

Allowed Mulches on Organic Farms and the Future of Biodegradable Mulch

*All farmers know that conventional polyethylene (aka: plastic) mulch is widely used for crop production because it controls weeds, conserves soil moisture, increases soil temperature, improves crop yield and quality, has a relatively low cost, and is readily available. Conventional mulch is also widely used on organic farms although organic farmers and others have questioned its use because it is often non-recyclable, and is generally made from **non**-biodegradable based materials.*

At this time, no biodegradable mulch is allowed for use on organic farms. None of the commercially available biodegradable mulches have been proven to meet the requirements of the National Organic Standards.

In this document we answer common questions about the currently allowed mulches on organic farms and the potential of using biodegradable mulches in the future.

How does the National Organic Program define “mulch”?

7 CFR 205.2

The National Organic Program (NOP) states that mulch is any non-synthetic material, such as wood chips, leaves, or straw, or any *allowed* synthetic material such as newspaper or plastic that serves to suppress weed growth, moderate soil temperature, or conserve soil moisture.

What specifically can organic farmers use now for mulching?

7 CFR 205.601

Currently allowed options for mulching are:

- Non-synthetic, untreated materials such as wood chips, leaves, or straw
- Newspapers or other recycled paper, without gloss, glossy inks, or color inks
- Plastic mulches and covers provided they are removed from the field at the end of the growing season, and they are petroleum-based, but not polyvinyl chloride (PVC)
- Biodegradable bio-based mulch film - provided that it complies with the requirements and restrictions of the USDA organic regulations, and [Policy Memo 15-1](#) in the NOP Program Handbook. **HOWEVER, no such mulches are currently approved for organic farming.**

What can you tell me about using newspapers, cardboard or recycled papers for mulching?

7 CFR 205.601(b)(2) and the OMRI Generic Materials List

Newspaper, cardboard and other recycled paper can all be used as mulches in organic farming but each has restrictions regarding its use:

Newspaper

Newspapers may not be printed on glossy paper, or have any glossy or color ink. This means that both the printed text and the graphics/pictures cannot be printed in any color other than black. All sections of the newspaper that contain gloss, glossy or color inks, or color graphics/pictures must be separated from the newspaper sections that will

be used as mulch. OMRI Generic Materials List, page 26

Recycled Paper

Paper may be used as mulch provided it is recycled, and does not utilize any gloss, glossy inks, or color inks. Black ink is allowed. OMRI Generic Materials List, page 27

Cardboard

Cardboard is considered to be a type of paper and therefore must be made from recycled materials. The cardboard cannot be printed with glossy or color inks. In addition, the cardboard must not be waxed or have been treated with fungicide. OMRI Generic Materials List, page 12

The Organic Materials Review Institute ([OMRI](#)) supports organic integrity by providing organic certifiers, growers, manufacturers, and suppliers an independent review of products intended for use in certified organic production, handling, and processing. The OMRI Generic Materials List is a catalog of over 900 substances that are allowed, allowed with restrictions, or prohibited for use in organic agriculture and food processing. Based on the [National Organic Program](#) (NOP), this publication serves as a reference guide for anyone with an interest in materials for use in organic production.

Click [here](#) to learn more about searching or purchasing the OMRI Generic Materials List.

Why aren't biodegradable mulches an option for organic farmers?

While biodegradable mulches exist and are available on the market, none currently meet the requirements of the USDA organic standards.

It is possible that biodegradable mulch could be approved for use on organic farms in the future?

Yes, it is possible in the future. Check with your certifying agent regarding the status of any biodegradable mulch you want to use on your organic fields prior to use.

Doesn't using conventional plastic (polyethylene) mulch create a lot of waste?

Yes, some view this as a conflict, because one of the goals of organic agriculture is sustainable resource conservation. Using biodegradable plastic as mulch would reduce non-recyclable waste and decrease associated environmental pollution, but at this time, no biodegradable plastics have been approved for use by organic farmers. See the Additional Discussion section below for details on why the use of polyethylene mulch has been called into question.

