



## **Degradation of sustainable mulch materials in two types of soil under laboratory conditions**

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Mulching is a technique used in cultivation worldwide, especially for vegetable crops, for reducing weed growth, minimising or eliminating soil erosion, and often for enhancing total yields. Manufactured plastic films, mainly polyethylene (PE), have been widely used for this purpose due to their excellent mechanical properties, light weight and relatively low prices in recent years. However, the use of PE is associated with serious environmental problems related to its petrochemical origin and its long shelf-life, which causes a waste problem in our crop fields. For this reason, the use of biodegradable mulch materials (biopolymers and papers) as alternative to PE is increasing nowadays, especially in organic farming. However, these materials can suffer an undesirable early degradation (and therefore not fulfilling their function successfully), greatly resulting from the type of soil. For this reason, this study aimed to analyse the degradation pattern of different mulch materials buried in two types of soils, clay and sand, under laboratory conditions (25°C, dark surroundings, constant humidity). The mulch materials used were: 1) black polyethylene (15  $\mu\text{m}$ ); black biopolymers (15  $\mu\text{m}$ ): 2) maize starch-based, 3) potato starch-based, 4) polylactic acid-based, 5) black paper, 85 g/m<sup>2</sup>. Periodically (every 15-20 days), the weight and surface loss of the different materials were recorded.

The results indicate that mulch degradation was earlier and higher in the clay soil, especially in the paper and in the potato starch-based materials, followed by the maize starch-based mulch, while polylactic acid-based suffered the least and the latest degradation.

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