Conventional and biodegradable bio-based plastics supporting sustainable innovative growth of the Agro-food sector
Agricultural plastics – greenhouse films

Greenhouse film, mulch film, seed trays, drip tape, water pipes, tunnel covers, twine, agrochemicals containers, fertilizer bags, ….
Plastic has many useful functions for farmers, but how can the material's vast environmental impact be mitigated?
Agricultural plastic wastes

Agricultural plastic wastes

Agrochemicals Plastic Packaging Waste

AGROCHEPACK, Design of a European Agrochemical Plastic Packaging Waste Management Scheme Pilot Implementation in Greece, STC Programme MED
Filling the sprayers, Triple rinsing - decontamination

Sorting
Traceability
Storage
Filling the sprayers, triple rinsing - decontamination, sorting, traceability, storage.

AGROCHEPACK, Design of a European Agrochemical Plastic Packaging Waste Management Scheme Pilot Implementation in Greece, STC Programme MED
If conventional plastics (e.g. PE) are used as mulch films, they are likely to accumulate in soil, since the removal and the correct disposal of these plastics are technically and economically burdensome, …. 143,000 t of plastic mulch was disposed of in the US in 2004, either in landfills or burned on site. Similar quantities of plastic mulching film waste were generated in Europe. Burning or burying polyethylene mulch in fields is associated with undesirable environmental and public health impacts (e.g. release of airborne toxic substances, including dioxins, and irreversible soil contamination) and is illegal in both EU and the US.
Mulching films

143,000 t of plastic mulch was disposed of in the US in 2004, either in landfills or burned on site. Similar quantities of plastic mulching film waste were generated in Europe. Burning or burying polyethylene mulch in fields is associated with undesirable environmental and public health impacts (e.g. release of airborne toxic substances, including dioxins, and irreversible soil contamination) and is illegal in both EU and the US.
Biodegradable bio-based mulching films


➤ success story by EU evaluation
Biodegradable materials: biodegradation

Biodegradable materials: design, processing and testing

BIOSTAR, ‘Biodegradable drip irrigation system”, General Secretariat for Research and Technology, Greece, 2004-2008

➢ The first experimental biodegradable drip irrigation system in the world
Development of innovative bio-based biodegradable EMAP for horticultural produce

http://www.hortibiopack.aua.gr/

HORTIBIOPACK “Development of innovative biodegradable packaging system to improve shelf life, quality and safety of high-value sensitive horticultural fresh produce”, Research for SMEs: 232551, 2009-2011
Marine biodegradation of bio-based materials

- Marine environmental pollution by plastics is a major problem of concern as it has been estimated that up to 10% of produced plastics end up in the ocean.
- Since most plastics do not biodegrade, they accumulate over time.
- Plastic items are consistently among the most abundant types of marine debris.
- Due to its abundance, and its persistence in the environment, plastics are of particular concern.

Monitoring the problem
Marine biodegradation of bio-based materials

Monitoring the problem

Open-Bio: Opening bio-based markets via standards, labelling and procurement
KBBE/FP7EN/613677
Marine biodegradation of bio-based materials

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