

## De-mystifying Bio-degradable and Degradable Mulching Films

This leaflet is intended to clarify the terminology used when describing mulching films and to help growers identify some of the key features of the different types of Bio-degradable and Degradable plastics that may be offered as mulching film.

**Mulching Film** is an extruded slightly stretchy lightweight film laid in direct contact with the soil. Planting young plants (plugs), through these films delivers key benefits to the grower. By preventing sunlight reaching the soil surface, they inhibit the germination of weed seeds present in the seed bed. The physical barrier affords protection from airborne weed seeds, eliminating or reducing the requirement for costly herbicides. Mulching films create a highly beneficial microclimate for rapid root growth and establishment – an important factor in the successful production of many non-native crops.

*Mulching film should not to be confused with “fleece” or “floating mulch” which “floats” over the crop. Used mainly as frost protection, fleece must be removed prior to any field operations or harvest and disposed of to landfill as plastic farm waste. Fleece is made from oil-derived polypropylene.*



*Equally, mulching film must not be confused with “groundcover” fabrics that are designed for use by ornamental growers and landscapers as long-term weed suppressants - all are made from oil-derived polypropylene and must also be disposed of in landfill as plastic waste.*

**BIO-DEGRADABLE** films are made from renewable products, either **plant starch<sup>1</sup>** or **plant sugars<sup>2</sup>** and are broken down by microbial action, leaving no polluting residues in the soil. They are currently the only ecologically viable alternatives to conventional oil-derived plastic films and are ideal for use in organic growing systems.

Only films compliant with EN13432 under the European Directive (93/62/EC) are acceptable as fully bio-degradable, compostable and residue free.

**Plant Starch<sup>1</sup>**- based films are water and air permeable and have a life expectancy of between 8 and 16 weeks subject to soil and climatic conditions. Their inherent elasticity allows for mechanical laying and good bed formation. Films produced in Europe are made from certified GMO-free feedstock.

**Plant Sugar<sup>2</sup>**- based films made from *PLA* (polylactic acid) have to date been unsuitable for use as mulching films, however, recent developments suggest that a new generation of pliable films made from a GMO-free feedstock may soon be made available to the grower.

**DEGRADABLE** is a term used to describe film that will break down into some or all of its component chemical parts at the end of its useful life. Not necessarily a good thing, as it depends on what the original film is made from and the chemical used to trigger degradation.

**Photo-degradable** films are manufactured from conventional oil-derived feedstock - a photosensitive chemical additive is introduced into the polymer chain, which on exposure to sunlight causes the film to breakdown into small bits of plastic. Once this process has taken place, there is no way to remove the plastic, which over time accumulates in the soil, undermining the viability of the polluted land.

**Oxo-degradability** is another way to make conventional oil-derived plastic films break down. Many use heavy metal additives to trigger a “programmed” break down over a specified time. Because of the chemicals used and the residues that may enter the environment, these films are considered by many to be wholly unsuitable for use in an organic context.

### The cost of waste plastic

The disposal cost of waste plastic including removal, carting and landfill charge is today estimated at up to £505\* per hectare, making the use of a biodegradable film alternative highly competitive.

\*figures based on range of on-farm costs 2008 & The Farm Management Pocketbook (John Nix 2007)

Costing £/ha<sup>a</sup>

Polyethylene film	Removal (manual)	Carting	Disposal
Up to £600 <sup>b</sup>	up to £235 <sup>c</sup>	up to £175 <sup>c</sup>	£95 <sup>d</sup>

notes:

a: Assuming a mulch application of 8,400 m<sup>2</sup> per hectare

b: Range of on-farm prices 2009

c: Using actual farm costs & The Farm Management Pocket Book (John Nix 2007)

d: Land fill charge as only films compliant with EN13432 are accepted as fully bio-degradable and compostable.