STRAWBERRY AND TOMATO RESPONSE TO ACROLEIN

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Introduction: Pest control in Alabama strawberries usually centers on diseases as well as weeds. Pressure from weeds, notably nutsedge species (*Cyperus* spp.), as well as root knot nematode (*Meloidogyne* spp.) can be problematic in tomato production. Both of these crops have relied heavily on preplant soil fumigation to control these pest species. Previous studies have shown that acrolein has the potential to be used as an alternative to methyl bromide. Therefore, two experiments were conducted to evaluate acrolein in strawberry and tomato production.

Materials and Methods: The strawberry experiment was conducted at the Brewton Experiment Field in Brewton, AL. Soil at this site is a sandy loam soil with low organic matter and CEC. Beds were formed and covered with high-density polyethylene mulch (HDPE) with two drip tapes on each bed. Two rows of 10 'Camarosa' strawberry plants were planted for a total of 20 plants in each plot October 24, 2007. The study design was a randomized complete block with 4 replications. Preplant treatments were applied 34 days prior to transplanting and included methyl bromide (67/33) at 350 lb ia/A and acrolein at 400 lb/A. Post-transplant treatments consisted of acrolein applied either in the fall (8 days after planting) or spring (155 days after planting) at 21, 42, 56, or 84 lb/A. Two other treatments were included for comparison, one receiving fungicides only and another that was a true non-treated. Contact-only fungicides were used to prevent airborne diseases and were applied to all treatments except the true non-treated. Methyl bromide was shank-injected while all acrolein was applied through the drip lines in one acre-inch of water. Vigor, disease incidence and crop yields were evaluated for each treatment. The tomato study was also conducted at the Brewton Experiment Field. Treatments evaluated were methyl bromide (67/33) at 350 and 175 lb ai/A, Inline at 20 and 10 gal/A, and acrolein at 100, 200, 300, and 400 lb product/A. All acrolein treatments were evaluated under both virtually impermeable film (VIF) and high-density polyethylene (HDPE). The high rate of methyl bromide and inline were evaluated under HDPE while the low rates were evaluated under VIF. Both mulches were laid two weeks prior to treatment for all acrolein treatments while the mulch for Inline and methyl bromide treatments were laid at the time of treatment. Treatments were applied April 29-30, 2008. Three rows consisting of 5 nutsedge "hills" were planted, each "hill" containing two yellow nutsedge (*Cyperus esculentus*) nutlets. Tomatoes were transplanted May 14, 2008. Data was collected for tomato vigor, weed and nematode control, and crop yield.

Results: