Biodegradable Mulch Films

NOP Policy Memo offers clarification

By Lindsay Fernandez-Salvador

Traditional plastic film mulches have many advantages for the organic grower. They facilitate warmer soil for early season planting. The use of plastic mulch can also conserve water and suppress weeds, all with minimal impact on the surrounding soil and water resources. It even protects the underlying soil from compaction by air and water, reducing the need for tilling and protecting soil health. However, disposal is a concern. Most plastic mulches are removed and discarded at the end of the growing season. Recycling is possible, but transportation is an issue and it can be hard to find plastic recyclers in all areas. In addition, the application and removal of plastic mulches requires significant additional labor. All in all, it adds up to a lot of plastic waste and a search for better solutions. A recent push to allow leave-in-place, biodegradable mulches for organic use generated a lot of enthusiasm and support from all types of stakeholders, and resulted in a change to the organic regulations. However, we have yet to identify an existing product that meets the required specifications.

The addition of biodegradable biobased mulch film to the National List at 205.601(b)(2)(iii) permits its use in organic production as long as the film is not derived from genetically modified organisms and meets the following criteria:

The application and removal of plastic mulches requires significant additional labor.

Biodegradable continued on page 3

Days to Harvest

Changes to OMRI’s manure restriction

By Kelsey Mckee

Changes are in the air, and one of them smells like manure! The updated OMRI Generic Materials List©, effective March 30, 2015, changes how the days-to-harvest restriction is applied to certain OMRI Listed® products. Specifically, this restriction will no longer apply to products made without manure.

As a source of nitrogen, organic matter and essential nutrients, manure is one of the most valuable resources on an organic farm. By applying manure to the soil, organic farmers close the loop of the organic nitrogen cycle whereby nitrogen is preserved and transformed into a bioavailable form. But the application of raw manure also presents a risk of contamination, most notably from potentially high levels of pathogenic organisms such as E. coli and Salmonella. The USDA organic standards require that producers properly manage plant and animal materials in order to prevent contamination of...
Serving my first term on the World Board of IFOAM (International Federation of Organic Agriculture Movements) has opened my eyes to the multitude of individuals and organizations involved in the organic movement around the globe, as well as the incredible potential to focus our energy and work toward our common goals.

IFOAM introduced the concept of Organic 3.0 last year, and we have been hard at work leading discussions and gathering input about the concept. Here’s a shorthand explanation: Organic 1.0 began in the early 20th century when organic pioneers such as JJ Rodale and Rudolph Steiner introduced organic agriculture and touted its benefits. We’re currently in the Organic 2.0 phase, in which we’ve experienced wide acceptance of organics along with rapid growth. However, organic is still a niche market and represents only about 4% of agriculture in the United States and 1% worldwide.

Organic 3.0 is the next phase, in which organic breaks out of its niche and becomes a mainstream choice. Organic practices are currently well positioned as the solution to the world’s problems such as climate change, food security and poverty. Public and private sectors have an opportunity to come together with the scientific community to develop and communicate these important messages. We must work collaboratively with like-minded organizations, such as fair trade, social justice and environmental groups. Although our missions are different, we can focus on common goals.

This concept was a common theme at the annual BioFach Congress and trade show in Nuremberg, Germany, where I was fortunate to attend and represent OMRI to the global organic community. It is the largest gathering of organic stakeholders in the world, and more than 2,200 exhibitors interacted with 43,000 visitors from 135 countries on the BioFach trade show floor. Attendees also participated in dozens of workshops ranging from updates on organic equivalence arrangements to improving supply chain integrity. In addition to walking the nine halls of organic products from around the world, I networked with members of the European Organic Certifiers Council and checked in with OMRI Listed® suppliers. Immediately following BioFach, the IFOAM World Board held our first meeting in 2015, including a full day strategy seminar in which we envisioned how IFOAM will lead the movement toward Organic 3.0.

