

Next generation cellulose fibre based active packaging, Origins, Activities and Goals

Graziano Elegir

Innovhub- SSI, Paper Division – Italy -

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Food losses are globally in the range of 30% each year worth for \$750 billion

In EU, food waste will increase from 100 Mton in 2014 up to 126 Mton by 2020.



**European Federation of Food Banks (2013)*



**Food and Agriculture Organization (2013)*

Environmental impact:

- 28% of the land used.
- 3,3 Giga tonnes of GHG
- 250 km³ of water
- Change in biodiversity of land

May active packaging help ?



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Active packaging

'active materials and articles' means materials and articles that are intended **to extend the shelf-life** or to **maintain or improve the condition of packaged food**

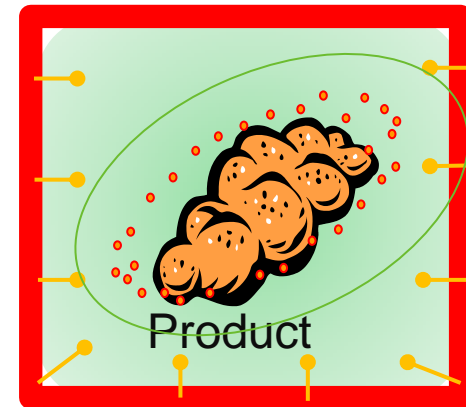
they are designed to **deliberately incorporate** components that **would release or absorb substances into or from the packaged food or the environment surrounding the food**

(EU Reg. 450/2009)

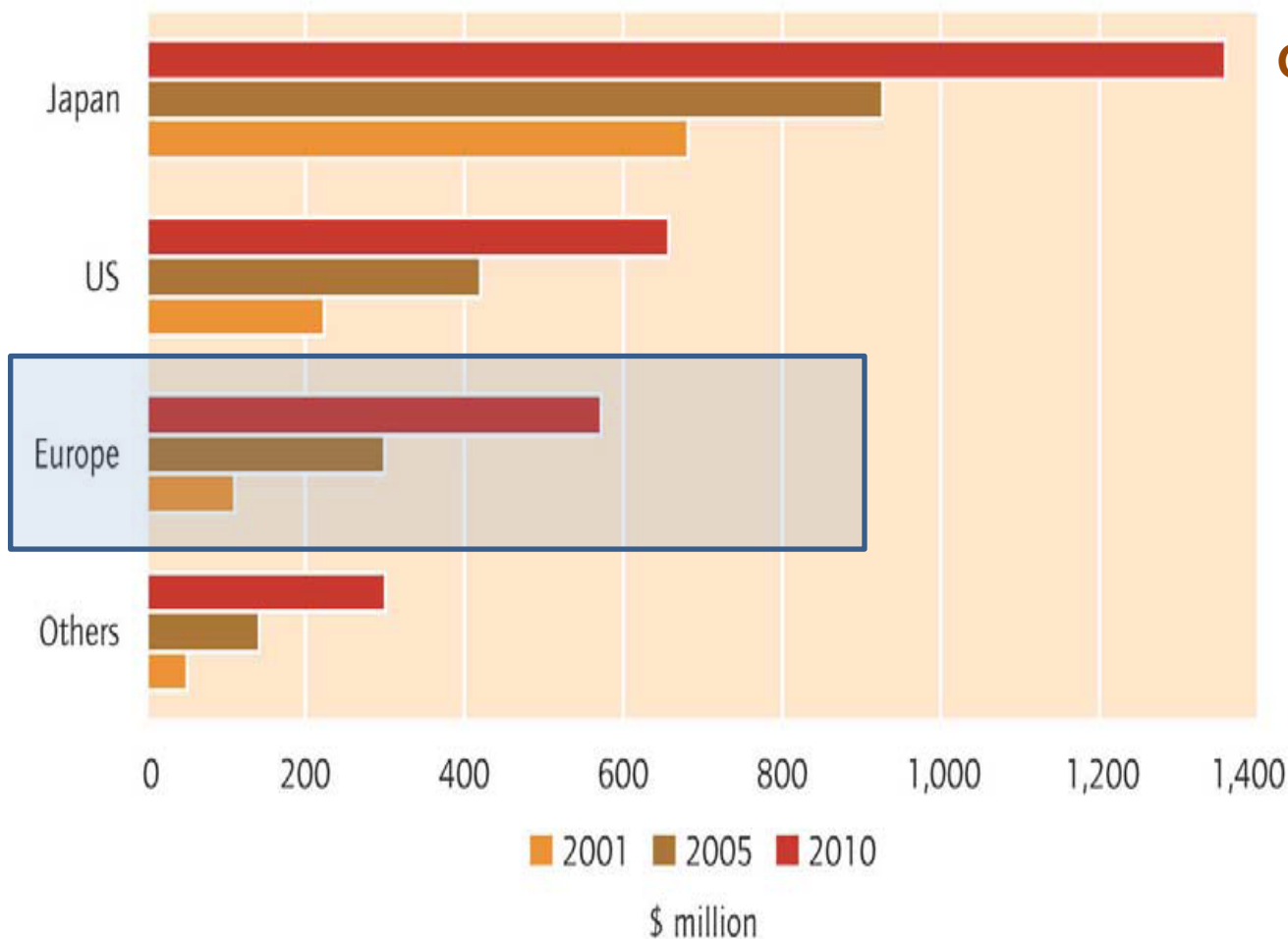
Why Active packaging?

