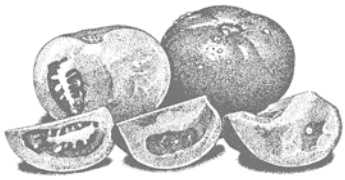
PROCESSING TOMATOES

IN SAN JOAQUIN & CONTRA COSTA COUNTIES

2002 WEED, DISEASE & INSECT CONTROL TRIALS

University of California Cooperative Extension
420 South Wilson Way
Stockton, California 95205-6243



UNIVERSITY of CALIFORNIA

2002 PROCESSING TOMATO WEED, DISEASE AND INSECT MANAGEMENT RESEARCH PROGRESS REPORT

Robert J. Mullen, Vegetable Crops Farm Advisor
and
Benny Fouché, UC Small Farms and Specialty Crops Advisor, San Joaquin County
University of California Cooperative Extension – San Joaquin County

Contributing Authors:
R.M. Davis, Extension Plant Pathologist, UC Davis
Janet Caprile, UC Horticulture Farm Advisor, Contra Costa County
Scott Whiteley, Extension Field Technician, San Joaquin County
Michelle Goff, Extension Post Graduate Researcher, San Joaquin County
Michelle Leinfelder, University Student Intern, San Joaquin County
Nick Prichard, University Student Intern, San Joaquin County
Brenda Villalpando, University Student Intern, San Joaquin County

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The 2002 tomato weed, disease and insect management research program in San Joaquin and Contra Costa Counties was conducted with the cooperation and management assistance of the following growers and managers: Hal and Keith Robertson (Robertson Farms), Mark and John Bacchetti (Marca Bella Farms) and Stan Nunn and "Supy" Lopez (Nunn Farms).

CAUTION

This report is a summary of processing tomato weed, disease and insect control studies conducted in San Joaquin and Contra Costa Counties. **IT SHOULD NOT, IN ANY WAY, BE INTERPRETED AS A RECOMMENDATION OF THE UNIVERSITY OF CALIFORNIA**.

Chemical or common names of herbicides, fungicides, and insecticides are used in this report instead of the more common trade names of these materials. NO endorsement of products mentioned or criticism of similar products is intended.

The rates of herbicides and fungicides in this report are always expressed as active ingredient (a.i.) of the material per treated acre, unless otherwise indicated.

Trade Name	Common or Chemical Name	Manufacturer
Devrinol (2E)	napropamide	United Phosphorus Limited
Shadeout / Matrix (25DF)	rimsulfuron	DuPont Chemical Co.
CBA 362622 (75WG)	trifloxysulfuron	Syngenta Corporation
Authority (75DF)	sulfentrazone	FMC Corporation
Dual Magnum (7.62E)	metolachlor	Syngenta Corporation
Prowl (3.8CS)	pendimethalin	BASF Corporation
Sandea (75WG)	halosulfuron	Gowan Chemical Co.
Sencor (75DF)	metribuzin	Bayer Ag Products
Thiram Granuflo (75WDG)	thiram	UCB Chemicals Corporation
Topsin M (70WP)	theophanate-methyl	Cerex Agri, Inc.
Quadris (2.08SC)	azoxystrobin	Syngenta Corporation
Force	tefluthrin	Syngenta Corporation
AG 600 WBC	diazinon	Syngenta Corporation
Calypso (480SC)	thiocloprid	Bayer Ag Products
Admire (2F)	imidacloprid	Bayer Ag Products
V10 112 (205G)	dinotefuran	Valent Chemical Co.

