



Performance and Adoptability Biodegradable Mulch

biodegradablenmulch.org

Report No. EO-2015-01

October 2015

Authors:

Carol Miles

Ed Scheenstra

Summary

Biodegradable mulch film has the potential to be a sustainable technology with several advantages over traditional plastic mulch, such as reduced labor costs for removal and disposal, and reduced landfill waste. If mulch could biodegrade into constituents that do not harm the soil ecology or environment, then its sustainability would be even greater. This fact sheet reviews the application of biodegradable mulch film to organic production systems.

This material is based upon work that is supported by the National Institute of Food and Agriculture, under award number 2014-51181-22382. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.



United States
Department of
Agriculture

National Institute
of Food and
Agriculture

Biodegradable Mulch Film for Organic Production Systems

Effective October 30, 2014, the USDA-AMS National Organic Program (NOP) passed a final rule which added biodegradable biobased mulch film to their list of allowed substances for organic crop production. The USDA organic regulation is [7 Code of Federal Regulations \(CFR\) section 205](#). Primary points of this new rule are criteria for a mulch film to be considered **biodegradable and biobased**. To be allowed for organic crop production, a mulch film **MUST**:

- ❖ Reach at least 90% degradation in the soil within two years or less in accordance with ASTM D5988ISO or 17556
- ❖ Be biobased, with biobased content measured using ASTM D6866
- ❖ Meet compostability specifications of one of the following standards: ASTM D6400, ASTM D6868, EN 13432, EN 14995, or ISO 17088 [*Section 205.2*]
- ❖ Be produced without organisms or feedstocks derived from excluded methods such as GMO [*Section 205.601(b)(2)(iii)*]
- ❖ Be produced without the use of non-biobased synthetic polymers; minor additives such as colorants and processing aids are not required to be biobased ([NOP Policy Memo 15-1](#))

(continued, next page)



PRODUCT BIODEGRADATION:

Biodegradation of mulch film depends upon its feedstock and prevailing environmental conditions. Factors affecting degradation include climate, soil type, pH, microbes, irrigation, and other production practices. Growers will need to take appropriate action to ensure that proper degradation of the mulch is occurring; these actions may be site specific. If an operation or grower uses practices that do not promote degradation and allow accumulation of mulch over time, they may be in non-compliance with the existing requirements.

PRODUCT COMPLIANCE:

There are several biodegradable mulch films available in the U.S. **Currently, no biodegradable mulch film has been approved for use in certified organic production because, so far, none meet the requirement of using only biobased feedstock composed of biological products or renewable agricultural or forestry materials.** Non-biobased synthetic polymer feedstocks, such as petrochemical resins, are not permitted, nor are feedstocks derived from or using GMO organisms. It is important to note that biodegradable paper mulch is allowable in certified organic production systems. Before using any product in a certified organic production system, check with your organic certifier to ensure that such use is in compliance with your certification.



Pictured above is what remains of a biodegradable mulch film after being tilled into the soil. On page 1, the picture shows a biodegradable mulch film in use.
(Photos: WSU Mount Vernon field trials June 2012)

ON-GOING RESEARCH:

University research programs are investigating the use and biodegradation of biobased mulch films in crop production. An overall goal of research is to provide manufacturers with new information so they can develop biodegradable mulches that use biobased feedstocks and so have the potential to be used in organic production systems. Research results will also provide growers with a guide to best management practices for the use of biodegradable mulch. Additionally, a convenient protocol for testing mulch biodegradation after incorporation into soil will be developed.

For more information regarding biodegradable mulch research see the website www.biodegradablemulch.org.