

Tackling the Challenges in Food Packaging

Shivani Pathania



Food Industry Development

Webinar Series for the food sector

Fortnightly on
Tuesdays @ 9.30am



Tackling the challenges in Food Packaging

Shivani Pathania, MSc, PhD
Research officer
Teagasc, Ashtown
Tel: +35318059762
E: Shivani.Pathania@teagasc.ie

Prepared Consumer
Food Centre



Outline:

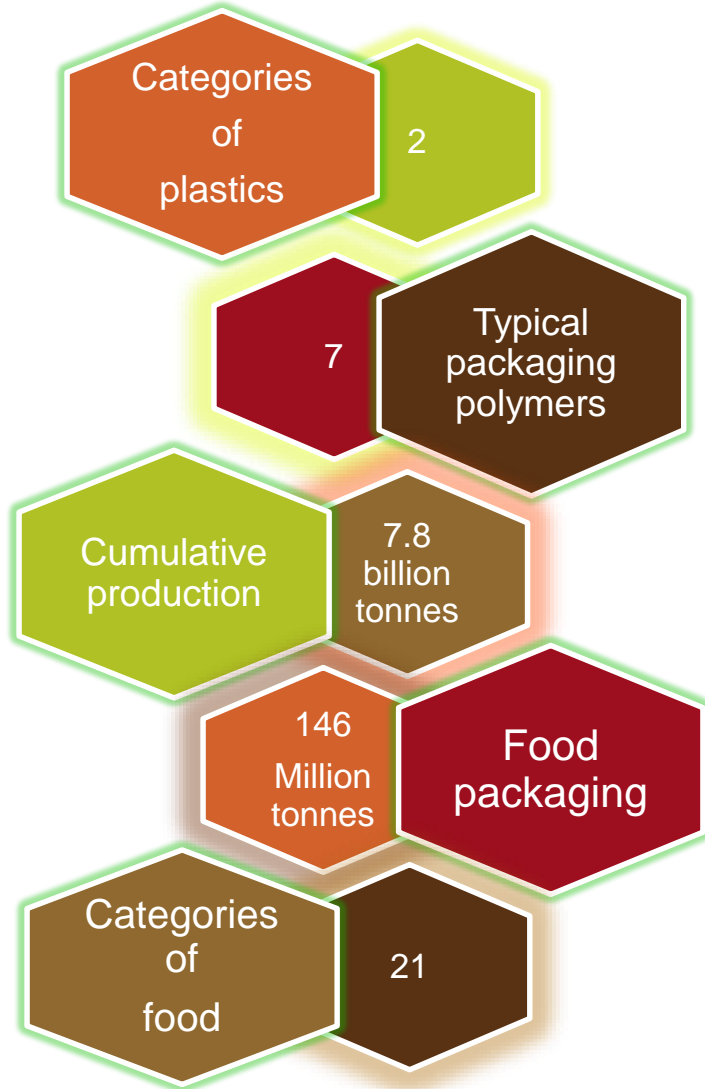
- *Food packaging polymers*
- *EU Plastic strategy*
- *EC Single use plastic proposal*
- *Next generation packaging*
- *Support to food businesses*

....The History



<https://www.sciencehistory.org/the-history-and-future-of-plastics>

Some facts...



<http://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/survey/getsurveydetail/instruments/flash/surveyky/2151>
https://www.ellenmacarthurfoundation.org/assets/downloads/Foundation_New-Plastics-Economy_4.jpg

How big is this industry?



