# DRIP-APPLICATIONS OF ACROLEIN IN TOMATO

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Previous greenhouse and field studies have demonstrated that acrolein has efficacy against root-knot nematode (*Meloidogyne* spp.) as well as fungal pathogens. A study was initiated spring 2006 to evaluate acrolein effects on root-knot nematode and tomato yield. The study was conducted at Brewton, AL in a fine sandy loam soil heavily infested with root-knot nematode. Treatments included: acrolein at 100, 200, 400, 600, and 800 lbs ai/A, methyl bromide (MeBr 66/33) at 350 lb ai/A, and an untreated check. All plots were tarped with HDPE plastic. Acrolein treatments were applied over a 3.5 hour period in one acre-inch of water utilizing two drip tapes. Each treatment was replicated six times. Tomatoes were transplanted at 1, 7, 14, and 21 days after treatment (DAT), with each planting date containing 8 plants. Nematode counts were conducted 10 and 13 weeks after treatment (WAT) and again at study completion (18 WAT). Additionally, data for root weights, root condition, and amount of root galling were taken. Data from the 1 and 7 DAT transplants were not included due to damage from hail.

At 10 WAT, nematode counts in the methyl bromide plots were lower than the 100, 200, and 400 lb rates of acrolein, but not the 600 and 800 lb rates. By 13 WAT, the MeBr treated plots had lower numbers of nematodes than any of the acrolein treatments in both the 14 and 21 DAT transplants. At study completion, all treatments contained extremely high numbers of nematodes (>1000/100cc soil). Root galling was significantly lower in the MeBr treated plots than any of the acrolein treatments at either planting date. The 800 lb rate of acrolein in the 14d transplanting was the only acrolein rate that provided a root condition rating equal to MeBr. For both transplant dates, the total number of marketable tomatoes in the 400, 600, and 800 lb rates of acrolein was equivalent to MeBr. All acrolein rates with the exception of the 200 lb rate gave equivalent weights of marketable tomatoes as MeBr.

Despite the higher numbers of root-knot nematodes found in the acrolein treated plots, yield weights and numbers remained on a level equal to those of MeBr. Previous studies have noted an increase in plant vigor in plants treated with acrolein. Additionally, it has been shown that acrolein will control fungal diseases not controlled by MeBr (notably *Fusarium* spp). The results from this study would seem to indicate that acrolein provided some type of pathogen control or growth promotion that MeBr did not, further increasing its potential as a viable MeBr alternative.