Just prior to Biofach, I was privileged to attend a workshop hosted by the Sustainable and Organic Agriculture Action Network (SOAAN). The SOAAN gathered to work on defining Organic 3.0 and discuss strategies for getting there. Sixty people were eager to brainstorm ideas that will move us toward Organic 3.0, and their input will be added to others to help frame the Organic 3.0 message.

With my election to the World Board and David Gould’s appointment as IFOAM’s staff representative to North America, we’re poised to increase OMRI’s and North America’s presence and influence at the global organic table. North America is undoubtedly a world leader in organic, and U.S. businesses have a unique opportunity through IFOAM to influence policies, standards and thought leaders on all continents. Let’s discover common goals and work together to achieve a healthier and more sustainable world!
Introduction to OMRI’s Q&A

Inputs made from genetically engineered materials

By Peter Bungum

In 2002, the OMRI Advisory Council developed a process for addressing Genetically Modified Organisms (GMOs) in inputs, and OMRI continues to use this process. This article and the following newsletter Q&A section devoted to GMOs reflect OMRI’s historic and current stance on addressing GMO materials in the absence of further regulatory clarification.

The U.S. regulatory status of genetically engineered (GE) materials in inputs for organic systems is to some degree ambiguous. The Organic Foods Production Act of 1990 does not mention biotechnology, genetic engineering or GMOs, but the National Organic Program (NOP) standards adopted in 2002 prohibit the use of GMOs in the following way: “the product must be produced and handled without the use of excluded methods.” Here OMRI interprets “product” to mean the output or final food product. The NOP regulations and the guidances published to clarify the use of GE technology and GMOs do not specifically focus on inputs. In their 2011 Policy Memo 11-13, the NOP answered questions concerning GMOs, focusing on intent and process evaluation, and stating that crops containing unintended or inadvertent GE substances would not result in the loss of organic status. There is only one clear case where GMOs are not permitted as an input. According to the recent rulemaking that added biodegradable biobased mulches to the National List, the mulches “must be produced without organisms or feedstock derived from excluded methods.”

The organic industry relies heavily on products and waste materials from conventional farming systems, which can include GE products. The ability to source conventional by-products as inputs for organic systems makes organic farming economically viable. For example, compost used on an organic farm can be made from nonorganic feedstocks, and soybean meal grown with conventional fertilizers and pesticides is an allowed input for soil fertility.

Because the USDA organic regulations do not specifically address this question, OMRI developed a GMO review process. OMRI’s process prohibits the use of GE technology in products that have the potential to express the GE trait. OMRI considers the specific protein coded by GE DNA to be the ultimate expression of the trait, and depending on the Use Class of the product, OMRI may consider the presence or absence of the specific protein encoded by the GE DNA as a point of determination whether to allow or prohibit the ingredient. Additionally, products are not allowed to contain DNA that OMRI considers to be readily transferable to another live organism.

To assist in making product decisions, OMRI follows a stepwise evaluation which is specific to each product Use Class: Crops, Livestock or Processing and Handling. These decision trees were designed by the OMRI Advisory Council and are not an official policy of the NOP or USDA, but they are frequently referred to and used by stakeholders. The decision trees and OMRI’s policy on GMO determination are presented at §2.1.3 of the OMRI Standards Manual. 

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1 The NOP definition of excluded methods; “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.” Examples include cell fusion, micro- and macroencapsulation and recombinant DNA technology.

2 “Genetically Modified Organisms,” retrieved from: www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5090396

3 Examples include living genetically modified organisms, GE crop byproducts that express the GE trait, or livestock feed additives that contain GE agricultural products.
How does OMRI evaluate GE materials used in crop inputs (fertilizers, pesticides or management tools)?

Ingredients used in crop input products derived from corn (maize), cotton or soybeans are among the most likely to contain products of genetic engineering; however these are by no means the only ingredient sources that may contain GE material. New GE crops and technologies are continually being developed for herbicides, insect and disease resistance, agronomic properties, product quality, and novel chemicals, such that their relative proportion in the commodity market is ever changing.

