



## Effect of Strip Mulching on Topped Burley Tobacco Growth and Yield

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### Introduction

Water economy and erosion control are among the main aims of mulching, particularly in arid and semiarid environments. Besides, mulching helps in controlling weeds and reduces temperature fluctuations, improving physical and chemical soil conditions with positive effects on plant growth and health. Tobacco mulching is usual in some producing areas, but not much in Italy. The trial object of this note was conducted with the above aims in areas of recent introduction of topped Burley tobacco.

### Materials and Methods

The trial, comparing two treatment (mulch and an un-mulched control), was conducted in the year 2020 at Sant'Agata de' Goti (BN) with a crop of the cv PMSP (Paolo Massaro Seeds, Dugenta, BN) transplanted on April 28 at a density of 22,222 plants/ha spaced 1.0 x 0.45 m. Row plots of 30 plants were used in an RCB layout. Mulching was done with a biodegradable black film (Mater-Bi, NOVAMONT) applied in strips 0.7 m wide, allowing mulched ridges about 0.4 m wide. On June 6, July 1 and 24 plot samples for determination of plant height, leaf number and area, and biomass were taken. Three days after the last assessment, plants were topped at about 1.5 m above ground and three days later, on July 31, harvested whole by stalk cutting. Growth and biomass indices were also determined for harvested plants and, after curing, cured yield and leaf quality. The minimal time span allowed to the crop between topping and harvesting was aimed at keeping a low alkaloid level, as required for the intended tobacco product.

### Results

Up to about three months after transplanting plants developed at comparable rates between treatments, but even by 45 days after transplanting and across the observed period plant height, expected means of leaf number and area and plant dry biomass were higher for the mulch, with 95% confidence intervals mostly above zero (Figure 1).

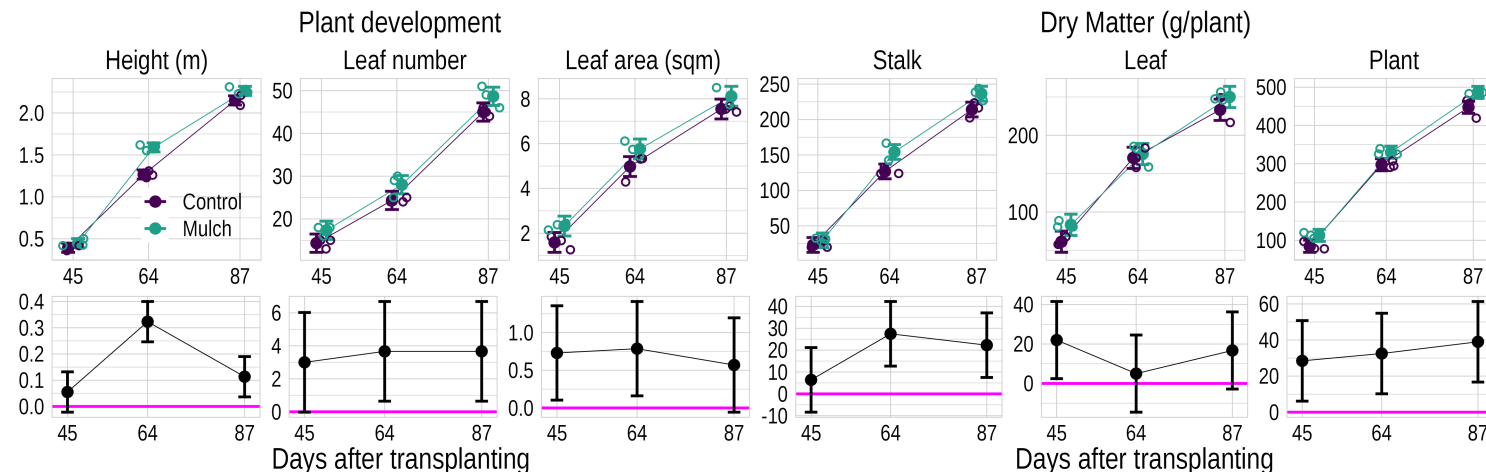


Figure 1. ABOVE: Plant development and biomass up to three days before topping and one week before harvesting. Observed values (symbols) and means with 95% confidence intervals (bars). BELOW: Differences in means, Mulch vs Control, with 95% confidence intervals.

Means for the mulch were higher than the control, at the three successive assessments respectively, by: 14%, 26% and 5% for plant height; 21%, 15% and 8% for leaf number; 46%, 16% and 8% for leaf area; 28%, 22% and 10% for stalk dry matter; 36%, 3% and 7% for leaf dry matter; 34%, 11% and 9% for plant overground dry matter. Leaf area and biomass of the topped plant, as well as cured tobacco yield, were definitely higher for mulch (Figure 2). Differences in expected treatment means between mulch and control had 95% confidence intervals above zero, excepted leaf number by design, and were 0.74 t/ha (+17%) for cured yield, 1 sqm (+20%) for leaf area and 21 g (14%) for leaf biomass. No noticeable difference in leaf quality was detected.

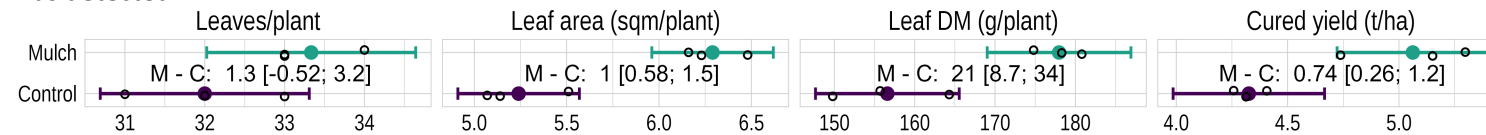


Figure 2. Treatment means of yield and leaf biomass of the topped plants and Mulch vs Control (M - C) differences in means with 95% confidence intervals. Observed values (symbols), means with CI (bars), differences with CI (figures).

### Conclusions

Strip mulching of Burley tobacco allowed increases of plant growth and yield, even if topped at identical height, which were statistically significant, though their practical relevance should be assessed on return/cost balance.