EFFICACY OF MIDAS (50/50) AS A SOIL FUMIGANT FOR TOMATO PRODUCTION.

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The experiments were conducted at the North Florida Research and Education Center in Quincy, FL on an Orangeburg loamy fine sand during spring and early summer of 2006 and 2007. Designs were randomized complete blocks with 5 replications in 2006 and 4 in 2007. Fumigants were applied using a flow meter pressurized with N_2 gas through 3 chisels spaced 28 cm apart. Bed width was 0.86 m and mulch was applied as fumigant was injected. Cultivar used each year was 'Quincy'. Between row spacing was 1.83 m. Total fertilizer applied was 218-30-181 kg/ha of N-P-K. At harvest fruit were sized, graded into marketable and non-marketable and weight and counts were recorded. Pesticides were applied as needed to control insects and diseases. Specifics for each year are outlined below.

2006: Treatments, rates and mulch types used are described in Table 1. Treated plot were 27.4 m long with center 12.2 m planted. Treatments were applied on 7 March. On 27 March 24 plants were transplanted 51 cm apart into the plots. Yellow nutsedge (*Cyperus esculentus*) counts were made on 7 April to center 2 m of row. Three harvests were made on 15 and 21 June and 5 July.

Results are shown in Table 1. Reduced rates of Midas (168 - 252 kg/ha) under metalized mulch controlled nutsedge as well as MBr at 392 kg/ha under LDPE. With Midas under LDPE level needed to equal MBr control was 280 kg/ha. Highest yield of extra-large fruit and total yield was with Midas at 252 kg/ha under LDPE but was only significantly greater than untreated check with LDPE and Midas at 168 and 224 kg/ha under metalized mulch.

2007: Treatments, rates and mulch types used are described in Table 2. Treated plots were 21.3 m long with center 9.0 m planted. Treatments were applied on 8 March. On 30 March, 18 plants were transplanted 51 cm apart. Yellow nutsedge counts were made on 3 April to center 9.0 m of row. Prior to first harvest, number of plants lost to Bacterial wilt (*Ralstonia solanacearum*) were counted. Two harvest were made on 25 June and 5 July.

Results are shown in Table 2. Per cent plants lost to Bacterial wilt ranged from high of 70.8 % for untreated with VIF mulch to low of 0.0 % for MBr (67/33) at 392 kg/ha with metalized mulch. Generally the fumigants performed better than the untreated checks. Incidence of Bacterial wilt was less with metalized mulch than VIF mulch (6.9 % versus 20.6 %, $P < 0.01$). This was probably due to lower soil temperatures that occur under the metalized mulch. All fumigant treatments reduced nutsedge counts over the untreated checks and untreated metalized mulch was significantly better than the other 2 untreated checks. There were no differences between any of the Accolade treatments and MBr treatments for yield of extra large fruit or total yield.Table 1. Effect of soil fumigants on nutsedge counts, yield, average fruit weight and percent marketable fruit of Quincy tomatoes. NFREC-Quincy. Spring 2006.

Treatment	Rate kg/ha broadcast	Mulch [Z]	Nutsedge counts [Y]	Yield (11.4 kg cartons/ha)	
				Extra-large	Total
Midas (50/50)	112	M	16.6 a	[X]4619 a-d	5837 a-c
Midas (50/50)	140	M	3.6 b-d	4453 a-d	5703 a-c
Midas (50/50)	168	M	1.8 d	4115 d	5330 c
Midas (50/50)	196	M	1.4 d	4896 a-d	6123 a-c
Midas (50/50)	224	M	1.8 d	4179 c-d	5483 bc
Midas (50/50)	252	M	2.4 cd	5775 a-c	7022 ab
Midas (50/50)	252	LDPE	11.0 a-c	6054 a	7096 a
Midas (50/50)	280	LDPE	5.8 b-d	5338 a-d	6548 a-c
Midas (50/50)	308	LDPE	3.6 b-d	5926 ab	6827 a-c
Midas (50/50)	336	LDPE	4.6 b-d	5002 a-d	6321 a-c
MBr (67/33)	196	M	6.2 b-d	5506 a-d	6780 a-c
MBr (67/33)	392	LDPE	2.0 cd	4821 a-d	5780 a-c
Untreated		M	12.2 ab	5135 a-d	6244 a-c
Untreated		LDPE	11.0 a-c	4285 b-d	5530 a-c

[Z] M = Canslit metalized mulch, LDPE = black low density polyethylene mulch

[Y] Number of plants/1.75 m^2
[X] Mean separation Duncan's multiple range test, 5 % level; NS = nonsignificant.

Table 2. Effect of fumigant and mulch type on Bacterial wilt (BW) control, yellow nutsedge control and yield of 'Quincy' tomatoes. NFREC-Quincy. Spring 2007.

Treatment	Rate kg/ha broadcast	Mulch type [Z]	Per cent dead plants (BW)	Nutsedge counts (plants/9m)	Yield (11.4 kg boxes/ha)	
					Extra large	Total
Untreated		VIF	70.8 a	258.3 a	1092 c	1566 c
Untreated		M	27.8 b	147.3 b	2858 b	3801 b
Midas (50/50)	140	VIF	5.6 b	28.8 c	4337 ab	5767 ab
Midas (50/50)	168	VIF	6.9 b	0.8 c	3107 ab	4424 ab
Midas (50/50)	196	VIF	11.1 b	0.3 c	4631 ab	6583 a
Midas (50/50)	140	M	2.8 b	4.8 c	3685 ab	4589 ab
Midas (50/50)	168	M	4.2 b	0.0 c	3389 ab	4607 ab
Midas (50/50)	196	M	4.2 b	0.0 c	4140 ab	5498 ab
MBr (67/33)	196	VIF	11.1 b	0.0 c	3695 ab	5582 ab
MBr (67/33)	196	M	2.8 b	0.3 c	3732 ab	4604 ab
MBr (67/33)	392	VIF	18.1 b	0.0 c	4369 ab	5930 ab
MBr (67/33)	392	M	0.0 b	0.0 c	4658 a	5733 ab

[Z] LDPE = black low density polyethylene, VIF = black Blockade VIF, M = Canslit metalized.
[Y] Means separation by Duncan's Multiple Range Test, 5 % level.