- ✓ To **avoid direct application** of preservatives on bulk.
- ✓ To **apply lower level** of antimicrobials and reduce contamination by them.

Packaging



From traditional to active packaging



Global markets for active packaging 2001-2010

(Source: Pira International Ltd.)

WP2 goals

- Develop suitable solutions for fibre based packaging
 - Grafting technologies
 - Coating with different techniques
 - Multiphase dispersion
 - Multilayers systems with nanocomposite films
 - Overprint varnish
 - Proof of concept at pilot scale



Activities: focus on Antimicrobials

- Grafting of organic molecules
- Coatings with essential oils
- Deposition of photoactive nanoparticles



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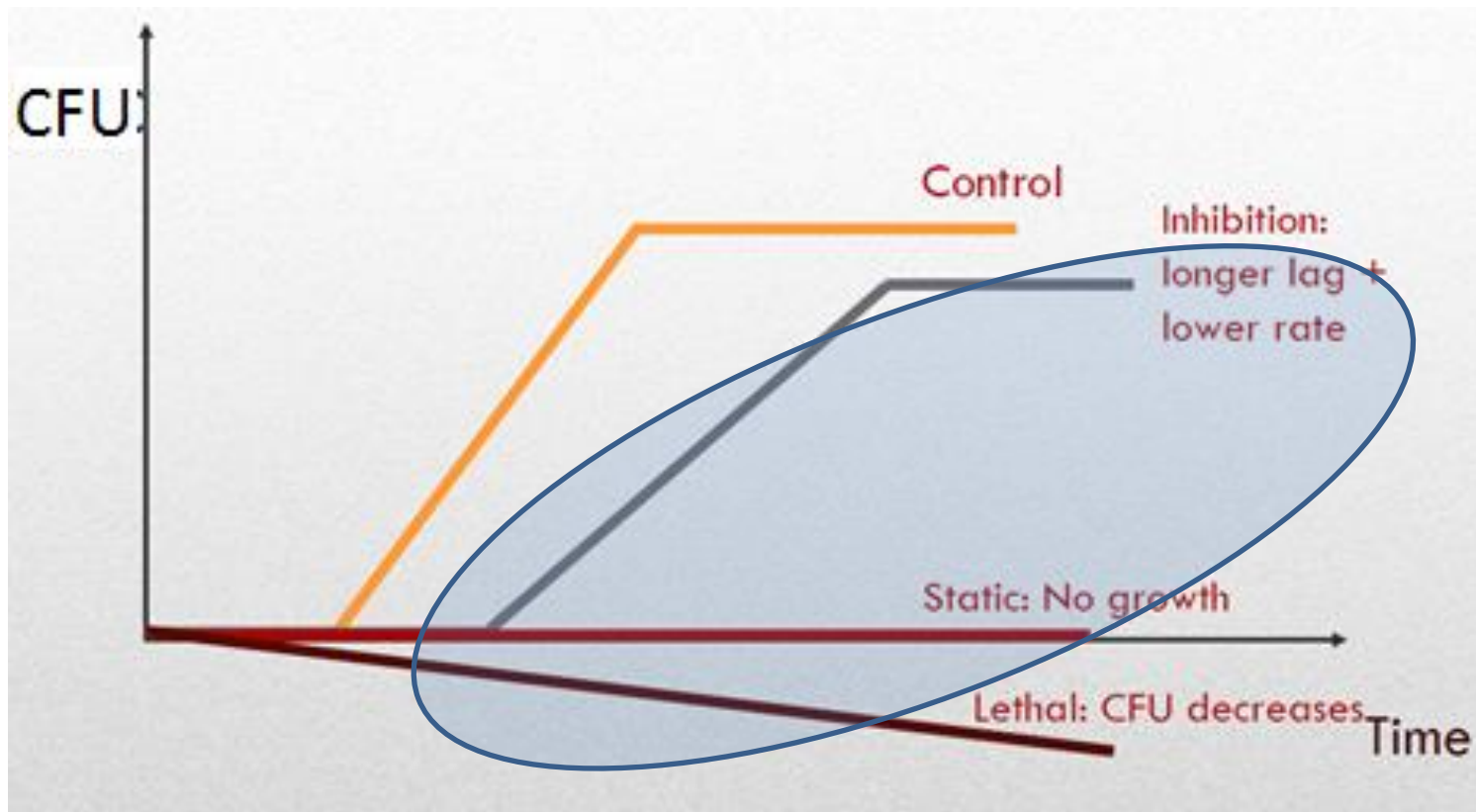
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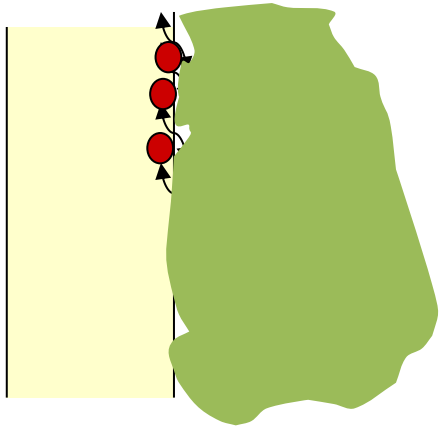
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Antimicrobials mechanism

