



# TOMATO INFO

General Field Notes  
Variety Trial Results  
Cover Crop – Triticale  
January 8<sup>th</sup> Meeting

## **GENERAL FIELD NOTES**

Such a relief with a much easier paced, open-ended dry weather planting season in 2007 compared to 2006. The dry conditions are carrying into 2008 with some challenges of water shortage. Nearly 12.1 million tons of statewide production in 2007 for our second highest record pack.

What did I observe locally? Lots of high yield fields together with many low yielding fields as well. While not the sole factor, irrigation management continues to be a major controller in yield outcome.

Tomato powdery mildew was prevalent in many mid to late season harvest scheduled fields. The desiccation of vines was alarming, while results were minor fruit losses to sunburn. In more scorching heat, the outcome may well have been severe.

Nematode activity continues. Reports from other farm advisors in the Central Valley also indicate that nematode populations have begun to overcome the plant resistance that the Mi gene previously conferred. Highest at-risk sites are the sandy soils with a close rotation with tomatoes continually using nematode resistant varieties.

## **Local Variety Trial Results:**

Two local processing tomato variety evaluation trials were conducted: one early and one mid-maturity class in commercial fields. Both trials were transplanted with plants from Westside Transplants and with grower's machinery and crews. Marketable yield was measured using grower equipment with fruit elevated into a special tractor-pulled gondola outfitted with weigh bars. Fruit samples were collected and sent to a local PTAB inspection station to measure fruit color, Brix and pH.

Our early-maturity variety trial was established north of Winters with Joe Rominger of D.A. Rominger and Sons. We transplanted on March 17 into double lines per bed in a class 1, Yolo silty loam soil. Plants grew well during the season. Irrigation was frequent in an every-other, alternating furrow pattern. Rain near harvest caused some blackmold fruit damage. Five of the 9 varieties were in the top-yielding group led by BOS 66509 with 56 tons per acre (Table 1). Mold was highest with H 9280, H 2206 and HMX 5883 with levels of 9, 7 and 6%, respectively. H 2206 had the smallest fruit while several varieties led by HMX 5883 had large fruit. H 2206 was the earliest maturing variety in our test by far.

Despite impressively high overall yield in the trial, double plants per plug averaged almost 10 tons more per acre compared to the single plant configuration with APT 410 and H 9280. With more plants per plug, fruit size was smaller. Fruit color was slightly better and sunburn fruit levels lower. Fruit pH was raised slightly.

Table 1. Early-maturity variety trial, twin row transplants, D.A. Rominger & Sons, Winters, 2007.

Variety	Yield		Brix	PTAB		pH	%	%	% sun	%	lbs./
	tons/A			color	pink		green	burn	mold	50 fruit	
1 BOS 66509	56.1	a	4.4	24.5	4.47	1	0	1	3	6.38	
2 410 double	55.9	a	4.7	25.5	4.41	1	1	0	2	6.68	
3 H 5003	55.8	a	4.9	23.5	4.40	2	2	1	2	5.65	
4 SUN 6366	55.7	a	5.1	26.5	4.43	2	1	0	2	6.76	
5 BOS 1411	55.0	ab	5.1	25.8	4.39	3	3	1	1	7.49	
6 BOS 66508	50.2	bc	4.6	23.3	4.44	1	1	1	1	6.59	
7 9280 double	47.4	cd	4.1	26.0	4.41	0	1	1	4	6.72	
8 APT 410	46.6	cd	4.8	24.3	4.45	0	1	1	1	7.21	
9 HMX 5883	45.8	cd	4.3	27.0	4.49	1	2	2	6	7.84	
10 H 2206	42.6	d	4.7	25.8	4.47	0	1	0	7	4.69	
11 H 9280	37.4	e	4.2	25.0	4.43	0	1	2	9	7.29	
LSD .05	5.0		0.6	1.9	0.039	NS	1.4	NS	4.35	0.67	
% CV	7		8	5	1	128	75	83	89	7	
mean	49.9		4.6	25.2	4.4	1.1	7.0	0.8	10.0	6.7	
Single vs.	42.0	a	4.5	24.6	4.44	0.2	0.6	1.3	4.7	7.2	
2 plants/plug	51.7	b	4.4	25.8	4.41	0.7	1.1	0.6	2.9	6.7	
probability	0.000		NS	0.095	0.048	NS	NS	0.06	NS	0.02	
F value	31.0		0.27	3.0	4.24	0.57	1.0	3.8	1.51	5.6	

Our mid-maturity trial was conducted on a class 1, Yolo silty clay loam soil northwest of Dixon with Steve Meek and John Pon of JH Meek and Sons. The field was transplanted on April 25 with double lines per bed. Seedbed condition was very good. Plants established well and grew vigorously. Yields were very high.