In 2002, four weed control studies were conducted on processing tomatoes in San Joaquin and Contra Costa Counties, evaluating eight herbicides and/or combination treatments for preemergence and postemergence weed control and crop safety. The first two trials were pre-transplant, preemergence experiments where the six candidate materials, or combinations thereof, were soil incorporated two to three inches deep with the growers' rotary power tiller. In both trials the crop was transplanted into the field 2 to 3 days later with furrow irrigation following 5 to 7 days later. Materials evaluated in both preemergence trials included Dual Magnum (metolachlor), Shadeout (rimsulfuron), Devrinol (napropamide), CGA 362622 (trifloxysulfuron), Prowl (pendimethalin) and Authority (sulfentrazone). In the first of two postemergence trials, Sandea (halosulfuron) plus X-77 at three different rates for control of yellow nutsedge (*Cyperus esculentus*) and crop safety. Also a combination of CGA 362622 plus Shadeout plus X-77 was compared to a combination of Sandea plus Shadeout for control of both yellow nutsedge and late emerging black nightshade (*Solanum nigrum*); Shadeout plus X-77 alone was also evaluated. The trial was conducted at Nunn Farms near Brentwood, California and applications were begun when the tomato crop was 5 to 6 inches tall and the yellow nutsedge was at the 2 to 5 true leaf stage of growth. The second postemergence trial, located at Marca Bella Farms north of Tracy, California, looked at comparisons of Sandea plus X-77, Sencor (metribuzin), Shadeout + X-77 and CGA 362622 + X-77, along with combination sprays of Sandea plus Sencor plus X-77 and Shadeout plus Sandea plus X-77. Weeds present at trial establishment were 3 to 6 true leaf yellow nutsedge, 0.5 to 2 inch tall sandbur (*Cenchrus longispinus*) and 1 to 3 inch rosette redroot pigweed (*Amaranthus retroflexus*); the tomato crop was 5 to 7 inches tall at trial treatment.

One disease management trial, for control of Fusarium Foot Rot (*Fusarium solani*), was established at Robertson Farms south of Tracy, California. Three fungicides, used as transplant soaks, were evaluated. Existing transplants in the trial area were pulled and destroyed. Transplants of the processing tomato variety, H-9994, were soaked in the respective treatments for approximately 20 minutes and then hand transplanted into a field that had a moderate history of the soil borne disease. The trial was rated for disease severity and hand harvested to look at yield effects, if any.

A trial to evaluate five candidate insecticides for the control of garden symphylan/centipede (*Scutigerella immaculata*) in transplanted processing tomato variety, Halley 3155, was established at Robertson Farms south of Tracy, California. Existing transplants in the trial area were pulled and destroyed. Treatments were then applied and soil incorporated prior to putting in the new transplant or applied as soil drenches following transplant. Live plant stand counts and crop vigor ratings were taken and a fresh weight harvest of plants in each treatment were taken 6 weeks after trial establishment.

Detailed descriptions of each trial follow, along with yield data. Additionally, the weed control trials have weed control and crop vigor/crop phytotoxicity ratings. The disease trial has a disease severity rating. Additional work on weed, disease and insect problems in tomatoes is planned for the 2003 season.

PROCESSING TOMATO
WEED MANAGEMENT TRIALS

A Pre-Transplant Incorporated Weed Control Trial in Processing Tomatoes

Robert Mullen, Scott Whiteley, Michelle Leinfelder and Nick Prichard

A pre-transplant incorporated weed control trial in processing tomatoes, evaluating six herbicides and/or combination treatments, was established at Marca Bella Farms (Mark and John Bacchetti) on Fabian Tract near Tracy, California on April 25, 2002. All treatments were applied to the soil surface of the beds using a handheld CO_2 backpack sprayer with 8002 nozzles at 40 psi in a spray volume of 30 gallons per acre water. The soil type at the trial site was a Burns clay loam. There were four replications of each treatment in a randomized complete block design. The treatments were incorporated with the grower's tractor-pulled rotary tiller; incorporation depth was 2 to 3 inches deep. The field was transplanted three days later, with furrow irrigation water following four days after that.

Weed control efficacy and crop vigor ratings were taken on May 23rd, 2002, and again May 31st, 2002. Best control of the moderately heavy population of yellow nutsedge *(Cyperus esculentus*) occurred with the combination of Dual Magnum (metolachlor) plus CGA 362622 (trifloxysulfuron), followed closely by the combination of Dual Magnum plus Shadeout/Matrix (rimsulfuron) and the high rate (2.54 Lbs./Acre a.i.) of Dual Magnum alone. The combination of CGA 362622 plus Dual Magnum and the high rate (0.028 Lbs/Acre a.i.) of CGA 362622 resulted in vigor reduction/growth suppression of the crop for a 4 to 6 week period.

Other treatments in the trial gave good crop safety. The trial was harvested by hand on August 27th and 28th, 2002. Most treatments out yielded the untreated control, except those treatments involving CGA 362622 (alone or in combination).

