics**

- As part of the Zero Pollution Strategy, bio-based and biodegradable plastics should be avoided. Indeed, they do not have any agronomic benefit and the safety of the additives they contain has not been demonstrated.
- Plastics should be first recycled and not be used for bio-waste collection in order to facilitate their agronomic recovery. We should promote the collection of biowaste in bulk or in paper containers (kraft bags), which better fits the natural cycle of the material.