OMRI has identified gluten meal, cobs and husks derived from corn, and seed meal and gin trash derived from cotton as high risk materials. These ingredients are likely to contain products of prohibited GE technology (specifically, Bt insecticidal genes) because the ingredients are only minimally processed and may still contain intact protein or genetic material. Refined products (processed to remove proteins) such as oils and starches are generally not considered high risk materials, even if they are derived from known GMOs. OMRI considers the protein product of a gene to be the expressed trait; therefore when these proteins are removed, so is the trait.

For input ingredients that are likely to contain GE material, OMRI further evaluates how the product is used. Products that are applied to the soil must be composted or otherwise degraded through biologically mediated processes such as fermentation if they contain a GE ingredient. For products where the GE trait is not considered by OMRI to have a detectable adverse impact on soil organisms, high-risk ingredients may also be evaluated as “non-GMO.” OMRI would evaluate a fertilizer containing soybean meal from herbicide resistant soy as non-GMO because the herbicide resistance trait cannot exist outside of the living plant.

As stated in the OMRI Standards Manual® GMO Decision Tree, products that are applied to plants must have the proteins related to the GE trait removed or denatured, unless the intact protein poses no measureable risk to human health or the environment. OMRI considers hydrolyzation, degradation through the use of strong acids or bases, and thermal breakdown as processes sufficient to denature proteins. For example, a product applied to a crop that contains cottonseed meal, where the meal is not subjected to a process such as composting, would be reviewed as containing a GMO, and thus prohibited for use in crop production. The material is likely to contain Bt insecticidal proteins that are considered potentially harmful to the environment.

How does OMRI evaluate GMOs for use in livestock inputs?

Organic livestock production systems rely on several products, and the non-GMO requirements vary depending on how the material is used. In order to review GE materials for use in organic livestock production, OMRI distinguishes between inputs used for nutritional purposes and inputs used for healthcare and production aids.

Agricultural ingredients such as corn, soy and alfalfa that are included in livestock feed must be certified organic, and by definition are made without GMOs. However, feed additives such as vitamins, minerals and probiotics which are not required to be certified organic must be evaluated for compliance with the USDA organic standards regarding GMOs. For input ingredients that are likely to contain GE material, OMRI further evaluates how the product is used.
How does OMRI evaluate GE materials for use as ingredients in processed organic food products labeled as “organic” or “made with organic ingredients”?

Because input materials for processing and handling can come in direct contact with food or are included as ingredients, the review standards for these materials are the most restrictive. When reviewing GE materials for processing and handling, OMRI distinguishes between “nonorganic ingredients” such as citric or lactic acid, corn starch or vegetable oils, and “processing aids” including enzymes, yeast and lactic acid.

Processing aids that are produced by GE organisms are prohibited. For example, the enzyme chymosin (rennet) is allowed as a processing aid when derived from the stomach lining of ruminants; however, chymosin is also produced using GMOs, in which case it would be prohibited. Citric acid is produced using the fungus, Aspergillus niger, but both GMO and non-GMO strains of the fungus are available. If GE A. niger is modified to produce greater amounts of citric acid, then the citric acid produced is derived from a GE microorganism and is prohibited. Lactic acid is allowed as a nonorganic ingredient or processing aid as long as the bacteria that ferment the whey to produce it are not GE. In addition, no GE carriers or fillers may be added to processing aids.

If the microorganism is not GE but the substrate that the microbe consumes for growth consists of GE ingredients, the resulting yeasts and enzymes are not considered products of excluded methods. For example, citric acid is allowed when produced from a non-GE strain of A. niger even if the fermentation substrate used contains a GE trait (e.g., molasses or high fructose corn syrup from GMO beet sugar). Because the fungus biologically transforms GE protein in the substrate, the final citric acid product would be allowed as a non-GMO ingredient. Ingredients that are not biologically transformed, and remain in the final product, such as corn starch and vegetable oils, must be certified organic and therefore wholly derived from non-GE sources. In addition, no GE carriers or fillers may be added to processing aids or ingredients.