2002 Processing Tomato Preemergence Weed Control
Marca Bella Farms; Fabian Tract, North of Tracy, California

Treatment	Rate Lb/Acre a.i.	Weed Control [1] Yellow Nutsedge		Crop Vigor [1]		Yield [2] Tons/Acre
		5/23	*5/31*	*5/23*	*5/31*	
Dual Magnum (7.62EC)	1.27	6.6	6.6	9.0	8.9	61.2
Dual Magnum	2.54	8.0	7.6	8.6	8.8	58.2
Shadeout (25DF) + Dual Magnum	0.031 + 1.27	7.9	7.8	8.9	9.0	61.7
Shadeout + Devrinol (50DF)	0.031 + 2.00	7.3	6.1	9.3	9.2	61.8
Shadeout	0.031	6.5	4.9	9.3	9.3	61.6
CGA 362622 (75WG)	0.014	7.0	7.0	8.5	8.6	54.0
CGA 362622	0.028	7.0	6.0	7.7	7.9	46.5
CGA 362622 + Dual Magnum	0.014 + 1.27	8.5	7.9	7.0	7.5	54.1
Prowl (3.8CS)	1.50	6.3	5.1	9.0	9.1	66.0
Prowl + Shadeout	1.50 + 0.031	7.1	5.6	9.0	9.1	63.2
Authority (75DF)	0.25	5.6	4.0	8.6	8.9	59.4
Untreated Control	-----	4.0	2.5	9.1	9.3	59.4

[1] Average of four replications:
Weed Control – 0 = no weed control; 10 = complete weed control LSD @ 5%: 8.1
Crop Vigor – 0 = crop dead; 10 = crop growing vigorously CV = 9.5%
[2] Average of four replications

A Pre-Transplant Incorporated Weed Management Study in Processing Tomatoes

Robert Mullen, Scott Whiteley, Michelle Leinfelder and Nick Prichard

A pre-transplant soil incorporated weed management study in processing tomatoes, evaluating six herbicides and/or combination treatments, was established at Robertson Farms (Hal and Keith Robertson) off Lehman Road, south of Tracy, California on May 1, 2002. All treatments were applied to the soil surface of the beds using a handheld CO_2 backpack sprayer with 8002 nozzles at 40 psi in a spray volume of 30 gallons per acre water. The soil type at the trial site was a Sorrento silty clay and there were four replications of each treatment in a randomized complete block design. The treatments were soil incorporated 2 to 3 inches deep using a tractor-pulled Performer rotary tiller. The field was transplanted five days later with furrow irrigation, using a split bed system, following two days after that.

Weed control and crop vigor ratings were taken on May 23rd, 2002 and again on May 31st, 2002. Due to the split bed furrow irrigation method, some untreated soil contaminated the tomato plant row so weed control ratings were made there and also for the rest of the bed. Best control of hairy nightshade (*Solanum sarrachoides*) in the planted row occurred with the combination treatment of Prowl (pendimethalin) plus Shadeout/Matrix (rimsulfuron), followed closely by the combination of Dual Magnum (metolachlor) plus Shadeout/Matrix and then Shadeout/Matrix alone. On the undisturbed remaining part of the bed, best control of hairy nightshade was obtained by Shadeout/Matrix alone and the combination treatment of Prowl plus Shadeout/Matrix, followed by the combination of Dual Magnum (metolachlor) plus Shadeout/Matrix, Prowl alone and the high rate (2.54 Lbs./Acre a.i.) of Dual Magnum. All treatments exhibited excellent crop safety. The trial was hand harvested on august 15th and 16th, 2002. All treatments provided higher yields, some significantly higher, than the untreated control.

2002 Processing Tomato Preemergence Weed Control
Robertson Farms; southeast of Tracy, California

Treatment	Rate Lb/Acre a.i.	Weed Control [1] Hairy Nightshade Planted Row *5/23*	Planted Row *5/31*	Rest of Tomato Bed *5/23*	Rest of Tomato Bed *5/31*	Crop Vigor [1] *5/23*	Crop Vigor [1] *5/31*	Yield [2] Tons/Acre
Dual Magnum (7.62E)	1.27	6.9	6.9	8.8	7.4	9.5	9.5	47.2
Dual Magnum	2.54	7.4	7.1	8.8	8.0	9.4	9.0	41.0
Shadeout (25DF) + Dual Magnum	0.031 + 1.27	7.8	7.8	9.1	8.3	9.5	9.3	41.5
Shadeout + Devrinol (50DF)	0.031 + 2.00	6.5	6.4	8.4	7.8	9.5	9.5	46.5
Shadeout	0.031	7.0	7.8	8.5	8.6	9.5	9.5	48.2
CGA 362622 (75WG)	0.007	5.1	5.5	7.6	7.1	9.4	9.2	39.2
CGA 362622	0.014	6.5	6.3	8.0	7.6	9.3	8.9	42.7
CGA 362622 + Dual Magnum	0.007 + 1.27	6.5	6.6	7.9	7.6	9.0	9.0	40.3
Prowl (3.8CS)	1.50	6.8	7.1	8.8	8.1	9.5	9.3	48.9
Prowl + Shadeout	1.50 + 0.031	8.0	8.0	9.4	8.6	9.5	9.3	48.0
Authority (75DF)	0.25	7.0	6.5	8.4	7.3	9.5	9.4	44.8
Untreated Control	-----	2.0	1.0	2.5	2.5	9.5	9.2	39.0

