MATER-BI

CULTIVATION OF VINES

WITH SOIL-BIODEGRADABLE MULCH FILM

CULTIVATION OF VINES

China is the world's leading producer of grapes, followed by Italy, the United States and France, while Spain leads with regard to area under cultivation, ahead of China and France.

In Europe Spain is followed by France and Italy.
Vines are planted by placing two-year old rooted grafts in the soil in October-November or in March.
As regards cultivation practices, regular action should be taken to keep the soil used for vines free from weeds.

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PROPERTIES OF MATER-BI MULCH FILM FOR VINES

Black MATER-BI mulch film, 15µm thick for nursery cuttings.

Black MATER-BI mulch film, 40µm thick for vines.

For the cultivation of nursery cuttings, the use of black 15-micron MATER-BI film is recommended to contain weed growth and at the same time create favourable conditions for the cuttings to take root and develop.

On newly planted vines the use of 40-micron thick black MATER-BI film is recommended to ensure efficient ground coverage for a period of over 12 months.

FIELD EXPERIMENTS

Experiments conducted in Italy and France have shown that mulching newly planted vineyards is an effective practice for controlling the growth of weeds in the row. Mulching nursery cuttings can also be a successful practice.

In some wine-growing areas (South of France, South Africa) mulch films are used to plant the vineyard, to prevent weeds from competing with young cuttings, while promoting their growth by increasing the temperature and humidity of the soil and allowing early production. In addition, mulch film prevents damage to the cuttings through the use of herbicides or tillage in the first year.
However, non-biodegradable plastic films are not removed from the ground, where they remain, causing soil pollution.

MATER-BI mulch film has been optimised for this application, which, albeit not yet particularly widespread commercially, has shown positive results in terms of the vegetative development of the plants, early production and better grape quality and quantity.

The main tests were carried out in:
- Tuscany;
- Puglia;
- Calabria;
- France.

The data collected in the various areas, both in field experiments and in production plants all concur and demonstrate:
- weed containment in the row, for a period of 6 to 18 months (depending on climatic conditions, soil type and film thickness);
- increase in vegetative development (greater length of shoots on mulched plants compared to non-mulched);
- optimal root development;
- early entry into production of up to one year;
- improved product quality.

The following features were noted on the rooted vines:
- effective weed containment;
- better rooting of cuttings;
- lower water stress level;
- better development of the root system of the cuttings with a greater number of primary and secondary roots.

AGRONOMIC DATA: ROOTED VINES

Test	% Rooting of cuttings
Test location: CALABRIA	
Black MATER-BI 15 µm	66,93
Bare soil	59,0

The state of the plant's water stress can be found by measuring the stomatal conductance, which indicates the plant's release of CO^2 at stomata level and therefore gives an indication of the state of its opening/closure.

Test	Stomatal conductance (MMOL CO^2M^2 SEC^{-1})
Test location: CALABRIA	
Black MATER-BI 15 µm	**194,33**
Black LDPE 40 µm	71,78
Row working	146,56

An unstressed plant keeps the stomata open and transpires, while a stressed plant tends to close the stomata so as not to lose water. Higher conductance values therefore indicate lower water stress.

Test	Total cuttings (g)	No. of primary roots (n)	No. of secondary roots (n)	Length of primary roots (cm)	Length of secondary roots (cm)
Test location: CALABRIA					
Bare soil	125,20 ns	5,24 b	5,12 b	189,24 b	118,24 b
Mb 15 µm	124,73	**8,0 a**	**8,60 a**	**262,68 a**	**210,44 a**
PE 40 µm	114,90	7,28 a	8,44 a	249,48 a	196,12 a

ALBAROSSA GRAPEVINES:

Test	Length of the main shoot (cm)
Test location: PUGLIA	
MATER-BI 30 µm	**140,42**
Not mulched	102,86

FALANGHINA GRAPEVINES:

Test	Length of the main shoot (cm)
Test location: PUGLIA	
MATER-BI 40 µm	**155,60**
Not mulched	116,13

RECOMMENDATIONS

This crop has not yet been fully mechanised, but simple mulching machines can be used to lay the film before transplanting the cuttings, or with the cuttings already in the soil. In this case it is recommended to pierce the film with a sharp knife by performing an X or Y cut.

Furthermore, the use of mulch film is not recommended on soils where there are many large stones that could compromise the integrity of the film. Newly planted vines should be transplanted on mulch when it is not too hot since high air temperatures together with the film could increase the transplant stress on the seedlings.

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