

Bioplastics and the circular economy, June 2018

Introduction

This document is written to help readers understand what biodegradable bioplastics can contribute to greater resource efficiency, reducing GHG emissions, improving product design and managing environmental issues around waste management.

What are biodegradable bioplastics ?

Let's define biodegradable. We mean materials which are certified to biodegrade in a certain time and place. These can include soil (for films used as mulch in farming) and composting, either industrial or at home. In these we mean materials used for packaging which families can then discard with food or garden waste. These materials have internationally recognised standards. Our members adhere to these standards. We do not therefore promote materials known as biodegradable which do not adhere to and meet international standards nor do we support materials made with additives to disintegrate, such as oxo degradable materials.

Let's get some myths out of the way. When talking about packaging, bioplastics are materials designed to biodegrade in warm, humid conditions such as industrial composting. Here conditions promote bacterial consumption of bioplastics turning them into mulch, water and CO₂. The standard measuring all this in Europe is the EN13432. Bioplastics are not designed to biodegrade by the roadside, in a river or at sea. There is currently no defined international standard for marine degradation and until there is it is not possible to advise which bioplastics may have this capability. However, some bioplastics have demonstrated potential for some level of marine degradation. Nevertheless, bioplastics do not prevent littering, anti-social behaviour, pollution from developing countries due to lack of modern waste management infrastructure (70% of the world), nor stopping loss of fishing gear etc. and should not be relied upon as the solution. For more information, see our document on <http://bbia.org.uk/faq/>.

What are the typical applications of compostable packaging and what is their added value?.

Compostable packaging offer an effective alternative to conventional plastic packaging, especially when recycling of such packaging is either technically or economically not viable. Typical such non-recyclable plastic packaging formats include packaging contaminated from food, lightweight bags, and multi-material packaging. These are also usually not collected for recycling. Compostable materials offer a solution in that they can be separately collected and treated with food waste in composting. While main applications of compostable packaging available in the market today include bags and table ware compostable packaging are now entering into new packaging for products and especially



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single-use packaging format such as teabags, coffee pods, composite/ multi-material snack packaging, labels, trays, cups, films, wrappers, sandwich boxes, vegetable bags etc. Compostable packaging offer today the best ecological alternative to avoid single-use, non- recyclable plastic packaging.

Infrastructure to treat compostable packaging

EN13432 certified materials can biodegrade in composting facilities authorised to take such products. In the UK there are 53 composting plants which can. They actually do accept on a daily basis compostable products, mainly films but not only. Vegware, a Scottish company, have a business selling compostable table ware made of compostable PLA (polylacticacid) which is then collected and sent to composting plants to be turned into compost. The London Olympics throw- away food service products were all compostable and were effectively composted. Bags for food waste collection and shopping bags sold by among others the Coop Food Group, are often compostable and are effectively composted daily.

Food waste collections deliver these materials to composting plants. Those collections are obligatory in Wales, Scotland and Northern Ireland and many councils (one third) in England also collect household and business food waste. The new EU wide policy which enters into force shortly, obliges all EU countries to separately collect food waste at source by end 2023. So more and more food waste is destined to treatment.

Compostables and Anaerobic Digestion

Whereas composting takes place in the presence of oxygen, AD takes place in its absence and this causes the bacteria to produce biogas. Where dry AD is practised, compostables can be treated as in composting. With wet AD all packaging is stripped out by the operator, regardless of its nature. In many European countries, the compostable, stripped - out material is recovered in post AD aerobic composting. In the UK this tends not to happen and the packaging is sent to landfill or incineration. Bioplastics do not add to GHG in this scenario, they act exactly as plastics act when burnt or landfilled.

The value of compostables in end-of-life

Composting is a process which naturally biodegrades organic waste into humus, compost. Compost is a natural soil improver, which brings organic carbon to soil, needed to replenish our exploitation of topsoil. The UK loses 3 million tonnes of topsoil every year. Yet we throw 7.5 million tonnes of food waste into landfills and incinerators, when we could be composting those and making compost (around 2,5 million tonnes) and replenish soil. The role of compostable materials is to facilitate this process, assisting the collection of food waste, reducing plastic waste, raising food waste treatment and the production of compost. By improving the food waste collection chain, increasing the



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availability of composting plants willing to take compostable packaging, we can bring enormous benefits to soil and to farming in the UK. We are working with stakeholders on the issue of food waste collections and understand the value of broad collaboration across sectors.

Conclusion

Whilst simplified polymer use may lead to greater plastic recycling, the recycling of plastics used for some packaging especially of food- and films- are likely to remain economically and technically very difficult. Many miss the point that plastics are so cheap, so waste plastics are worthless, indeed having a negative value; moreover plastics were never designed for recycling. Where packaging is contaminated by food, mechanical recycling is virtually impossible. By using compostable materials in food packaging we can ensure their return to soil through food waste collections and composting.

Compostables are designed for organic recycling. This circularity is evidenced by the European Commission and the Ellen MacArthur Foundation in their circular economy strategy , as well as in their New Plastics Economy and in the recently launched UK Plastic Pact to which we are signatories. Bioplastics therefore offer an opportunity of reducing plastics waste as well as enhancing food waste collections and recovery, a truly circular option for UK resource efficiency.