[1] Average of four replications: LSD @ 5%: 5.2
Weed Control – 0 = no weed control; 10 = complete weed control CV = 8.3%
Crop Vigor – 0 = crop dead; 10 = crop growing vigorously
[2] Average of four replications

A Postemergence Weed Control Trial in Direct-seeded Processing Tomatoes

Robert Mullen, Janet Caprile, Scott Whiteley, Michelle Leinfelder and Nick Prichard

A postemergence weed control trial in direct-seeded processing tomatoes, evaluating three herbicides and/or combinations treatments, was established on April 20th, 2002 at Nunn Farms (Stan Nunn and "Supey" Lopez) near Brentwood, California. With selected treatments, second applications of the same rate or a lower rate of the same herbicide were made on May 13th, 2002. All treatments were applied using a handheld CO_2 backpack sprayer with 8002 nozzles at 40 psi in a spray volume of 30 gallons per acre water. There were four replications of each treatment in a randomized complete block design. Weeds present at the initial treatment date were 2 to 5 true leaf stage yellow nutsedge (*Cyperus esculentus*) and by the second application additionally one to two true leaf black nightshade *(Solanum nigrum*); the crop growth stage at trial initiation was 5 to 6 inches tall. Weed control and crop phytotoxicity ratings were taken 4/29/02, 5/10/01, 5/23/02 and 5/31/02. Best control/suppression of yellow nutsedge occurred with the two applications of both rates of Sandea (halosulfuron) plus X-77, followed by two applications of CGA 362622 (trifloxysulfuron) at 0.028 plus 0.014 Lbs/Acre a.i. plus X-77. Best control of the later emerging black nightshade occurred with two applications of Shadeout/Matrix (rimsulfuron) plus X-77, followed by the single application combination of Sandea plus Shadeout/Matrix plus X-77. All treatments, except those involving CGA 362622, were safe to the crop. CGA 362622 caused considerable crop injury at all rates tested.

The trial was harvested on July 15th and 16th, 2002 and yields were below average due to the presence of some Phytophthora Root Rot. All treatments, except those involving CGA 362622, out yielded the untreated control. The three rates of CGA 362622 reduced yields more than half below the untreated control and had considerably more green (immature) fruit at harvest.

2002 Processing Tomato Postemergence Weed Control
Nunn Farms - Brentwood, California

Treatment	Rate Lb/Acre a.i.	Spray App's	Weed Control [1] Yellow Nutsedge 4/29	5/10	5/23	5/31	Black Nightshade 4/29	5/10	5/23	5/31	Crop Phyto [1] 4/29	5/10	5/23	5/31	Yield [2] Tons/Acre	% Green Fruit [2] at Harvest
Sandea (75WG) + X-77	0.032 + ¼%	2	8.1	7.8	8.1	8.5	NOT RATED	NOT RATED	5.6	6.0	0.9	0.7	0.5	0.7	28.9	2.4
Sandea + X-77	0.047 + ¼%	2	8.3	8.2	8.5	8.9			6.3	6.8	1.2	0.8	0.5	0.7	31.0	3.0
CGA 362622 + (X-77)	0.014 + 0.0035 + (¼%)	2	8.0	7.1	7.0	7.6			6.1	5.4	4.0	3.0	2.0	1.2	10.9	15.5
CGA 362622 + (X-77)	0.021+ 0.007 + (¼%)	2	8.1	7.6	7.8	7.8			7.3	6.9	5.4	4.2	2.7	1.8	9.4	18.8
CGA 362622 + (X-77)	0.028 + 0.014 + (1/4%)	2	8.4	8.4	8.5	8.5			8.0	8.0	5.8	4.9	3.2	2.4	8.3	24.9
Sandea + Shadeout (25DF) + X-77	0.016 + 0.031 + ¼%	1	8.5	7.5	6.8	6.5			8.8	8.9	1.1	0.9	0.8	0.7	20.7	10.8
CGA 362622 + Shadeout + X-77	0.007 + 0.031 + ¼%	1	8.3	7.5	6.1	6.3			7.6	8.3	3.8	2.9	1.9	1.4	10.9	14.7
Shadeout + X-77	0.031 + ¼%	2	6.8	6.4	5.9	7.2			9.3	9.1	0.8	0.8	0.6	0.5	27.1	4.6
Untreated Control	-----	-----	0.5	0.5	1.0	0.5			1.0	1.0	0.5	0.4	0.5	0.9	19.5	3.1
														LSD @ 5%:	7.6	8.6
														CV =	28.2%	54.1%

