

TRENDS

AGRICULTURAL PLASTICS

2023



MAY

- Increasing use of biodegradable mulch

COMING SOON

- Increase in protected agriculture in the world
- Cultivation of fruit trees under cover
- Cannabis cultivation under cover
- Increased use of oxygen barrier films
- Sustainable horticultural and baling twine solutions
- Sustainability and water management
- Special New Year's gift

PREVIOUS EDITIONS

- Reducing the plastic used in the manufacture of agricultural films



JUNE

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER



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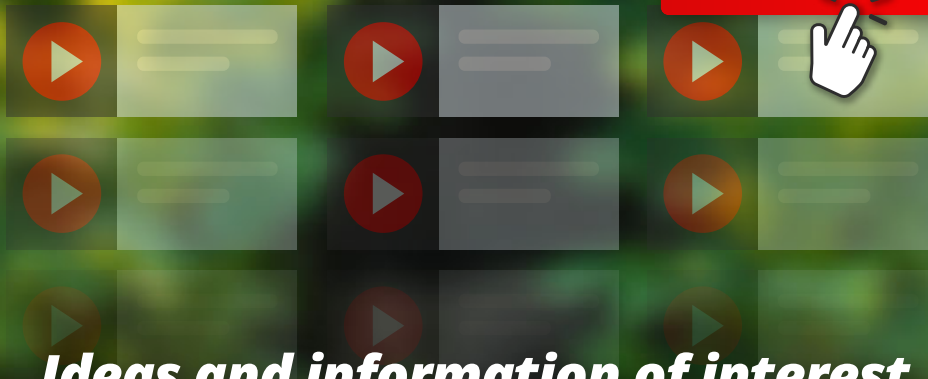
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A screenshot of a YouTube video player. The video shows a man smiling in a field with cows. The player includes a play button, a progress bar at 0:50 / 2:50, and various control icons. Below the video, the title 'Webinar: Silage Protection' and '300 views' are visible. The channel name is 'Agriplastics Community: Agricultural Plastics' with a description: 'Do you want to produce high-quality silage every year? Check this webinar out presented by Oliver Peck, a UK silage...'. A red 'SUBSCRIBE' button is overlaid on the bottom right of the video player area.



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***Ideas and information of interest
on the use of plastics in agriculture,
technological trends and more!***

INCREASING USE OF BIODEGRADABLE MULCH



Without a doubt, the use of biodegradable plastics is on the rise, but for how much? The publication "**Soil Degradable Bioplastics for a Sustainable Modern Agriculture**" published by Springer in 2017 noted at the time that "although agriculture soil degradable plastics have still a less than one digit share of the market of plastics, they are growing at very fast rate, and the properties of biodegradable compostable plastics have even opened new fields of applications which were not possible with polyolefin-based plastics (for example, soil degradable nursing, and transplanting pots)."

Another piece of interesting data about the growth in the use of biodegradable mulch is found in a recent study titled "**Biodegradable Mulch Film Market Size, Share & Trends Analysis Report By Crop Type and Segment Forecasts, 2016-2024**" published by **Grand View Research**. This publication highlights that the "global biodegradable mulch film market size was valued at USD 44.65 million in 2019 and is expected to expand at a compound annual growth rate (CAGR) of 7.5% from 2020 to 2024. Increasing demand for greenhouse applications along with rising environmental concerns over synthetic counterparts is expected to drive market growth over the next eight years. The

rising population and decrease of agricultural lands due to rapid urbanization and industrialization have forced farmers to increase productivity."

These data lead us to include **biodegradable mulch as a clear trend in the agricultural market, not only because it is environmentally friendly -a topic of worldwide interest in all sectors- but also because of its advantages and indirect cost savings**, which we will see in detail in this article.

INCREASING DEMAND FOR GREENHOUSE APPLICATIONS ALONG WITH RISING ENVIRONMENTAL CONCERNS OVER SYNTHETIC COUNTERPARTS IS EXPECTED TO DRIVE MARKET GROWTH OVER THE NEXT EIGHT YEARS.

WHAT ARE BIODEGRADABLE MULCHES?

These are **plastic films that can biodegrade as a result of the action of microorganisms such as bacteria, fungi, or algae**. The biodegradation process produces carbon dioxide, water, inorganic compounds, and biomass, a process that is not only harmless to the soil and crops but also provides an additional source of fertilization, although it is limited.

It is important to make a distinction between **oxo-degradable plastics**, which are made from conventional polyethylene with oxo-fragmentable additives that break down the polyethylene into small pieces, thus favoring the contamination of agricultural soils with microplastics.

(...) BIODEGRADABLE MULCHES

(...) CAN BIODEGRADE AND SERVE AS A COMPOSTABLE MATERIAL TO REDUCE ENVIRONMENTAL IMPACT BY INCORPORATING IT INTO THE SOIL.