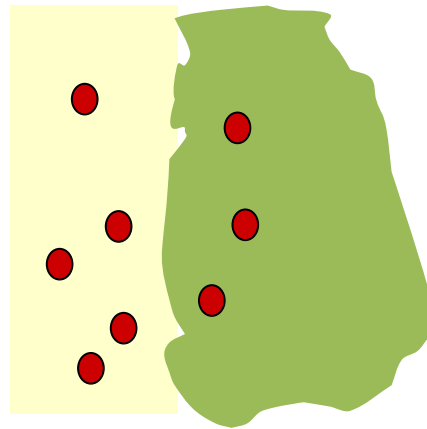


Active packaging systems



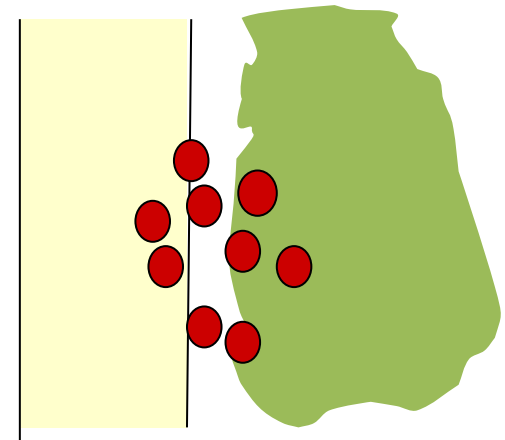
PACK FOOD

Contact active surface



PACK FOOD

Non volatile migration
(diffusion)



PACK FOOD

volatile migration
(no need of direct contact)



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industrial pilot trial

- **Focus:** medical packaging- prevent cross-contamination in hospitals
- @ **Multipackaging Solution** plant in Northern Ireland (Belfast)
 - Two days pilot trial to proof the concept
 - Evaluated different approaches
 - Selected one of them based on:
 - Commercial availability
 - Compatibility with the commercial varnish & industrial line

Activities: industrial pilot trial



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Thank you for you attention!

graziano.elegir@mi.camcom.it
www.innovhub-ssi.it



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