[1] Average of four replications:
Weed Control – 0 = no weed control; 10 = complete weed control
Crop Phyto - 0 = no crop damage; 10 = crop dead

[2] Average of four replications

A Postemergence Weed Management Trial in Transplanted Processing Tomatoes

Robert Mullen, Scott Whiteley, Michelle Goff and Nick Prichard

A postemergence weed management study in transplanted processing tomatoes, evaluating four herbicides and/or combination treatments, was established at Marca Bella Farms (Mark and John Bacchetti) on Fabian Tract north of Tracy, California June 5, 2002. All treatments were applied as directed sprays using a handheld CO_2 backpack sprayer with 8002 nozzles at 40 psi in a spray volume of 30 gallons per acre water. There were four replications of each treatment in a randomized complete block design. The field tomato variety was HM-830 and the soil type of the trial site was a Columbia fine sandy loam; the field was furrow irrigated throughout the season. Weeds present at the time of trial establishment included 3 to 6 true leaf yellow nutsedge (*Cyperus esculentus*), 0.5 to 2 inch tall sandbur *(Cenchrus longispinus*) and 1 to 3 inch rosette redroot pigweed (*Amaranthus retroflexus*); the tomato crop was 5 to 7 inches tall.

Weed control and crop phytotoxicity ratings were taken on June 17, 2002. Best overall control of the three major weed species present occurred with the combination treatment of the higher rate (0.032 Lbs/Acre a.i.) of Sandea (halosulfuron) plus Shadeout / Matrix (rimsulfuron) plus X-77. Sandea plus X-77 alone gave good yellow nutsedge control/suppression, while Shadeout / Matrix plus X-77 alone gave excellent control of redroot pigweed and sandbur. All treatments, except the one treatment of CGA 3626222 (trifloxysulfuron) plus X-77, were safe to the crop. CGA 362622 caused considerable leaf burn and crop stunting for about 4 weeks.

The trial was hand harvested on September 6, 2002. Yields were somewhat below average due to some moisture stress in the coarse-textured soil. However, all treatments outyielded the untreated control with the Sandea plus Shadeout / Matrix plus X-77 combinations giving significantly greater yields.

2002 Processing Tomato Postemergence Weed Control
Marca Bella Farms; Fabian Tract North of Tracy, California

Treatment	Rate Lb/Acre a.i.	Weed Control [1] Yellow Nutsedge	Redroot Pigweed	Sandbur	Crop Phyto [1]	Yield [2] Tons/Acre
Sandea (75WG) + X-77	0.032 + ¼%	7.8	8.5	3.3	0.8	27.4
Sandea + X-77	0.047 + ¼%	7.9	7.3	4.3	1.4	24.9
Shadeout (25DF) + X-77	0.031 + ¼%	6.0	9.8	9.3	1.2	27.8
Sencor (75DF)	0.50	3.9	9.8	3.9	1.1	21.1
CGA 362622 (75WG) + X-77	0.014 + ¼%	6.5	9.1	5.5	3.4	23.7
Sandea + Sencor + X-77	0.032 + 0.25 + ¼%	6.8	8.8	3.9	1.6	24.5
Sandea + Shadeout + X-77	0.032 + 0.31 + ¼%	8.3	9.9	8.3	1.3	31.9
Sandea + Shadeout + X-77	0.016 + 0.031 + ¼%	7.1	9.8	7.8	1.1	31.5
Untreated Control	------	1.5	0.5	1.3	2.0	16.2
					LSD @ 5% :	13.7
					C.V. =	36.9%