WHY USE BIODEGRADABLE MULCHES?

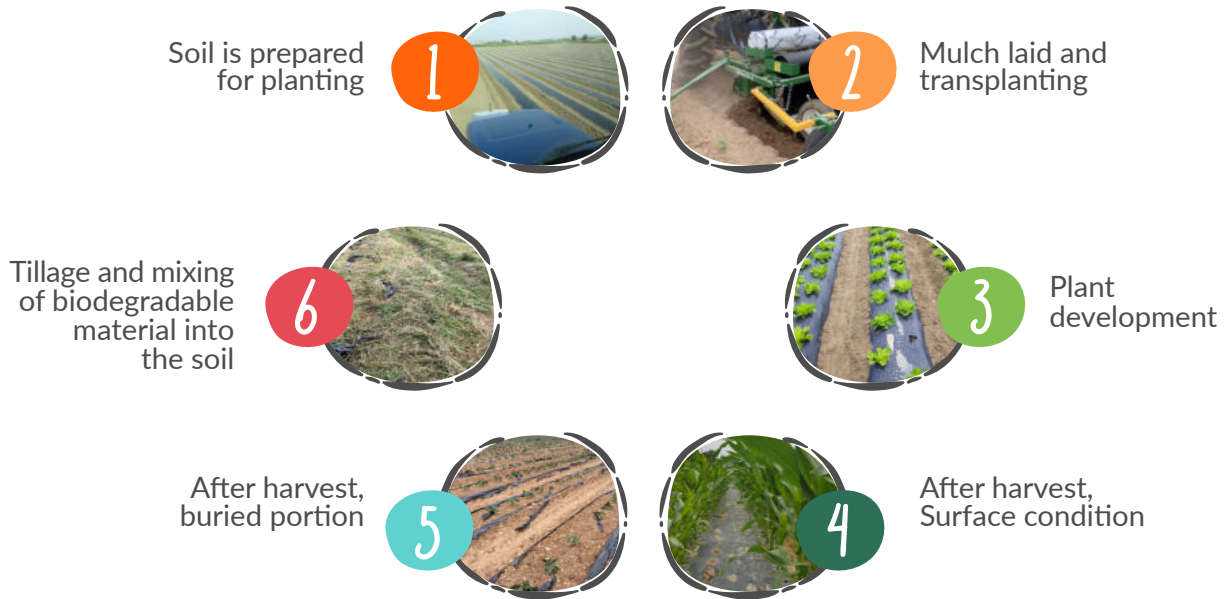
For some years now, there has been an increase in campaigns focused on raising awareness among the population about the importance of reducing the use of plastics and the products that contain them. For this reason, **more companies and agricultural producers are looking for alternatives that allow them to be more environmentally friendly while maintaining the quality of the products they produce.**

One of the best alternatives is **biodegradable mulches**, which despite being made from polymers, **can biodegrade and serve as a compostable material to reduce environmental impact by incorporating it into the soil.**

In addition to the action exerted by microorganisms such as bacteria, fungi, or algae, the degradation of biodegradable mulch is caused by the intervention of several factors such as climate (relative humidity, rainfall, temperature, etc.), solar radiation received, and the growing season, among others.

Before using biodegradable mulch, it is essential to analyze or perform specific soil tests and also consider the climatic conditions. In this way, the agricultural producer could have greater assurance of the life expectancy of the plastic.

BIODEGRADABLE MULCH LIFE CYCLE



ADVANTAGES

- Prevent the proliferation of weeds.
- Retain soil moisture.
- Improve and protect soil bed structure.
- Save more water.
- Saves on fertilizer.
- Better temperature control (heating or cooling).
- Pest control (reflective mulches).
- Higher crop yields are achieved.
- No need to collect plastic waste after harvesting.

DISADVANTAGES

- They have a **higher cost compared to other conventional polyethylene plastics** (in some countries this factor is mitigated by subsidies that promote their use and, on the other hand, there is also savings because there's no need to collect plastic waste after harvest).
- Some of these plastics may be **more sensitive to the action of temperature, the pH of the growing soil, and the humidity of the area where they are used** (the more humidity there is, the more likely the degradation process will be accelerated).
- The **biodegradation process starts in the buried part**, as opposed to the exposed part of the film whose biodegradation process will be slower.

