

# Reflective film can boost profits for apple growers

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Solar films shown applied to the orchard floor improved fruit size and color in Gala apples. Credit: Photo by Ignasi Iglesias

In a research report published in a recent issue of *HortTechnology*, scientists Ignasi Iglesias and Simó Alegre examined the effects of covering orchard floors with reflective films on fruit color, fruit quality, canopy light distribution, orchard temperature, and profitability. The experiments were performed using Extenday™ and Solarmate™ films installed 5 weeks before commercial harvest in orchards of 'Mondial Gala' apples. The research showed that the use of both films increased fruit size and color and can result in increased profits for apple growers.

It's long been known that consumers choose apples based on fruit color. Although color does not affect the flavor, taste, and texture of apples, color influences consumer buying decisions and, in turn, [apple](#) growers'

bottom lines. For many red and bicolored apple cultivars, including Gala, Delicious, and Fuji, red color (the intensity and quality of red skin) and fruit size are also important characteristics for fruit grading standards. Even when apples are of adequate size, poor fruit color can result in lower-grade fruit and decreased consumer approval.

Apple producers recognize that clear days with temperatures of around 25 °C and cool nights below 15 °C are ideal growing conditions for apples to develop bright red colors. Under these conditions, apples are capable of increasing canopy photosynthesis, and respiration rates decrease at night. Commercial apple growers in southern regions can be challenged by warm, dry summers that are not favorable to apple fruit color development; these warmer climates can have a definite negative effect on production and profits.

'Gala' apples have become very popular in Europe, where the high quality of this fruit is increasingly appreciated by consumers. To meet consumer demand, apple growers in southern Europe (mainly Spain and Italy) are looking for ways to turn out high-quality, cost-effective apple crops despite a climate that is not particularly conducive to apple production.

To address producers' issues of warmer climates, increased consumer demand, and high apple quality, Iglesias and Alegre designed a 3-year experiment using 'Mondial Gala' apples grown in orchards in northeastern Spain. Their objective was to determine how different types of reflective film affect orchard temperature, skin-color development, fruit quality, light canopy distribution, and, ultimately, apple crop profitability.

Based on the fruit size and color required to meet European Union grade standards, the use of Extenday™ or Solarmate™ films resulted in an increase of 26% and 17%, respectively, when compared with the control,

for the number of fruit picked at first harvest.

The researchers concluded that "season clearly affected fruit color development, whereas harvest date, fruit firmness, fruit size, soluble solid concentration, titratable acidity, and maturity were not consistently affected by the use of reflective film." According to Iglesias, the study results are promising, but long-term benefits of the technique will largely depend on fruit prices.

Source: American Society for Horticultural Science

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