EVALUATOIN OF IODOMETHANE AND CHLOROPICRIN ON PEPPER UNDER DIVERSE IRRIGATION SCENARIOS

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A field experiment was conducted in Fort Pierce, FL in the spring of 2011 to evaluate the performance of fumigants containing iodomethane and chloropicrin on pepper. Fumigant treatments including iodomethane applied at 98 lbs per acre (Midas 98:2), chloropicrin applied at 100 lbs per acre, a 50:50 formulation of iodomethane and chloropicrin applied at 200 lbs per acre (Midas 50:50) and an untreated control were arranged in a randomized complete block design and applied under two divergent irrigation systems commonly employed for pepper production in Florida. A drip irrigation system consisted of a single drip tape placed on the surface of raised beds covered with a virtually impermeable film (VIF). A seep irrigation system consisted of raising the water table using lateral irrigation ditches to a depth of 12 inches below the tops a raised beds covered by the same VIF used in the drip system. Pepper was transplanted into fumigated beds 14 and 21 days after fumigant application.

At 43 days after application, fumigant applications had a significant effect on mixed populations of purple and yellow nutsedge. The highest nutsedge populations were observed in the straight chloropicrin application followed by the untreated control. Fumigant applications containing iodomethane significantly reduced nutsedge populations to levels below 0.5 plants per ft. Nutsedge control was similar under both irrigation scenarios.

The incidence of Phytophthora blight, caused by *Phytophthora capsici*, at harvest was higher under seep irrigation (14.7%) than under drip irrigation (6.3%). Fumigant treatments containing either iodomethane or chloropicrin reduced disease incidence by approximately 50% in both irrigation systems. The combined application of iodomethane and chloropicrin reduced disease incidence to less than 2% in the seep irrigation system and less than 1% in the drip system, indicating a synergistic interaction for disease control when the fumigants were combined.

Marketable yield of pepper was noticeably higher under the drip irrigation system when compared to yields under the seep irrigation system. For example, in the untreated controls yield was 619.2 and 1,004.4 boxes per acre under the seep and drip system, respectively. Under both irrigation systems the highest yields were obtained from plots treated with iodomethane. Under seep irrigation, treatments contained chloropicrin resulted in yields greater than the untreated control. However, under the drip irrigation system, the fumigant application containing only chloropicrin resulted in a marketable yield lower than the untreated control. The yield response of treatments containing iodomethane was greater under drip irrigation when compared to a seep irrigation system.