

Can The Activity Of Rimsulfuron Be Enhanced With Aquatrols® (Soil Surfactant) In Transplanted Fresh Market Deficit Irrigated Tomatoes?

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Shortages of water have led to research on regulated deficit irrigation (RDI) and use of soil surfactants such as Aquatrols IrrigAid Gold® that potentially improves water infiltration. We hypothesized that this soil surfactant may also improve the distribution and thus the efficacy of a soil-applied pre-emergence herbicide such as rimsulfuron (Matrix). A field study was conducted in 2012 at the California State University, Fresno farm to evaluate the efficacy of rimsulfuron when applied with Aquatrols IrrigAid Gold® on weed control and to see if reduction in irrigation increased weed competition. The fresh market tomato variety 'Quali T 47' was transplanted on 60 inch beds in late-May. The experimental design was a split-split plot with 3 irrigation regimes (100%, 80%, and 60% of the daily ET) as the main plot. Soil surfactant applied at the rate of 4 oz/ac or no-surfactant were the sub-plots. Rimsulfuron applied at 0, 1, 2, and 4 oz/ac were the sub-sub-plots. Irrigation and fertilizer was applied through a sub-surface drip irrigation system buried 6 inches deep. The soil surfactant and rimsulfuron were applied immediately after transplanting tomatoes and the herbicide was water-incorporated. Data were taken on weed densities, weed biomass, and crop growth, yield, and quality. Irrigation levels did not affect weed density or crop yield but weed biomass was lowered and fruit maturity was delayed as irrigation was reduced. The soil surfactant had no effect on any of the weed or crop parameters. Presence of herbicide affected both weed and crop parameters but the herbicide rate did not. Weed density, biomass, and crop yield was lower when no herbicide was applied. In conclusion, under RDI better weed control may be required as presence of weeds delayed fruit maturity and lowered the yield more so in the 60% ET plots than in the other plots.