[1] Average of four replications: 0 = no weed control; 10 = complete weed control
0 = no crop injury; 10 = crop dead

[2] Average of four replications

Notes:

Sandea + X-77 (low rate) – partial control of shepherdspurse, missing small population of purslane and lambsquarter
Sandea + X-77 (highest rate) – missing small populations of black nightshade, purslane, groundsel and smooth crabgrass
Shadeout + X-77 - missing limited population of lambsquarter
Sencor – only partial control of smooth crabgrass; good control of shepherdspurse
CGA 362622 + X-77 – missing limited population of smooth crabgrass and black nightshade
Sandea + Sencor + X-77 – missing limited population of black nightshade; partial burn on puncture vine
Sandea + Shadeout + X-77 – missing limited population of lambsquarter and purslane; partial burn on puncture vine
Sandea (reduced rate) + Shadeout + X-77 – missing limited population of purslane and lambsquarter
Untreated Control – limited populations of purslane, black nightshade, groundsel, lambsquarter, shepherdspurse and puncture vine present

PROCESSING TOMATO DISEASE CONTROL TRIAL

A Fusarium Foot Rot Disease Management Trial In Transplanted Processing Tomatoes

Robert Mullen, Mike Davis, Scott Whiteley, Michelle Leinfelder and Nick Prichard

A Fusarium Foot Rot *(Fusarium solani*) disease management trial in transplanted processing tomatoes, evaluating three fungicides, was established at Robertson Farms (Hal and Keith Robertson) southeast of Tracy, California on May 24, 2002. There were four replications of each treatment in a randomized complete block design. Existing transplants were removed from the field and destroyed. Transplants of the tomato variety, H-9494 were put into bucket solutions, based on chemical manufacturer's recommendations, and allowed to soak for 20 minutes. They were then removed and transplanted into the trial area. About a pint of water was applied to each transplant in each plot to hold them until the next furrow irrigation, which occurred 2 days later. The weather was warm (75º to 93º F) over the short period until irrigation. The soil type at the trial site was a Sorrento silty clay and the field site had a previous history of light to moderate Fusarium Foot Rot infection.

Two weeks after trial establishment all of the plants in the thiram Granuflo (thiram) treatment were dead and apparent victim of chemical phytotoxicity and the warm weather. The plant stand of one replication of Quadris (azoxystrobin) was also lost. A Fusarium Foot Rot disease severity rating was taken on August 8, 2002. Infection was light in the trial with Topsin M (thiophanate-methyl) and Quadris (azoxystrobin) showing some slight benefit over the untreated control. The trial was hand harvested on September 1, 2002. Both the Topsin M and Quadris treatments gave better yields than the untreated control but the Quadris treatment had a higher percentage of green fruit at harvest than the untreated control, indicating there may have been some earlier growth suppression with Quadris. Work on this disease should continue in 2003 as this pathogen seems to be gradually spreading, probably from equipment that is not being cleaned sufficiently before being moved to another field.

2002 Processing Tomato Fusarium Foot Rot Control
Robertson Farms – Tracy, California

Treatment	Rate	Fusarium Foot Rot Disease Severity Rating	Yield (Tons/Acre) Red	Yield (Tons/Acre) Red + Green	% Green @ Harvest
Untreated Control	----	2.3	24.5	35.6	27.8
Thiram Granuflo (75WDG)	5 kg/100*l*	Not taken*	Not taken*	Not taken*	Not taken*
Topsin M (70WP)	116/100 gal	1.6	33.8	46.4	26.3
Quadris (2.08SC)	1,000 ppm	1.8 **	28.7**	45.5**	36.2**

* Crop stand lost in all replications shortly after transplanting due to phytotoxicity of the treatments and very warm temperatures

** Based on only three replications, as one replication was lost shortly after transplanting due to treatment phytotoxicity and very warm temperatures

PROCESSING TOMATO INSECT CONTROL TRIAL

CONTROL OF GARDEN CENTIPEDES, *Scutigerella immaculata,* IN TOMATO FIELDS - 2002

C. Fouché, R. Mullen, C. Rivara, M. Leinfelder, B. Villalpando, & S. Whiteley
University of California Cooperative Extension, 420 Wilson Way,
Stockton, California 95205-6243
209/468-2085
bfouche@ucdavis.edu, rjmullen@ucdavis.edu

