

Biodegradable Mulches

Why think about Biodegradable Mulches?

- Growers estimate labor + disposal of plastic = \$25-\$100/ A.
- Biodegradable mulches can be tilled in at the end of the season reducing labor and disposal costs.

What are Biodegradable Mulches?

- Good biodegradables are made from plant starches such as corn and wheat.
- Soil microbes break down the starch into CO₂ and water.
- Warm, moist conditions that favor the microbes speed up biodegradation.
- Sticky starches help them adhere to soil, keeping them from blowing away/ littering.
- Other degradable films are made from polyethylene which degrades slowly.

Advice from farmers

“When it got hot, it got loose and actually wrinkled. Try to avoid planting in the heat of the day. Keep the tension at the lowest setting to avoid tearing it. Cover the edges well. Don’t walk on it and keep it tight to the ground.” - Andrew, Frankenfield Farm Market.

“Just like plastic good bed preparation is important. If the soil is cloddy, and the film too loose it will blow around and is more likely to pull up. If it does it tears easily and sticks to itself. Make sure you cover the edges well. Unlike regular plastic mulch you can’t lay it super tight. I have seen it rip right down the middle from being too tight.” - Tianna, Shooting Star Farms.

“It flops around a little be careful with small seedlings.” Harold, Meadow Gate Vista Farm.

“It seems that both Biotelo and Eco-one perform better when used with crops that put on foliage or shade fast like summer squash or tomatoes.” Michael, Little Peace.

Where biofilms might not work

- Perennial weeds like sedge and johnsongrass are likely to break through.
- In fields where the biodegradable mulch is laid early with a lag before transplanting the film can become brittle and rips when transplanted into.

Tips

- Transplant right after you lay the biofilm.
- Keep the tension at the lowest setting.
- Adjust cover discs to avoid nicking the mulch.
- Avoid planting in the heat of the day.
- Cover the edges well.

On Farm Demonstrations 2011

Biotelo and Eco-One corn based films were laid at seven farms across PA.

Eco-One and Biotelo were comparable for weed suppression.

Biotelo was somewhat more fragile and earlier to break down.

Biotelo and Eco-One worked well at five of seven sites; at two sites perennial weeds were a problem and at one site plastic was not laid well.

Eco-One was less expensive than Biotelo (\$392/A vs \$609/A 2012 prices).

WeedGuard Plus – Non Fert - Sunshine Paper Co

OMRI listed

Weed Guard Plus – Fert contains 5-5-5

Notes from Orzolek 2008

Paper tore when press wheels were angled.

Paper dried and stayed intact after rain.

Soil temp 2” deep (Jul14) was 84 F vs. 79 F under black non-degradable plastic.

Yield compared to non-degradable plastic

Cantaloupe was the same (32/ 27 lbs vs. 42 lbs/ 100 ft).

Acorn squash was 36% higher with paper + 5-5-5.

Pepper yield was lower (18-21 vs. 38 fruit/ 100 ft).

Eggplant yield was lower (14/21 vs. 34 fruit/ 100 ft).

Notes from Cave Moose Farm SARE Project

Cost per ft including materials and labor for laying, maintaining, removing and disposing

\$0.34 – 0.35/ ft paper

\$0.19-0.20/ ft Agrofilm

\$0.20-\$0.21/ ft plastic

Mater-bi Agromulch (Biotelo) – Novamont

Agrofilm

Corn starch base. Compostable.

Approved for use by IFOAM (European Organic) **NOT approved by OMRI in the US.**

Notes Rangarajan 2006

Field application similar to plastic

Good soil stretch

Soil temperature similar to plastic

Similar yields to plastic for muskmelon

Total T/A – 14 (plastic), 13 (Biobag), 12.2 (Materbi), 15 (Materbi brown)

Early Season T/A – 3.5 (plastic) vs 1.6-2.8 (biodegradables)

Notes from Cave Moose Farm SARE Project

“The material began to degrade by mid-summer. . . (but) the ground underneath remained bare.”

Yield per dollar spent was better w/ plastic for winter squash but higher w/ Agrofilm for pumpkins.

Notes from Orzolek 2007, 2008

Biodegradable performed as good or better than plastic for yields in pepper, cantaloupe, eggplant, zucchini (ie 30-40 lb peppers/ 24 ft).

No weed growth/ competition when film degraded before crop matured.

Local 2012 Commercial Sources and Prices

Nolts Produce Supply

152 North Hershey Avenue
Leola, PA 17540-9711
(717) 656-9764

Biotelo 4’ x 5,000’ roll .6 ml	\$348
Biotelo 5’x 4,000’ roll .6 ml	\$348
Eco-One 4’ x 8,000’ roll .6 ml	\$316
Eco-One 5’ x 8,000’ roll .6 ml	\$450
Plastic 4’x 5,000’ roll 1ml	\$133

Rainflo

884 Center Church Road
East Earl, PA
(717) 445-6976

Biotelo 4’ x 5,000’ roll .6 ml	\$349
Biotelo 5’x 4,000’ roll .6 ml	\$349
Plastic 4’x 4,000’ roll 1ml	\$103
Plastic 5’ x 4,000’ roll 1ml	\$128

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