EFFICACY OF PALADIN (DMDS) AS A SOIL FUMIGANT FOR TOMATO AND CANTALOUPE 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 2007. Designs were randomized complete blocks with 4 replications. 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. Pesticides were applied as needed to control insects and diseases. Specifics for each crop are outlined below.

Tomatoes: Treatments, rates and mulch types used are outlined in Table 1. Treated plots were 21.3 m long with center 9.0 m planted. Between row spacing was 1.83 m. Treatments were applied on 8 March. On 30 March, 18 'Quincy' tomato plants were transplanted 51 cm apart. Yellow nutsedge (*Cyperus esculentus*) counts were made on 3 April to center 9.0 m. 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. Fruit were sized, graded into marketable and non-marketable and weight and counts were recorded.

Results are shown in Table 1. 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. 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.

Cantaloupes: Treatments, rates and mulch type used are outlined in Table 2. Treated plots were 18.3 m long with center 9.0 m planted. Between row spacing was 2.29 m. Treatments were applied on 9 March. On 26 March 18 'Athena' cantaloupe plants were transplanted 51 cm apart. Yellow nutsedge (*Cyperus esculentus*) counts were made on 10 April to center 9.0 m. Sandea at 35.0 gm/ha was applied over the top to remove nutsedge since this field had a high root knot population and did not want to confound experiment. Six harvest were made from 31 May to 20 June. Fruit were graded into marketable and non-marketable and weight and counts were recorded.

Results are shown in Table 2. Both MBr treatments produced higher yields than the untreated check but there were no differences between Accolade treatments and MBr treatments. Treatments had no effect on fruit weight. Nutsedge counts

were highest in the Telone II plots but were not different from the untreated check or the DMDS at 646 kg/ha under LDPE mulch. Best nutsedge control occurred with both MBr treatments but was not different from reduced rate of DMDS under VIF mulch. Root gall ratings were not different between both DMDS treatments and the untreated check buth the Telone II treatment was significantly lower. Root gall ratings for both MBr treatments were lower than all other treatments.

Summary: Paladin performed equally to MBr when used in tomato production. With cantaloupes, the 100% DMDS did not perform as well as the MBr treatments. Root knot population in this field was very high.

Table 1. 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		LDPE	47.2 ab[Y]	309.5 a	2465 bc	3606 cd
Untreated		VIF	70.8 a	258.3 a	1092 c	1566 d
Untreated		metalized	27.8 bc	147.3 b	2858 a-c	3801 b-d
MBr (67/33)	196	VIF	11.1 c	0.0 c	3695 ab	5582 a-c
MBr (67/33)	196	metalized	2.8 c	0.3 c	3732 ab	4604 a-c
MBr (67/33)	392	LDPE	5.6 c	3.5 c	3643 ab	4816 a-c
MBr (67/33)	392	VIF	18.1 bc	0.0 c	4369 ab	5930 a-c
MBr (67/33)	392	metalized	0.0 c	0.0 c	4658 a	5733 a-c
Paladin (79/21)	823	LDPE	1.4 c	30.5 c	4402 ab	6118 ab
Paladin (79/21)	823	VIF	4.2 c	0.0 c	4053 ab	5968 a-c
Paladin (79/21)	823	metalized	5.6 c	0.0	4671 a	6091 ab
Paladin (79/21)	549	VIF	4.2 c	1.5 c	4775 a	6597 a
Paladin (79/21)	549	metalized	4.2 c	1.5 c	4332 ab	5380 a-c

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

Table 2. Effect of fumigant and mulch type on yield, fruit weight, yellow nutsedge counts and root gall rating of 'Athena' cantaloupes. NFREC-Quincy. Spring 2007.

Treatment	Rate kg/ha broadcast	Mulch type [Z]	Yield (kg/ha)	Fruit wt. (kg)	Nutsedge counts (plants/9m)	Root gall rating [Y]
Untreated		LDPE	34.34 b [X]	1.66	479.0 ab	7.3 a
Paladin (100%)	646	LDPE	38.85 ab	1.49	583.3 ab	7.2 a
Paladin (100%)	448	VIF	44.86 ab	1.67	168.5 bc	7.4 a
MBr (98/2)	269	LDPE	48.59 a	1.78	0.0 c	1.3 c
MBr (98/2)	185	VIF	49.74 a	1.75	0.0 c	1.7 c
Telone II	170	LDPE	40.58 ab	1.77	798.0 a	5.0 b
				NS		

[Z] LDPE = low density polyethylene, VIF = Blockade VIF.
[Y] Root gall rating, 0 - 10 with 0 = no damage and 10 = death of plant.
[X] Means separation by Duncan's Multiple Range Test, 5 % level.