ALTERNATIVES TO METHYL BROMIDE FOR NEMATODE AND DISEASE CONTROL ON TOMATO, 1996.

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Two formulations of methyl bromide (MBr) were compared with possible alternative multi-purpose soil fumigants and nonfumigants for control of root-knot nematode, soilborne diseases, and weeds on tomato grown in drip irrigated polyethylene mulch culture in north central Florida. The experiment was conducted in 1996 at the Agronomy Research Farm, University of Florida, Gainesville, FL. The soil was an Arredondo fine sand (>92%) and infested with a high density of *Meloidogyne incognita* (southern root-knot nematode), and moderate densities of *Paratrichodorus minor* (stubby root nematode) and *Belonolaimus longicadatus* (sting nematode). The site also was infested with *Sclerotium rolfsii* (southern stem blight) and *Cyperus rotundus* (purple nutsedge) and *C. esculentus* (yellow nutsedge). The winter cover crop was wheat cv. Florida 301, which was turned under and the field disked 6 weeks before the treatments were applied. Plots were single row, 9.1 m long on 1.8 m centers with a 0.91-m bed width. Plots were arranged in a randomized complete block and replicated six times. Beds were formed and a starter fertilizer applied and incorporated. Methyl bromide, chloropicrin, and 1,3-D + chloropicrin (17% or 35%) were applied 30 cm deep over preformed beds 28 days preplant with a bed-press mulch laying machine (Kennco Mfg., Ruskin, FL) with three chisels spaced 30 cm apart and covered immediately with black polyethylene mulch. Metham sodium was sprayed over the bed and incorporated with a rototiller. Oxamyl and Abbott 9008 were applied either weekly or biweekly via drip irrigation beginning 16 days after transplanting. Tannic acid was applied biweekly via drip irrigation beginning 16 days after transplanting. Treatments of metham sodium, oxamyl, and Abbott 9008 were applied alone or to beds pretreated with 1,3-D + 35% chloropicrin. Tannic acid was applied to beds pretreated with 1,3-D + 35% chloropicrin. The plots were drip irrigated twice daily and fertilized via drip tube weekly.

Only three compounds, MBr 98-2, oxamyl applied alone weekly, and chloropicrin resulted in increased total marketable yields over the control ($P \leq 0.05$). The remaining eight treatments provided higher numerical yields than the control but there was no statistical difference among these treatments and the control. Three treatments (oxamyl weekly or biweekly and MBr 98-2) provided higher numbers of extra-large fruit than that produced in the control ($P \leq 0.05$). Root-knot nematode galling indices were lower in soil treatments of MBr, chloropicrin, 1,3-D + 17% chloropicrin, and all treatments containing 1,3-D + 35% chloropicrin than in the control ($P \leq 0.05$). Wilt induced by *Sclerotium rolfsii* was reduced to one or fewer plant hits per plot by MBr, chloropicrin, and by all treatments containing 1,3-D + 35% chloropicrin except 1,3-D + 35% chloropicrin + oxamyl, compared with the control ($P \leq 0.05$).