1 www.ams.usda.gov/AMSv1.0/getfile?dDocName=e=STELPRDC5102733

Q&A

SEND YOUR QUESTIONS

Email or mail your materials questions to OMRI. OMRI wishes to help address common questions about the organic standards. If we select your question for the FAQ section of the newsletter, then you will be notified prior to printing it. Email info@omri.org with ‘FAQ’ as the subject or mail your question to: OMRI, Newsletter FAQ, PO Box 11558, Eugene, OR 97440.
Biodegradable continued from page 3

National List at 205.601(b)(2). The biodegradable, bioblastic mulches in question are synthetic, so a change in regulation was needed to allow these unique materials to be used without having to remove them at the end of the growing season.

In 2012, the Biodegradable Products Institute (BPI) submitted a petition to the National Organic Standards Board (NOSB) to add biodegradable mulches to the National List. The petition cited widespread use in Europe and proposed that such mulches should by “fully biodegradable,” and should be required to pass specific tests for biodegradability. Testing for biodegradability is fairly common in many countries, and the petition explained that several mulch products on the market already carry certification as to their biodegradability under certain conditions.

The BPI petition proposed requirements for compostability and biodegradability, but did not propose specifications related to the biobased content or “feedstocks” that make up the majority of the mulches. However, the subsequent recommendation from the NOSB added a requirement for “biobased content” to ensure that the feedstocks in these mulches would be derived from renewable resources such as corn. The final NOSB recommendation further defined biobased content, stipulating that mulches, “must be biobased with content determined using the ASTM D6866 method.” When the NOP published the final rule on October 30, 2014, confusion generally centered on this particular stipulation. Results from the ASTM D6866 testing method are reported as a percentage of biobased content, rather than a simple pass/fail determination. Certifiers and Material Review Organizations like OMRI were uncertain as to what percentage would be acceptable.

On January 25, 2015, the NOP further clarified in Policy Memo 15-1 that “Biodegradable mulch film that contains non-biobased synthetic polymer feedstocks, such as petrochemical resins, does not comply with the USDA organic regulations.” Although biobased mulches contain varying amounts of biobased content, most if not all of these mulches are made from some non-biobased feedstock.

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Harvest continued from page 1

Harvest continued from page 1 crops, soil or water. Due to the high risk associated with manure, the use of raw manure is further restricted to application no less than 90 or 120 days prior to harvest, depending on whether the edible portion of the crop comes in contact with the soil. This is commonly referred to as the “days-to-harvest” restriction, which appears at 205.203(c)(1) of the USDA organic standards.

The restriction does not apply to composted manure, which has been carefully managed to reduce the risk of pathogenic contamination. The National Organic Program (NOP) Handbook includes Guidance Document 5021 that details the time and temperature requirements necessary to ensure appropriate reduction of pathogenic organisms during the composting process. Processes that maintain a temperature of 131°F for three days have been shown to effectively reduce the number of pathogenic organisms, and are therefore allowed without restrictions. Likewise, the guidance specifies the requirements for vermicomposting to ensure suitable conditions are maintained for the consumption and breakdown of harmful bacteria. Manure can also be applied at any time in the growing season if it is processed per specific heating and drying steps as outlined in NOP Handbook Guidance 5006. The composting and processing requirements outlined in these guidance documents provide the only exceptions to the days-to-harvest restriction.

Although other plant and animal materials can also be contaminated with unwanted and potentially harmful microorganisms, manure is the only material that requires the days-to-harvest restriction under the USDA organic standards. However, OMRI previously applied the restriction to some products that do not contain manure. Compost tea, products of anaerobic digestion, and some animal materials such as food wastes containing meat or eggs were previously subject to the raw manure restriction. During the recent review and revision of the


OMRI Standards Manual®, a proposal was submitted to remove the restriction from products that do not contain manure. The change was approved by OMRI’s Board of Directors, and the revision is effective as of March 30, 2015.