320,000 products
are packed, every
second

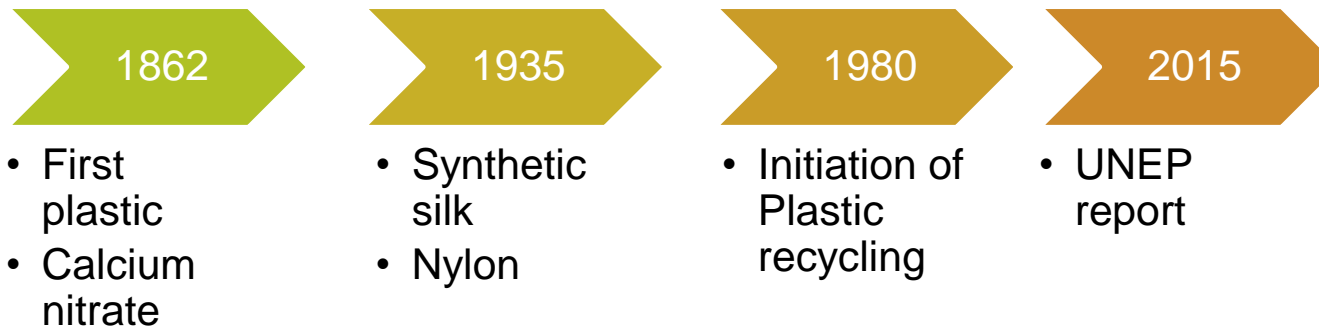


320,000
emptied
packs per
second



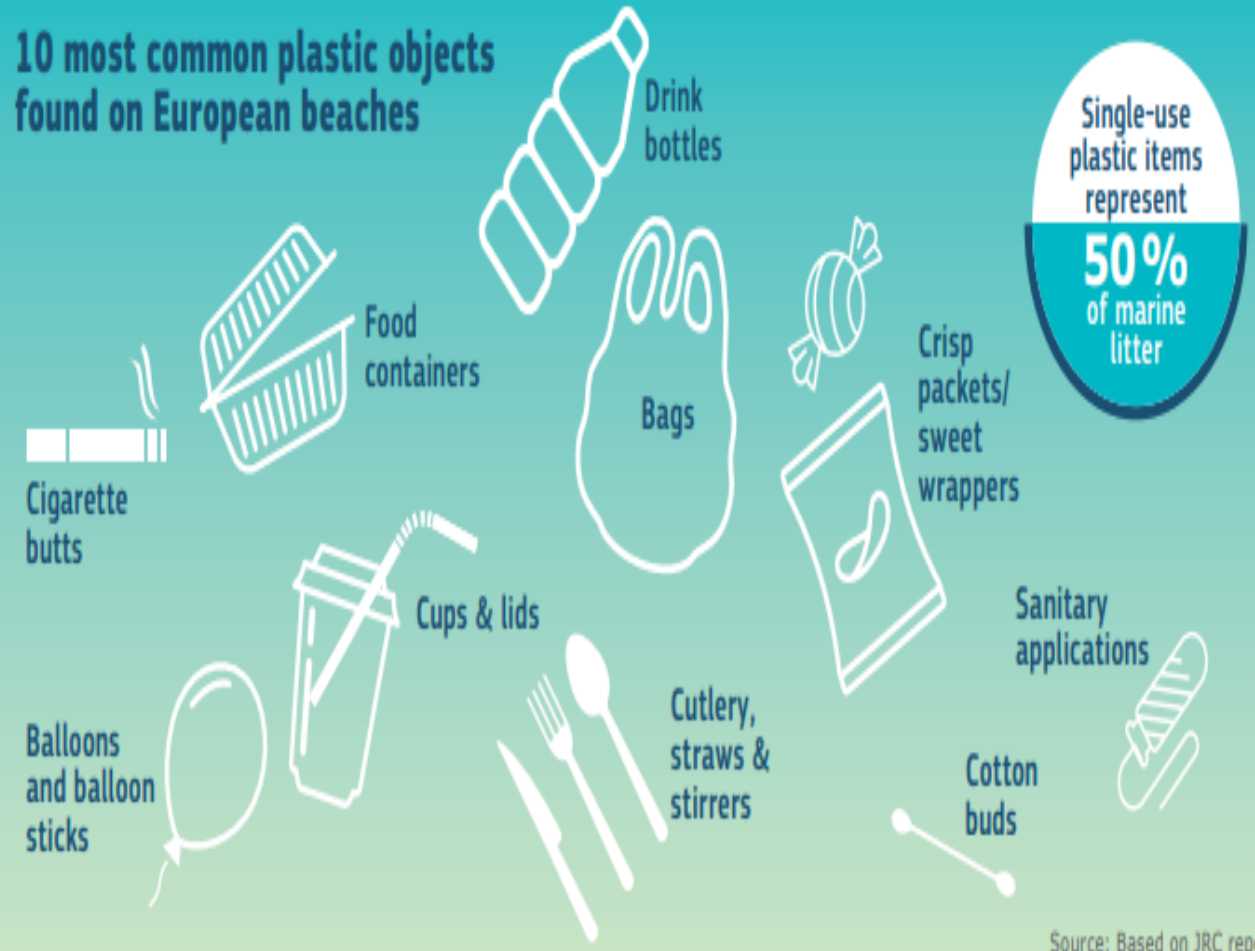
Google

....The History



<https://www.sciencehistory.org/the-history-and-future-of-plastics>

10 most common plastic objects found on European beaches



Single-use plastic items represent **50%** of marine litter

Source: Based on JRC report

Awareness.....??



How sustainable is the food

More consumers are seeking products that are completely eco-friendly, but there are still many barriers on the design and manufacturing side.

by the air within it. Earlier this year, 40 companies including Coca-Cola and Asda signed up to the UK Plastics Pact, pledging to cut plastics within seven years by designing better product components.



The food industry must take greater responsibility for single-use plastics

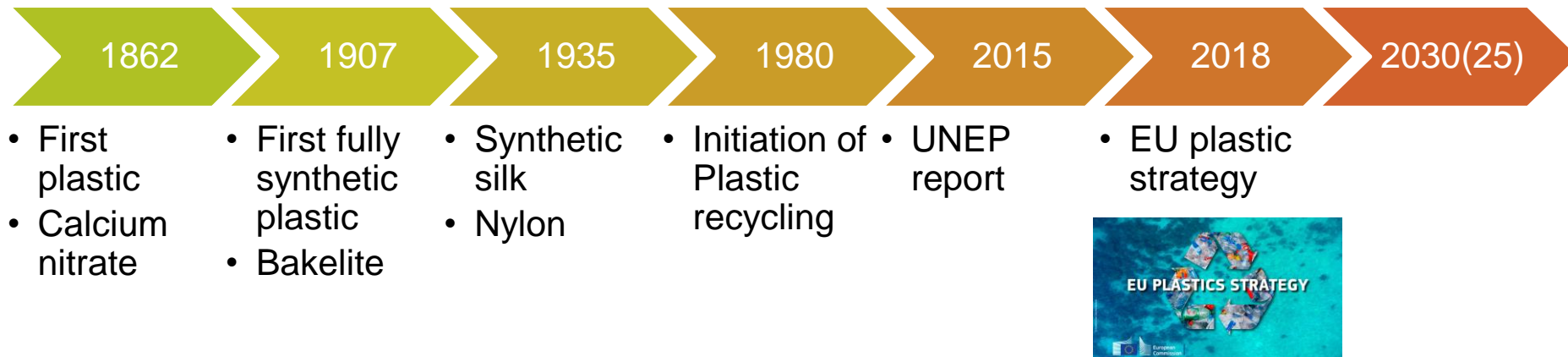
