PRACTICE ABSTRACT nº 7

How to use Biodegradable in Soil Mulch Films in case of Mechanical Laying

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This abstract provides comprehensive guidelines for the effective use of biodegradable mulch films, encompassing soil preparation, mechanical laying, crop setup, and end-of-life management.

Soil Preparation

Preparation of the soil is critical for optimal film performance in terms of weed control and the mechanical performance of biodegradable mulch films. The soil should be refined and free of sharp objects like rocks or crop residues to avoid damaging the film. Organic fertilizers, particularly manure, should not be applied immediately before laying the film to prevent premature degradation caused by microbial activity.

Prepared soil for mulching operation

Mechanically laid mulch film

Laying out the film

Preparation of the soil is critical for optimal film performance in terms of weed control and the mechanical performance of biodegradable mulch films. The soil should be refined and free of sharp objects like rocks or crop residues to avoid damaging the film. Organic fertilizers, particularly manure, should not be applied immediately before laying the film to prevent premature degradation caused by microbial activity.

The film can be laid mechanically using the same machinery as traditional plastic films and at similar speed and gear. It is essential to ensure the correct calibration of the mulch laying machine: the film tension must be reduced to a minimum to prevent it from being weakened during application. It is therefore advisable to adjust the brakes and clutch of the mulch laying machine to reduce excessive stress to the film. If needed micro-perforated mulch films are available.

It is advisable to lay the film and transplant cuttings at the same time (normally mulch machine provides laying and transplanting), or to minimize the time between these operations. This will make it possible to take full advantage of biodegradable mulch film.

Crop Setup

Perforation is generally carried out when the film is laid and is therefore completely mechanized. It is conducted using the same machines and procedures used for traditional plastics, bearing in mind that biodegradable film is more elastic. Ideally the systems used should perforate the film when it is already positioned on the ground. Biodegradable films are compatible with all standard irrigation systems. Fertilizers and agricultural inputs used with traditional films are also suitable for biodegradable alternatives, as no adverse interactions have been reported.

Mulch film perforation and lettuce transplanting

Controlling weeds and duration of the film

Field tests demonstrate that biodegradable mulch films are as effective in weed suppression as traditional black plastic mulches. However, specific weeds like horsetail (*Equisetum sp.*) and sedge (*Cyperus sp.*) may damage the films. The duration of biodegradable mulch film in the field depends greatly on environmental factors. Films with a thickness of 15 µm perform well for crops with cycles of 2–6 months, such as lettuce or solanaceae. Thicker films (18–20 µm) are suited for longer cycles, like strawberries, while those exceeding 40 µm are ideal for perennials like raspberries or vineyard applications.

End-of-Cycle Management

Unlike traditional plastic mulches that require removal and disposal, biodegradable mulch films are integrated into the soil at the end of the crop cycle.

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