Experimental plots were established at Hal and Keith Robertson Farms, Tracy, California, in order to evaluate the effectiveness of five different materials against the garden centipede in a commercial tomato field. The plot area was selected by evidence of garden centipede damage to the growers' original transplants. The treatments were randomized based on the severity of damage in the field, and all original plants were removed. Treatments 1, 2, and 3 were dissolved in water, with 10 oz. (295.7 ml) of solution applied to the soil immediately after transplanting. The solution was applied to the base of the plant and allowed to penetrate the soil profile to a level just below the plug. Treatment 4 was applied in granular form before the transplanting, and then roto-tilled into the soil using a Sears 5-hp garden type tiller. Treatment 5 was mixed in 30 gallons of water per acre, applied in a 6-inch band over the bed and incorporated with the roto-tiller prior to placing the new transplants in the ground. Treatments 4 and 5 also received 6 to 8 ounces of water per transplant after the plants were set in the field. All materials were applied on June 5, 2002. Tomato plants were the variety Halley 3155, spaced 15 inches apart in a 60-inch-wide bed. Plot size totaled .003 acre, one bed wide by 20 plants down the bed. The field was furrow irrigated throughout the trial duration.

Materials in Trial:

Products	Active ingredient	Timing	Formulation	G ai/100m	Lb ai/ac
1. Admire	Imidacloprid	At Transplanting	2F	0.75	0.09
2. Calypso	Thiocloprid	At Transplanting	480SC	1.04	0.12
3. V10112	Dinotefuran	At Transplanting	20SG	2.80	0.33
4. Force	Tefluthrin	At Transplanting	3G	1.29	0.08
5. AG 600 WBC	Diazinon	At Transplanting	AG600	34.40	4.00
6. Untreated		At Transplanting			

Stand counts were taken by visually rating the number of plants alive out of the total of 20 in each plot. Stand vigor was evaluated based on the growth and vigor of the plants outside of the affected area. Plots were harvested on July 19th. During the course of the trial, garden centipedes were observed feeding on the roots of the tomato plants in the untreated control.

Tomato Symphylid Trial – 2002 Tracy, CA					
Treatments and Rates g ai / 100 meters		Number of Surviving Plants (20 plant sample)*		Vigor of Plants	Mean Wt gms/plant
		June 7	July 7	July 7	July 19
1.Admire 2F	0.75	10.75 ab	11 ab	2.25 c	211.95 ab
2.Calypso 480SC	1.04	18.5 b	16.5 b	2.5 bc	278.4 ab
3.V10112 20SG	2.80	12.5 ab	13.8 ab	1.8 c	155.225 a
4.Force 3G	0.08	18.5 b	15 ab	4.5 a	598.05 c
5. Diazinon AG600	34.40	17.0 ab	16.5 b	3.8 ab	368.45 b
6.Untreated Control		9.25 a	10.25 a	1.25 c	196.15 a

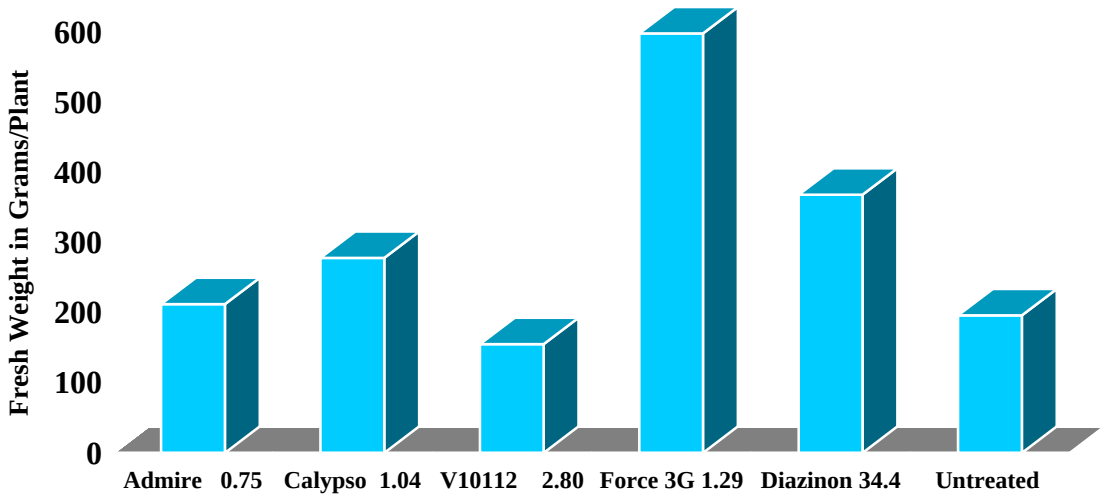
*Two different people evaluated the plants mortality at different times, thus the mortality rates are based on each individual's criteria.