The oceans are choked with plastic, and food packaging is one of the main culprits. But will our modern diet allow us to consider alternatives?

Is packaging justified?

Absolutely, it can extend the shelf life of energy intensive product thus minimising the environmental impact through waste reduction.

97% of the carbon footprint rests within the food and 3% within the packaging.

...The History



<https://www.sciencehistory.org/the-history-and-future-of-plastics>

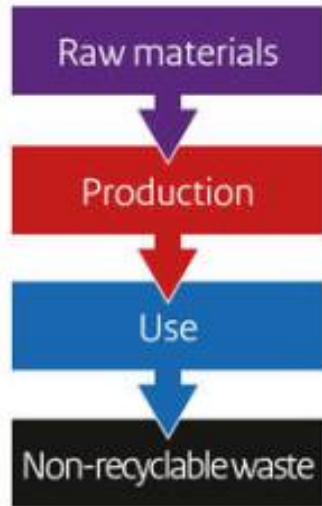
Main highlights of the EU Plastics Strategy

- ⊙ No plastic packaging goes to landfill by 2030.
- ⊙ Eliminating unnecessary single-use plastic packaging.
- ⊙ 55% per cent reusable, recyclable or compostable plastic packaging by 2030 (50% by 2025).
- ⊙ Eliminating non-recyclable components in all plastic packaging by 2030
- ⊙ Help to build circular economy.
- ⊙ Life cycle assessment of plastics to accomplish waste minimisation.