It remains critical for producers to properly manage plant and animal materials according to the general management standards at 205.203(c) in order to prevent contamination by pathogenic organisms. Unfortunately, the general management standard is broad and does not include specific instructions for how to prevent contamination from materials other than manure. This is why OMRI has developed a system and standards to help farmers and certifiers identify potential sources of contamination. Pathogenic indicator testing is required for all products containing animal materials, and for all products produced via composting or other micro-biological processes. OMRI will identify OMRI Listed® products that test above established thresholds (<1,000MPN/g fecal coliform and <3MPN/4g Salmonella) in the OMRI Products List® with a cautionary statement that “application to certified organic farms cannot contribute to contamination of crops, soil or water.” This system identifies potential sources of contamination without placing the specific days-to-harvest restriction on products that do not contain manure.

The process for revising OMRI policies and standards includes a public comment period, and in response to the proposed revision a comment was received requesting that the days-to-harvest restriction also be removed from compost teas that contain properly composted manure. Compost tea is defined as a water extract of compost produced to transfer microbial biomass, fine particulate organic matter, and soluble chemical components into an aqueous phase, intending to maintain or increase the living, beneficial microorganisms extracted from the compost. The National Organic Standards Board (NOSB) Compost Taskforce previously considered the allowance of compost tea, and recommended specific conditions surrounding the production of compost tea in order to reduce the pathogenic risk of these microbiologically active leachates. However, the recommendation was not included in the final NOP Handbook Guidance; therefore, OMRI maintains the restriction for compost teas produced with composted manure pending additional clarification from the NOP. Compost tea products manufactured from non-manure feedstocks can be listed as Allowed without the days-to-harvest restriction.

Public participation in the review and revision of the OMRI Standards Manual® is critical to the integrity of the standard. We hope this change helps clear the air and provides a step towards consistency with other material review organizations.

### OMRI Categories with New Restriction Text

<table>
<thead>
<tr>
<th>Category [Class]</th>
<th>OMRI Annotation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compost Tea - from manure feedstock [CF]</strong></td>
<td>Compost tea made with manure feedstocks and used as a fertilizer or soil amendment is subject to the same restrictions as raw, uncomposted manure. It may only be (i) applied to land used for a crop not intended for human consumption; (ii) incorporated into the soil not less than 120 days prior to the harvest of a product whose edible portion has direct contact with the soil surface or soil particles; or (iii) incorporated into the soil not less than 90 days prior to the harvest of a product whose edible portion does not have direct contact with the soil surface or soil particles.</td>
<td>Allowed with Restrictions</td>
</tr>
<tr>
<td><strong>Compost Tea - without manure feedstock [CF]</strong></td>
<td>Compost teas are acceptable if made from only allowed non-manure feedstock materials.</td>
<td>Allowed</td>
</tr>
<tr>
<td><strong>Anaerobic Digestates - from manure feedstock [CF]</strong></td>
<td>Products of anaerobic digestion produced with manure feedstocks are subject to the same restrictions as raw, uncomposted manure. They may only be (i) applied to land used for a crop not intended for human consumption; (ii) incorporated into the soil not less than 120 days prior to the harvest of a product whose edible portion has direct contact with the soil surface or soil particles; or (iii) incorporated into the soil not less than 90 days prior to the harvest of a product whose edible portion does not have direct contact with the soil surface or soil particles.</td>
<td>Allowed with Restrictions</td>
</tr>
<tr>
<td><strong>Anaerobic Digestates - without manure feedstock [CF]</strong></td>
<td>Products of anaerobic digestion processes are acceptable if made from allowed, non-manure feedstock materials.</td>
<td>Allowed</td>
</tr>
<tr>
<td><strong>Microbial Products - with manure [CF/CT]</strong></td>
<td>Products which contain manure are subject to the same restrictions as raw, uncomposted manure. They may only be (i) applied to land used for a crop not intended for human consumption; (ii) incorporated into the soil not less than 120 days prior to the harvest of a product whose edible portion has direct contact with the soil surface or soil particles; or (iii) incorporated into the soil not less than 90 days prior to the harvest of a product whose edible portion does not have direct contact with the soil surface or soil particles.</td>
<td>Allowed with Restrictions</td>
</tr>
<tr>
<td><strong>Animal By-Products and Materials</strong></td>
<td>Parts of an animal and animal by-products that have specific uses in soil fertility are allowed. Includes meat, bone meal, and animal urine. See listings under individual generic materials.</td>
<td>Allowed</td>
</tr>
</tbody>
</table>
April 13-16  BioCycle, Portland, OR  This year's theme is “Building Climate Resilient Communities.” BioCycle provides an excellent venue to get hands-on information and tools for starting, expanding and investing in composting, organics recycling, and renewable energy to build sustainable community infrastructure. OMRI Technical Director Lindsay Fernandez-Salvador will present “Biodegradable Mulch Films For Organic Ag Production” on Wednesday, April 15, 1:45 pm - 3:30 pm (Track 2) www.biocyclewestcoast.com *

