EFFECT OF VIF ON METAM, CHLOROPICRIN AND 1,3-DICHLOROPROPENE, ALONE AND IN COMBINATION

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Previous research has demonstrated stimulation of purple and yellow nutsedge (*Cyperus rotundus* and *C. esculentus*) with chloropicrin when applied at rates ranging from 100 to 150 lbs./acre (112 to 168 kg/ha) under low or high density polyethylene film mulch. This stimulatory effect has been exploited in research by developing a program of metam application five days after application of chloropicrin, thus placing metam in the soil once the tubers have begun to sprout and are most vulnerable.

This project was expanded in 2004 - 2005 to include the commercial emulsifiable concentrate formulation of 65% 1,3-dichloropropene and 35% chloropicrin (1,3-D + Pic) and virtually impermeable film mulch as well as high density polyethylene film. The test site was a commercial tomato farm in west central Florida with a heavy infestation of purple nutsedge. Chloropicrin was applied into raised beds through three gas knives, while 1,3-D + Pic and metam potassium were applied in 1 acre inch of water through 2 drip irrigation tubes spaced 10 inches apart and 5 inches from the bed center. Metam was applied 5 days after application of chloropicrin and 1,3-D + Pic. Treatments were applied under both standard high density polyethylene film (Hilex ®) and Bromostop ®) VIF.

Stimulation of nutsedge sprouting and emergence was approximately the same with either chloropicrin alone or combined with 1,3-D; however, there was some enhancement when applied under VIF. There was a slight improvement in efficacy of metam potassium when applied alone under VIF, contrary to previous results. Application of metam 5 days after application of chloropicrin or 1,3-D + Pic greatly improved nutsedge control over that observed without the subsequent application of metam and VIF improved results to some degree. Tomato production followed a trend similar to nutsedge control.

Producers of drip irrigated crops in Florida can achieve good nutsedge control using this sequential application technique combined with VIF; however, the addition of a second drip tube on the bed top increases

expense by approximately $125 US per acre and is not compatible with crops grown with more than a single row on the bed.