Circular economy...

Linear economy



Reuse economy



Circular economy



<https://www.ellenmacarthurfoundation.org/circular-economy/concept>

<https://www.government.nl/topics/circular-economy/from-a-linear-to-a-circular-economy>

Tackling the challenge?



1

- Reuse

2

- Recyclable
 - Mechanical
 - Chemical

3

- Compostable

4

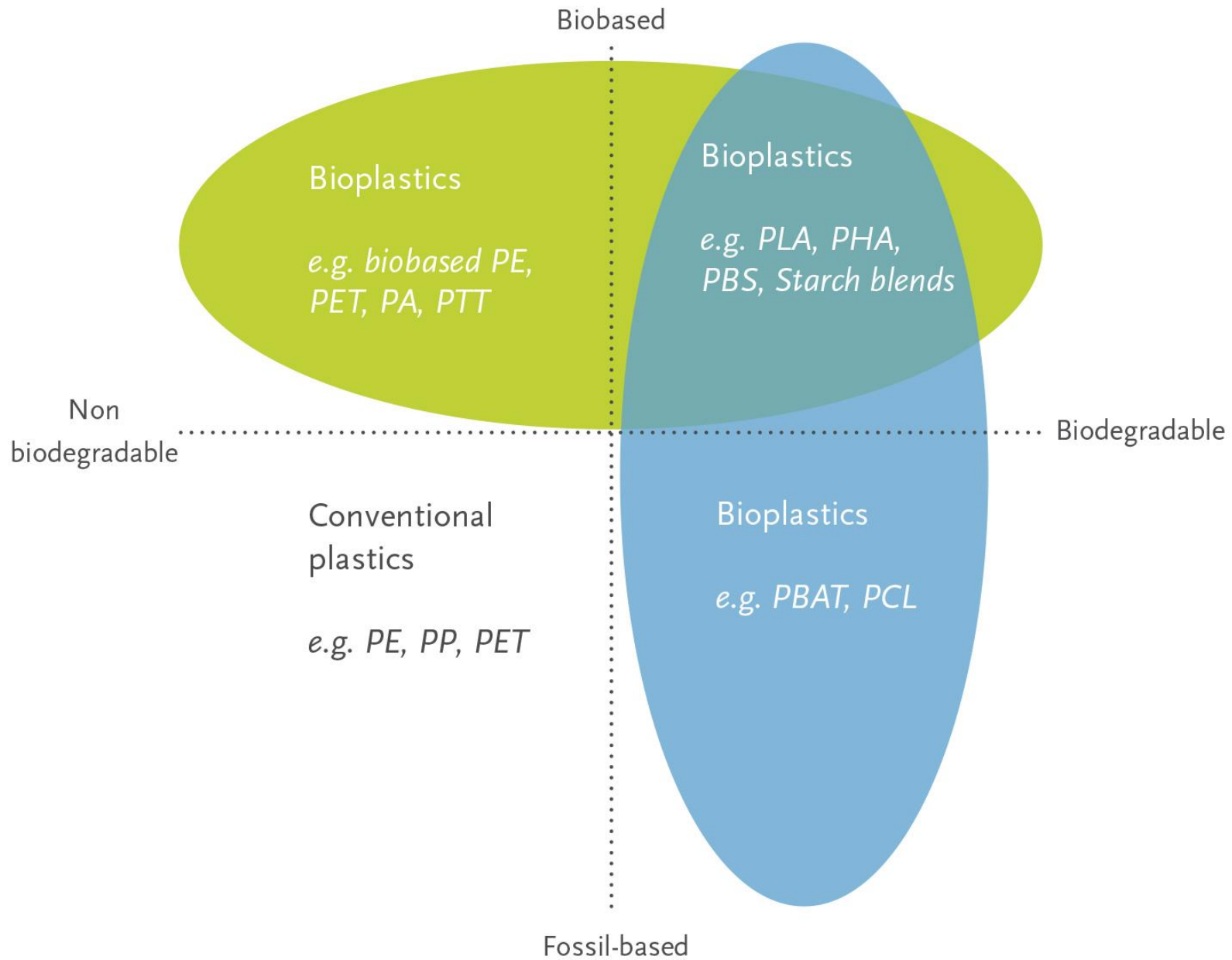
- Responsible use

5

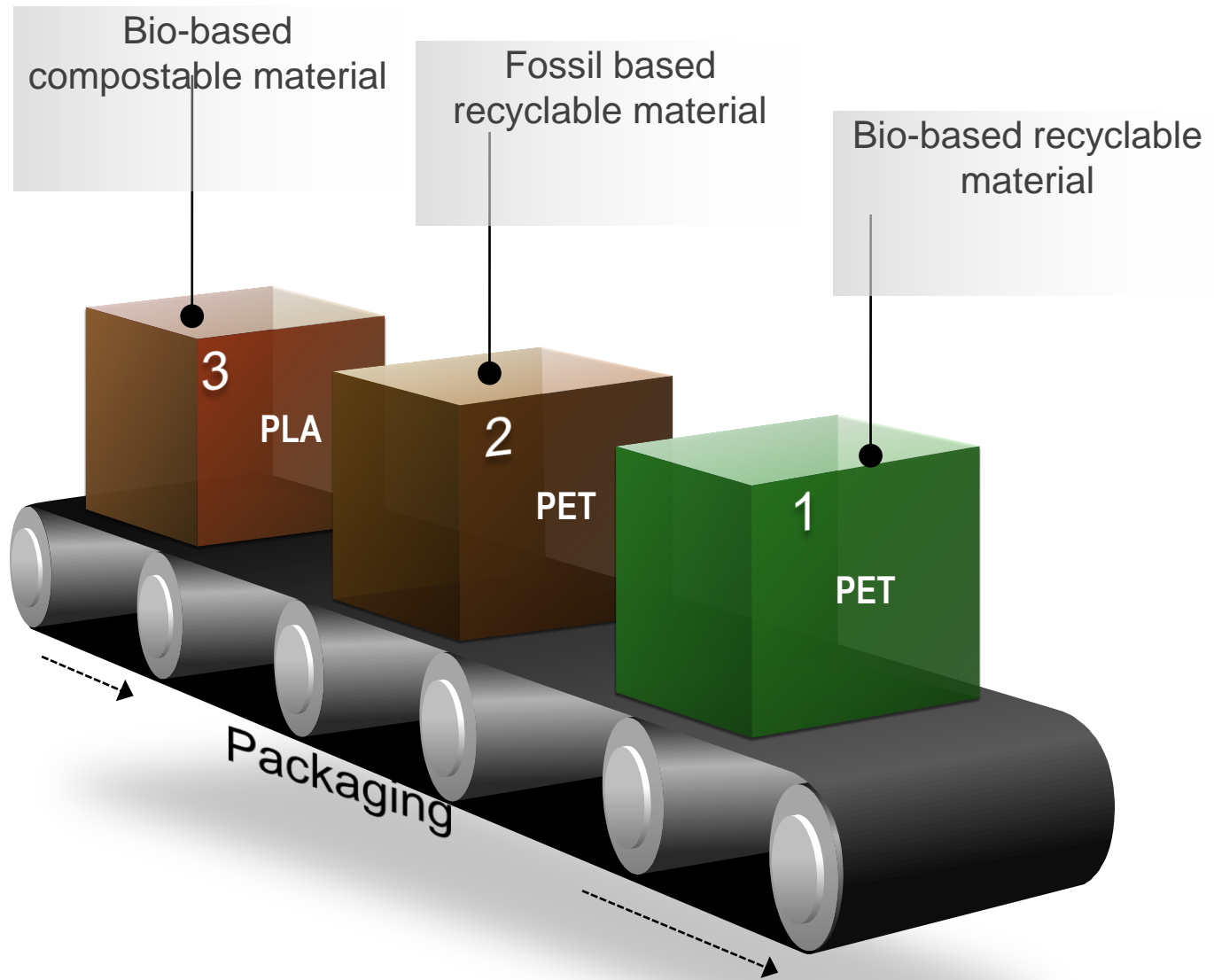
- Recyclate Use
 - Material obtained after recycling

