

Biodegradable Mulch Films

What is this technology?

Biodegradable mulch films are prepared by coating kraft paper with cured vegetable oil-based resins.

Resins made by combining soybean, linseed or tung oils with a catalyst, cure when exposed to sunlight and air in the field.

Resins made from epoxidized soybean oil and citric acid, are cured in an oven.



What problem does it address?

Currently, vegetable and fruit growers use large quantities of non-degradable, petroleum based polyethylene mulch films to:

- Inhibit weed growth
- Raise soil temperatures
- Conserve water
- Raise yields

Polyethylene mulches must be removed from the field at the end of the growing season at considerable labor cost, transported and disposed of in an approved landfill. Landfill costs are high, especially in the eastern US. The difference in cost between biodegradable mulch film and polyethylene mulches is insignificant when applied to high value specialty crops, and further reduced because there is no removal cost with use of the biodegradable mulch. Biodegradable mulches can simply be tilled into the field after use and allowed to naturally biodegrade.

Who could use this technology?

Home gardeners and farmers raising vegetables and fruits are prime targets. The biodegradable mulch is especially useful for strawberry propagation since runners must be able to penetrate the mulch after a few months in order to root.

The value of the market for polyethylene mulch is about \$300 million in the US and about \$1 billion worldwide.

How is this technology unique?

Vegetable oil coated mulch films:

- Can be developed as water-permeable or water-impermeable
- Can be developed to degrade at different rates depending on the needs of the crop
- Cannot be penetrated by weeds that are capable of penetrating polyethylene mulches
- Are significantly less expensive than other biodegradable mulch films commercially available

Licensing Opportunity

This technology needs an industrial partner for manufacturing and commercial development.

A number of businesses supplying mulch films to home gardeners have expressed an interest in selling the paper/oil mulch.

Stage of Development

Biodegradable mulch film has been tested successfully on watermelons, by the University of Florida; on trees, by MeadWestvaco in Missouri; on melons, by Cornell University; on tomatoes and peppers, by University of Illinois Extension/Master Gardeners; and in home garden applications, by Gardener's Supply.

IP Status

Awarded U.S. Patent 6,312,826

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