

CULTURAL CONTROLS: Mulches



INTRODUCTION:

Polyethylene mulch has been used in vegetable production for over 40 years and is currently used in virtually all pepper and tomato production in Florida. Mulches vary in thickness and color, with white being used in hot seasons and black in cool seasons. Colored mulches have been tried for insect control with varying success. More recently, use of virtually impermeable film (VIF) has gained in popularity. In addition to being an integral part of fumigation success, mulch can increase yield, inhibit weed growth, improve moisture retention, reduce crown fruit rot and reduce fertilizer leaching.



Figure 3. A variety of tests for mulches has been done to find the efficacy of the different colors on insect control. Photograph by: Milt Putnam.

BENEFITS OF MULCH:

- Silver, aluminized or metalized mulch reduce the population of thrips, aphids and silverleaf whitefly by deterring adult insects from landing on plants.
- Silver, aluminized or metalized mulch can delay tomato yellow leaf curl (TYLC) by at least 2 weeks and reduce tomato spotted wilt (TSW) significantly.
- VIF allows reduction of methyl bromide rates which saves money and helps increase the acreage which can be treated, maintaining effective pest control as alternatives continue to be developed.
- Some VIF products are also metalized, providing double the benefit.

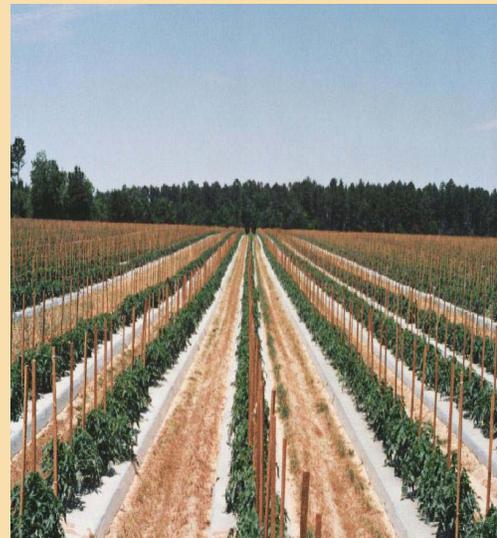


Figure 4. Silver mulch for thrips/TSW control in North Florida. Photograph by: Steve Olson.

POTENTIAL PROBLEMS:

- Colored or reflective mulches are usually most effective early in the crop cycle before the crop canopy covers the mulch and before spray residues decrease the reflectivity.
- Silver and metalized mulch can affect soil temperature and plant growth; however, yield reductions due to temperature are often offset by the increase in yield as a result of reduced virus incidence.
- To reduce the cooling effect of silver mulch in cool seasons, mulch is available with a 5 to 6 inch strip of black down the middle (**Figure 4, pg. 70**).
- Traditionally, VIF mulch has been hard to lay due to lack of elasticity, requiring equipment modifications. Newer films are being improved to lessen this problem.
- Reducing fumigant rates requires equipment modifications in order to achieve uniformity of delivery and effective pest control across the entire bed.



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SUCCESS STORY:

In the spring crop of 2000 in North Florida on a large scale grower trial (40 acres metalized and 100 acres black), use of metalized mulch reduced incidence of TSWV from 45% to 11%. In 2002 in another grower trial (100 acres metalized and 25 acres on black), the combination of Actigard® and metalized mulch reduced TSW from 23% to 3%. Other growers report reduction in virus of up to 75% with increased profits of up to \$4000 per acre.



Figure 5. Metalized VIF mulch covering tomato beds in central Florida. Photograph by: Phyllis Gilreath.



Figure 6. TYLC symptoms on tomatoes in central Florida. Photograph by: Phyllis Gilreath.

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Figures 7 & 8. TSW damage on green and ripe fruit in north Florida. Photographs by: Steve Olson.

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