REDUCED RATES AND ALTERNATIVES TO METHYL BROMIDE FOR SNAPDRAGON PRODUCTION IN FLORIDA

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A field trial was conducted to evaluate soil solarization, Midas™ (iodomethane:chloropicrin 50:50, Arysta LifeScience Corp., Cary, NC) and different rates and formulations of methyl bromide under standard and metalized films for the production of snapdragon (*Antirrhinum majus*) in Martin County, Florida. The first year trial was conducted beginning in the fall of 2006. Treatments included soil solarization using a 2 mil clear plastic (VeriPack, Framingham, MA), Midas™ applied at 224 kg/ha under metalized (MT) film (Canslit, Inc., Montreal, Quebec, Canada), methyl bromide (98:2) applied at 448 kg/ha under high density (HD) polyethylene (Hilex Poly, Hartsville, SC) and 224 kg/ha under MT, and methyl bromide (67:33) applied at 448 kg/ha under HD and 224 kg/ha under MT. Each plot was 1.8 m wide by 34 m long. Treatments were replicated four times and plots were arranged in a randomized complete block design. Plastic mulch was removed two weeks after fumigation and snapdragon cultivar Potomac Ivory White was transplanted approximately two months later. Soil temperature and moisture were monitored while the plastic remained in the field. Data on weed density, fungal colony forming units (cfu), nematode populations, and snapdragon growth parameters were taken from two subplots in each replication. Data were collected prior to fumigation, at plastic removal, prior to planting, mid-season of the crop, and at harvest. Nematode and fungal cfu counts prior to fumigation were consistent throughout the sample area. After soil treatment, nematode counts were highest in the methyl bromide 67:33 treatments, although there were few significant ($P<0.05$) differences. Cumulative weed counts were not significantly different among treatments, with the exception of white clover (*Trifolium repens*), the principal weed problem at the location, which was significantly higher ($P<0.05$) in the methyl bromide:chloropicrin 67:33 applied at 224 kg/ha under metalized film than in any other treatment (Fig. 1). Soil solarization was very effective for the control of this weed (Fig. 1). Total fungal cfu at mid-season was significantly higher in the solarization treatment, with the majority of the colonies belonging the genus *Penicillium*. Marketable harvest was lowest in methyl bromide:chloropicrin 67:33 applied at 448 kg/ha which was significantly lower ($P<0.05$) than solarization, and treatments containing methyl bromide:chloropicrin 98:2 (Fig. 2). The level of clover control achieved with the soil solarization treatment has led to a one acre demonstration soil solarization trial. The field trial with methyl bromide alternatives is being repeated during the 2007-08 season. This research was supported in part by the CSREES, Methyl Bromide Transitions Grant Program.

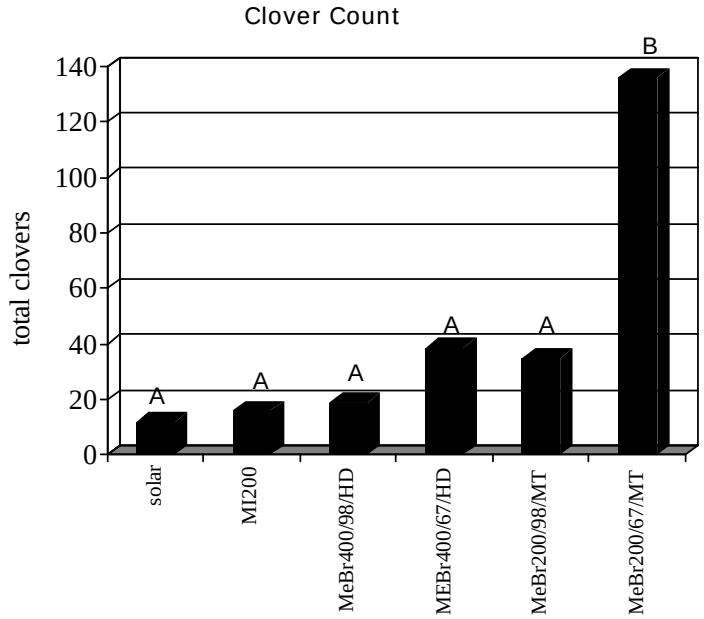

Figure 1. Cumulative white clover (*Trifolium repens*) counts per plot. Totals represent the averages of two subsamples in each of four replications. Bars with the same letter are not significantly different ($P<0.05$) according to mean separation using Duncan's Multiple Range Test (DMRT).

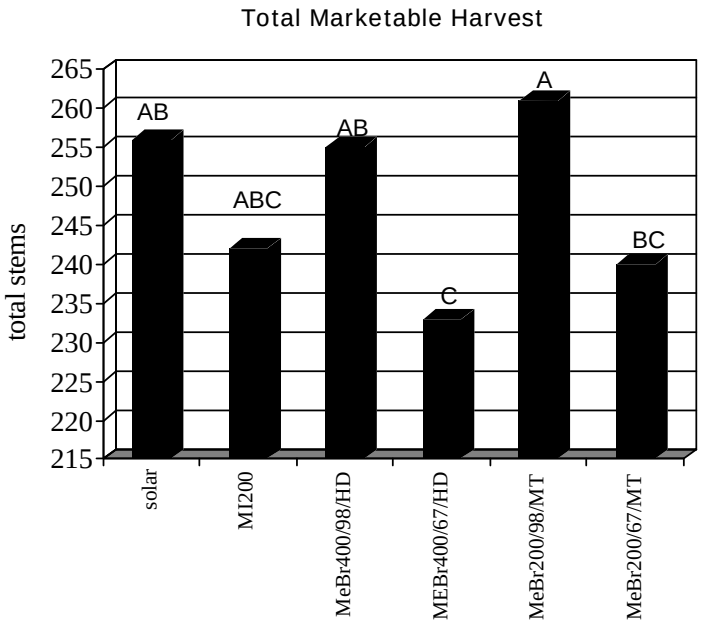

Figure 2. Total marketable snapdragon harvest per plot. Totals represent the averages of two subsamples in each of four replications. Bars with the same letter are not significantly different ($P<0.05$) according to mean separation using Duncan's Multiple Range Test (DMRT).