*Means followed by the same letter in a column are not significantly different at 5% level (Fisher's LSD)

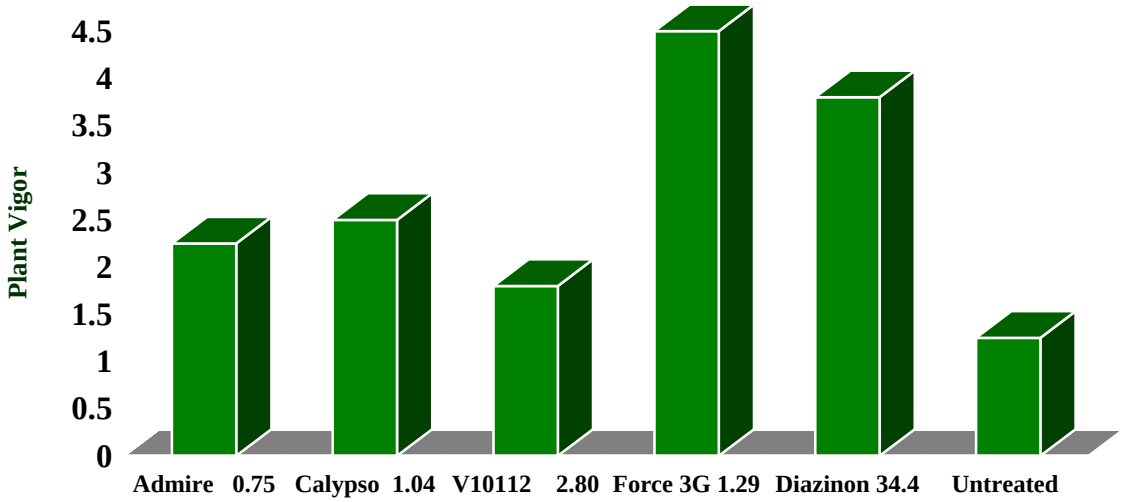
The Calypso treatment provided the best protection of transplants for the first few days but the effect did not continue as the trial progressed. Force 3G provided the best control of garden centipedes 44 days after the treatments were applied.

Future work should evaluate the rates of Force required to control damage by garden centipedes and possible combination treatments of Calypso and Force should be investigated in order to obtain the best method for early season control of damage in transplanted fields.

Tomato Symphylid Trial-Tracy, CA 2002
44 Days After Treatment-20 Plants/Plot
Treatment Rates in Grams Active/100 Meters



Tomato Symphylid Trial-Tracy, CA 2002
Plant Vigor Rating 1=Low 5 =High



This is a report of work in progress only. The chemicals and uses contained in this publication are experimental data and should not be considered as recommendations for use.

Until the products and their uses given in this report appear on a registered pesticide label or other legal, supplementary direction for use, it is illegal to use the chemicals as described.

WARNING ON THE USE OF CHEMICALS

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in their original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Recommendations are based on the best information currently available, and treatments based on them should not leave residues exceeding the tolerance established for any particular chemical. Confine chemicals to the area being treated. **THE GROWER IS LEGALLY RESPONSIBLE** for residues on his crops as well as for problems caused by drift from his property to other properties or crops.

Consult your County Agricultural Commissioner for correct methods of disposing of leftover spray material and empty containers. Never burn pesticide containers.

PHYTOTOXICITY

Certain chemicals may cause plant injury if used at the wrong stage of plant development or when temperatures are too high or when overcast conditions occur. Injury may also result from excessive amounts or the wrong formulation or mixing incompatible materials. Inert ingredients such as wetters, spreaders, emulsifiers, diluents, and solvents, can cause plant injury. Since formulations are often changed by manufacturers, it is possible that plant injury may occur, even though no injury was noted in previous seasons.

No endorsement of named products is intended, nor is criticism implied of similar products which are not mentioned.

University of California Cooperative Extension of San Joaquin County
420 South Wilson Way, Stockton, California 95205-6243 Telephone (209) 468-2085