EFFICACY OF MIDAS™ FOR CONTROL OF *MELOIDOGYNE INCOGNITA* ON *CELOSIA* IN FLORIDA

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The efficacy of iodomethane:chloropicrin (50:50 Midas™, Arysta LifeScience Corp., Cary, NC) was evaluated for control of root-knot nematodes (*Meloidogyne incognita*) on *Celosia argentea* var. cristata. A field trial was conducted on a commercial farm in southeastern Florida in 2006. Midas applied at 224 kg/ha was compared to methyl bromide:chloropicrin (98:2) applied at 224 kg/ha, and an untreated control. All plots were covered with metalized mulch (Canslit, Inc., Montreal, Quebec, Canada) immediately after fumigation. Beds were 30 m long with each treatment replicated four times and plots arranged in a randomized complete block design. Mulch was removed 15 days after fumigation, five days before planting. *Celosia* seed were planted directly into soil. Nematodes were evaluated in plots immediately before fumigation, at planting, 40 days after planting (DAP), and 90 DAP. At 97 DAP plants were destructively sampled, roots were evaluated for galling, and nematodes were extracted from roots using the Baermann funnel technique. Nematodes were identified as *Meloidogyne* spp., other stylet-bearing nematodes, or microbivorous nematodes.

Nematode populations before fumigation were evenly distributed among the plots, with the exception of a slight decrease in other stylet-bearing nematodes among Midas plots. Following treatment Midas reduced populations of all nematodes in the soil compared to the untreated control (Table 1). Although nematode populations in methyl bromide treated plots were approximately ½ of those in the control plots, differences were not statistically significant due to variability among methyl bromide treated plots. Nematode populations 40 DAP rebounded and were evenly distributed among all treatments. At 90 DAP nematode populations were equivalent to, or higher than the control in both methyl Midas and methyl bromide. However, both Midas and methyl bromide reduced the number of root-knot nematodes isolated from roots, and reduced galling by root-knot nematodes compared to the untreated control (Table 2). The total number of all types of nematodes isolated from roots was lowest in the Midas treatment. Plant root weights were also higher in Midas and methyl bromide treated plots compared to the untreated plots, with Midas having higher root weights than methyl bromide (Table 2).

The increased efficacy and consistency of Midas compared to methyl bromide for reducing populations of nematodes in soil early in the season is somewhat

unexpected due to the lower vapor pressure and reduced movement of Midas through soil. This study emphasizes the importance of early season nematode control for reduction of galling on Celosia.

Table 1. Number of nematodes/100cc soil post fumigation (1-12-06) from Celosia trial, Stuart, FL.

	Root-knot nematodes/ 100cc soil	Other stylet-bearing/ 100cc soil	Microbivorous nematodes/ 100cc soil	Total nematodes/ 100cc soil
Untreated	102.06 a	34.02 a	31.19 a	167.27 a
Methyl bromide	56.70 ab	14.75 ab	11.34 ab	82.22 ab
Midas	9.72 b	0.00 b	0.00 b	9.72 b
LSD (0.05)	76.74	21.44	25.55	114.05

Table 2. Number of nematodes/g roots, root weight, and galling at the end of season (5-18-06) from Celosia trial, Stuart, FL.

	Root-knot nematodes/ g root	Other stylet-bearing/ g root	Microbivorous nematodes/ g root	Total nematodes/ g root	Root Weight (g)	Gall Rate (Zecks)[1]
Untreated	12.20 a	0.75 a	28.09 a	41.04 a	6.33 c	1.62 a
Methyl bromide	4.67 b	0.63 a	21.04 a	26.05 ab	11.65 b	0.14 b
Midas	3.81 b	1.22 a	17.19 a	22.23 b	14.05 a	0.65 b
LSD (0.05)	5.32	1.64	13.88	15.50	2.23	0.62

[1] Means with the same letter are not significantly different.
[2] Zeck's gall rate is defined as1=no galling, 10=total galling at root deterioration