- Avoid soil contamination by not producing toxic waste after use.
- Help preserve soil nutrients and improve fruit and vegetable growth.
- Contain no heavy metals.
- Installation is a standard procedure that doesn't require special machinery.
- Depending on the thickness of the biodegradable mulch, **degradation may start earlier than expected** (2 to 3 months).
- As these are biodegradable mulches, made from biopolymers, it is important to know that their mechanical properties are a little lower, so applying or placing the mulch with excessive tension may cause breakage. **It is therefore recommended to reduce the tension during the application of this type of mulch.**



**BLACK
MICRO-PERFORATED
MULCH FOR THE
SPECIFIC CULTIVATION
OF ASPARAGUS**

However, **the disadvantages of biodegradable mulches** -mainly related to the degradation process- **are outweighed by the benefits they offer to crops.** Today, a wide variety of fruits and vegetables are grown with biodegradable mulch, such as peppers, tomatoes, eggplants, zucchini, watermelons, melons, and lettuce.

Among the innovations on the market are black micro-perforated mulch for the specific cultivation of asparagus, black/white natural mulch for melon cultivation, and natural mulch for corn. **For more information, we recommend reading our article on biodegradable agricultural films: advantages, disadvantages, and their different applications.**

ASPECTS TO CONSIDER BEFORE PURCHASING BIODEGRADABLE MULCHES

When choosing which type of mulch to use, it is necessary to analyze certain aspects. One of them is the cost. However, the price of the plastic film is not the only aspect to consider, since its characteristics and the benefits it brings to the soil are also important.

According to **Javier Pery**, Product Manager, and **Sara Erlbacher**, Export Sales, both members of the **Armando Alvarez Group**,

several factors make up the final and total cost of biodegradable or polyethylene mulch:

- ✓ Mulch purchase price (PE vs. BIO)
- ✓ Mulch thickness chosen (the thicker the mulch, the higher the cost per acre).
- ✓ The cost of removing mulch from the field after use varies according to:
 - ✓ If the collection is manual or mechanized
 - ✓ If the collection is performed lightly or in-depth
 - ✓ Thickness of mulch
- ✓ Transportation cost to the recycling site and possible recycling charges.
- ✓ Environmental subsidies

After making this comparison between different mulch plastics, it is evident that **although biodegradable mulch is more expensive initially, in the long term this type of mulch saves more money in terms of labor, especially at the time of removing the conventional plastics and disposing of them when harvesting is completed.**

Placing the biodegradable mulch can be done with the same equipment

used for traditional plastic mulches, while the plastic waste that is collected and disposed of at the end of the crop cycle is reduced to zero because it remains on the land to be plowed along with the rest of the soil and vegetation.

CASE STUDY OF MELON CULTIVATION IN MURCIA, SPAIN



MULCH	PE 15μ	PE 22,5μ	BIO 15μ
Thickness (mm)	0,015	0,0225	0,015
Length (m/ha)	5.000	5.000	5.000
Width (mm)	1.200	1.200	1.200
Weight (kg/ha)	90	135	117
Price (€/ha)	2,1	2,05	4,5
Cost (€/ha)	189	276,75	526,5
FINAL COST			
Mulch	189	276,75	526,5
Removement from the field € / ha	350	250	0
Transport and Recycling € / ha	120	180	0
Subsidy	0	0	0
Total cost (€/ha)	659	707	527

The biodegradation of plastics doesn't cause soil contamination and global greenhouse gas emissions are significantly reduced.

HOW TO CHOOSE THE TYPE OF PLASTIC MULCH?

Once the agricultural producer has decided to use biodegradable mulch plastics on the crops, one of the first aspects is to know what type of mulch to use.

Biodegradable plastic mulch must comply with the norm EN 17033:2018 or be certified as OK Biodegradable Soil. This is one way to ensure its proper performance in the cultivation soil.



The selection of plastic mulch will depend on the type of soil, the type of crop in which it will be used and the climatic conditions of each region.

It is always advisable to perform prior studies of the aspects mentioned above, as well as to consult your distributor to find out the best solution in each case before purchasing any type of mulch.

ADDITIONAL INFORMATION

There may be differences in quality between biodegradable mulches from different manufacturers since each company in charge of their production will have different technology, know-how, and raw materials that will result in final products of better or lesser performance.

The degradation time may vary according to the factors influencing biodegradable mulches.

Following are a few examples:

- Film thickness
- Type of crop
- Geographical location
- Irrigation
- Raw materials
- Mulch color

Hence the importance of knowing how to choose the mulch that suits your needs or consult with experts in agricultural plastics who can guide you at the time of purchase of the mulch.

The competitiveness of a mulch, whether biodegradable or not, will depend on factors such as production costs, raw material purchase prices, or logistics. Usually, the more production there is, the better the conditions will be.

Once the crop is harvested, agricultural producers can replant immediately, unless something unexpected that requires additional attention is happening to the soil. The pigments used in the production of biodegradable films are also biodegradable and harmless. ■

Our biodegradable mulch recommendations include the following:

- ➔ [Bio ReyFilm](#)
- ➔ [Biosol](#)
- ➔ [Sotrafilm Biodegradable Black](#)