6

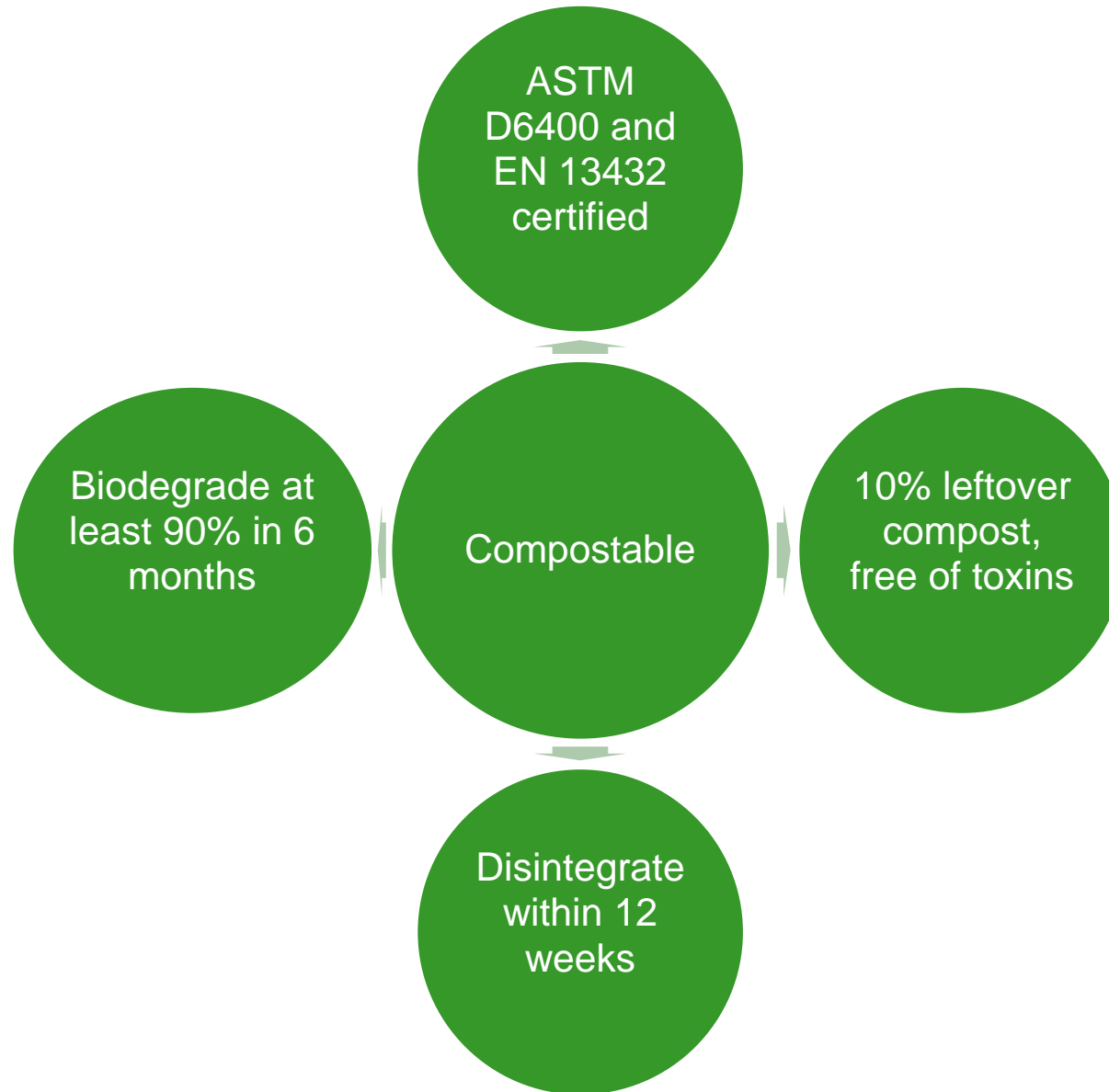
- Edible packaging



<https://www.european-bioplastics.org/bioplastics/>



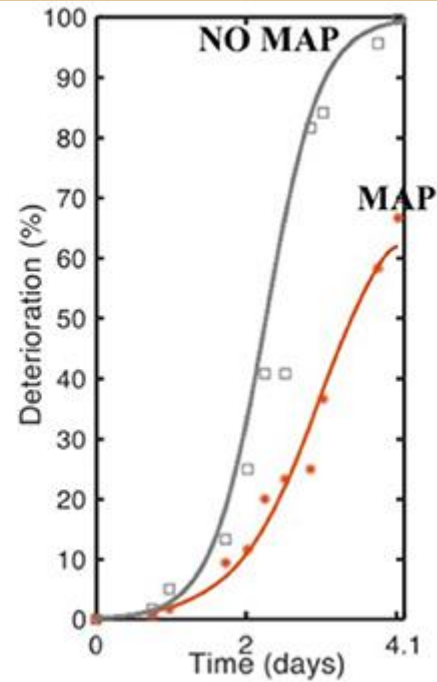
Compostable...what?





If we double the shelf life

Food waste is reduced by 40%



Shelf life extension measures



- ✓ Introduce gas mix in the package
- ✓ Active packaging systems with CO₂ emitters or O₂ absorbers



https://www.teagasc.ie/media/website/crops/horticulture/HIF_industry-vision_Dec17.pdf
<https://www.freshfruitportal.com/news/2018/03/14/sustainable-produce-packaging-debate-far-wrapped/>

EC single use plastic proposal.....

	Consumption reduction	Market restriction	Product design requirement	Marking requirements	Extended producer responsibility	Separate collection objective	Awareness raising measures
✓ Food containers	X				X		X
Cups for beverages	X				X		X
Cotton bud sticks		X					
Cutlery, plates, stirrers, straws		X					
Sticks for balloons		X					
Balloons				X	X		X
✓ Packets & wrappers					X		X
✓ Beverage containers, their caps & lids			X		X		X
✓ - Beverage bottles			X		X	X	X
Tobacco product filters					X		X
Sanitary items:							
- Wet wipes				X	X		X
- Sanitary towels				X			X
✓ Lightweight plastic carrier bags					X		X
Fishing gear					X		X

Consumption reduction



Seaweed based edible bubble of water



Plant-based edible film

Product design



Producer responsibility

Embrapa Food Technology

- ✓ Maintains fruit quality longer