April 14-16  OTA's Annual Policy Conference and Hill Visit Days, Washington, D.C. Booming consumer demand as organic goes more mainstream, increasingly tight supplies of organic products, and lingering confusion among consumers are just a few of the host of critical issues which will be addressed during OTA's annual Policy Conference and Hill Visit Days. www.ota.com/programs-and-events/policy-conference-hill-visit-days *

April 18-19  Humboldt Green Week, Eureka, CA  Two final expos will focus on gardening and green living, and creating awareness in environmental sustainability and overall positive health and well-being. OMRI Technical Director Lindsay Fernandez-Salvador with present both days. www.humboldtgardenexpo.com *

April 28-May 1  NOSB Spring Meeting, La Jolla, CA  This bi-annual meeting brings together industry leaders and stakeholders to discuss new materials and input policies. www.ams.usda.gov *

May 30-June 4  IFOAM World Board Meeting, South Korea  IFOAM unites an enormous diversity of international stakeholders contributing to the organic vision. OMRI's Executive Director/CEO and IFOAM World Board member Peggy Miars will attend. www.ifoam.bio *

June 6-7  Mother Earth News Fair, Albany, OR  Held throughout the year in locations around the country, this gathering offers practical, hands-on training and experience taught by leading experts in the areas of renewable energy, organic gardening, sustainable agriculture, green home building and more. www.motherearthnews.com/fair/workshops-and-speakers-oregon.aspx

June 24-26  ExpOrgánicos, Mexico D.F.  Hosted by Impulso Orgánico Mexicano, this event draws participants representing all aspects of the Mexican and international organic industries, and is meant to establish commercial relationships between certified organic producers in Mexico and buyers while providing educational opportunities. www.exporganicos.com.mx *

July 11-14  IFT15 [Institute of Food Technologists], Chicago, IL  More than 23,000 top food science and technology professionals from more than 90 countries, representing the most prominent organizations in the global food sector come together to discover the industry's best science, strategies, and solutions to inform work and improve business. www.am-fe.ift.org/cms

* OMRI staff will attend, present, or exhibit at this event.
We welcome emails in advance to share our booth location and make meeting arrangements. Email to marketing@omri.org.

2015 GENERIC MATERIALS LIST NOW AVAILABLE

OMRI's updated standards for compliance with the USDA organic regulations will be implemented on March 30, 2015.

VISIT OMRI.ORG/OMRI-LISTS TO DOWNLOAD A LIST OF CHANGES AND ORDER YOUR COPIES.

OMRI Listed® suppliers can receive a free copy. Email info@omri.org for assistance.