Wouldn't it be better to use currently available biodegradable mulch instead of the conventional plastic?

At this time, although they are commercially available, no biodegradable mulches are approved for use on organic farms. Because of its very nature, substances that biodegrade become part of the soil and those substances must be approved for use in organic farming. The mulch must also biodegrade in a certain time frame and any materials used to make the mulch must be bio-

based.

What are “bio-based” materials?

A **bio-based** material is a material intentionally made from substances derived from living (or once-living) organisms. Currently available (but not approved) biodegradable mulches are typically made with corn or wheat starches. See the Additional Discussion section below for more specifics on why biodegradable mulches are not yet approved for use on organic farms.

ADDITIONAL DISCUSSION: BIODEGRADABLE MULCH

Farmers should be familiar with the USDA organic regulations and which regulations pertain to the requirements for biodegradable mulch. Here we offer the text from the relevant regulations and further reading and discussion points below.

What do the USDA organic regulations say about the requirements for biodegradable mulches?

As stated in 205.601:

Biodegradable bio-based mulch film (as defined in §205.2) must be produced without organisms or feedstock derived from excluded methods.

As defined in 205.2:

Biodegradable bio-based mulch film. A synthetic mulch film that meets the following criteria:

(1) Meets the “compostability” specifications of one of the following standards: ASTM D6400, ASTM D6868, EN 13432, EN 14995, or ISO 17088 (all incorporated by reference; see §205.3);

(2) Demonstrates at least 90% biodegradation absolute or relative to microcrystalline cellulose in less than two years, in soil, according to one of the following test methods: ISO 17556 or ASTM D5988 (both incorporated by reference; see §205.3); and

(3) Must be bio based with content determined using ASTM D6866 (incorporated by reference; see §205.3).

The National Organic Program (NOP) has further defined the term “bio-based” in their [Policy Memo 15-1](#). As stated, certifiers and material review organizations should review biodegradable mulch products to verify that all of the polymer feedstocks are bio-based. Pigments and processing aids are not considered feedstocks. ASTM International defines bio based as organic material in which carbon is derived from a renewable resource via biological processes. Bio-based materials include all plant and animal mass derived from carbon dioxide recently fixed via photosynthesis, per definition of a renewable resource. Bio-based feedstocks are composed of biological products or renewable agricultural or forestry materials.

Biodegradable mulch film that contains non-biobased synthetic polymer feedstocks, such as petrochemical resins, does not comply with the USDA organic regulations.

A Closer Look at the Standards

Excluded methods & the production of biodegradable mulch

USDA organic regulation 205.601, as described above, states organisms and feedstock must not be derived from excluded methods. Excluded methods as defined by the organic standards include the following:

“A variety of methods used to genetically modify organisms or influence their growth and development by means that are not possible under natural conditions or processes and are not considered compatible with organic production. Such methods include cell fusion, microencapsulation and macroencapsulation, and recombinant DNA technology (including gene deletion, gene doubling, introducing a foreign gene, and changing the positions of genes when achieved by recombinant DNA technology). Such methods do not include the use of traditional breeding, conjugation, fermentation, hybridization, in vitro fertilization, or tissue culture.”

For Further Reading & Questions

The full text of the [USDA organic regulations](#) can be found online at the U.S. Government Publishing Office (GPO) website in the Electronic Code of Federal Regulations (e-CFR).

Specifically, these regulatory sections might be particularly helpful to those with questions about the use of mulch:

7 CFR 205.2	Terms defined
7 CFR 205.600	Evaluation criteria for allowed and prohibited substances, methods, and ingredients
7 CFR 205.601	Synthetic substances allowed for use in organic crop production
7 CFR 205.601(b)(2)	Mulches

For general information about the USDA’s National Organic Program (NOP), visit www.ams.usda.gov/nop.

Further questions may be directed to your certifying agency.

This product was developed with support from U.S. Department of Agriculture’s Agricultural Marketing Service, National Organic Program.