- ✓ Reduces post-harvest losses to below 5%
- ✓ Decreases energy use in the lower cold chain of the supply chain.

Add some fibre to the plastic composite and reduce the amount of plastic

The packages are returnable in a reverse-logistics system.



How does Teagasc support food businesses?

Automatic tray sealer



Testing

1. New tray formats
2. Gas mixes for shelf life extension
3. Downgauging lidding film thickness

Thermoformer



Testing

1. Products usually packaged using traysealers for e.g. sausages
2. Newly developed top and bottom webs



Vertical film forming machine




Horizontal flow wrapping machine

Testing compostable and recyclable mono-material films

**Advanced Packaging Suite,
Teagasc, Ashtown**

Final words...



#Repak team green member

- Understanding the shelf life of the product and what is causing the spoilage?
- Outline the type of packaging you wantRecyclable or compostable
- Request your packaging manufacturer/supplier to provide regulatory approvals
- Confirm if you can use international packaging manufacturer's claims in your country
- Keep up to date with the legislations and regulations
- Or consult an expert to understand necessary packaging functions and the right packaging machines before investing.

Thank you!!

More information:

- <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement><https://www.ellenmacarthurfoundation.org/>
- <https://packagingeurope.com/packaging-sectors/food>
- <https://repak.ie/>