The top yielding varieties were AB 2 and AB 8058 with 65.9 and 64.3 tons/acre, respectively (Table 2). Immature fruit levels were highest with H 9780 at 11 to 15%. Overall, sunburn levels ranged from 2 to 6%. Fruit mold was highest with Nun 567 at 10%. Nun 567 also had 1.3% blossom end rot.

Additionally, double plants per plug were compared to singles with varieties AB 2, H 9780 and pear-shaped H 2601. H 2601 clearly performed better as a double with a 7 plus ton yield gain over the single plant in a plug. AB 2 and H 9780 were not statistically superior at a 95% confidence level when comparing double plants to single plants per plug. Bottom line: results are mixed across several years of tests in several locations across the state. Yield increases have occurred with double-seeded plugs over singles, but determining the likely circumstances remains unclear.

Table 2. Mid-maturity variety trial, twin-row transplants, J.H. Meek & Sons, Dixon, 2007.

Replicated Variety	Yield		Color	PTAB		%		%		BER	lbs per 50 fruit
	tons/A			<sup>o</sup> Brix	pH	Pink	Green	Sun	Mold		
1 AB 2 double	65.9	a	24.8	5.0	4.36	2	2	3	1	0.0	7.68
2 AB 8058	64.3	ab	23.8	4.3	4.52	1	1	3	3	0.0	7.64
3 AB 2	64.0	ab	24.0	5.0	4.38	3	2	2	2	0.0	7.79
4 SUN 6368	61.2	bc	26.0	4.6	4.46	4	2	2	1	0.0	7.35
5 H 9780 double	60.6	c	25.8	4.6	4.34	9	6	3	1	0.2	7.23
6 H 9780	60.5	c	25.0	4.8	4.31	6	5	2	1	0.1	7.44
7 H 2601 double	59.9	c	25.0	4.7	4.45	3	3	4	0	0.0	6.89
8 H 8004	59.9	c	24.3	5.0	4.44	2	1	6	1	0.2	6.89
9 H 2005	59.3	c	24.5	4.8	4.51	5	2	5	2	0.0	6.83
10 H 2601	53.8	d	24.8	4.7	4.55	3	1	4	1	0.8	6.99
11 Red Spring	52.6	d	24.5	4.6	4.55	2	2	5	1	0.0	8.08
12 Nun 567	51.5	de	24.8	4.1	4.57	2	1	6	10	1.3	7.88
13 H 2506	49.1	ef	22.5	4.4	4.51	1	0	6	2	0.3	6.36
14 HMX 5893	47.2	f	25.5	4.4	4.53	3	1	6	2	0.0	7.25
LSD (5%)	3.2		1.3	0.3	0.15	2.9	1.7	2.9	3.0	0.6	0.7
% C.V.	4		4	4	2	63	56	52	101	215	6

Table 3. Non-replicated, mid-maturity variety trial, J.H. Meek & Sons, Dixon, 2007.

Non Rep Variety	Yield		Color	PTAB		%		%		BER	lbs per 50 fruit
	tons/A			<sup>o</sup> Brix	pH	pink	green	burn	mold		
1 BOS 67374	64.8	26	5.0	4.29	3	3	1	1	0	7.00	
2 U 877	57.9	24	4.4	4.53	2	2	13	0	0	5.80	
3 NDM 5578	55.7	24	4.4	4.52	2	1	7	1	0	7.50	
4 UG 4305	54.7	24	4.6	4.58	3	1	4	2	0	7.35	
5 U 889	54.2	23	4.1	4.57	1	2	7	9	0	6.45	
6 PX 1723	53.5	26	4.5	4.50	7	1	3	2	2	8.75	
7 HT 1075	53.4	23	5.2	4.52	3	2	2	3	1	6.05	
8 NDM 4464	51.3	24	4.0	4.64	0	0	25	1	0	6.20	
9 HM 5894	47.9	26	4.2	4.64	0	0	7	3	0	7.80	
10 HT 1058	46.6	26	4.2	4.55	0	2	23	7	0	5.60	
11 UG 36003	41.6	24	4.1	4.56	0	0	17	10	0	7.00	
Average	52.9	24.5	4.4	4.5	1.9	1.2	9.8	3.6	0.2	6.86	

Non-replicated data should be viewed with less confidence (Table 3). BOS 67374 yielded 64.8 tons per acre and with a low level of culls. Sunburn damage level was above 20% on NDM 4464 and HT 1058.

## Grass Cover Crop May Increase Yield

In cooperation with Extension Specialist Tim Hartz as the lead, we continued our evaluation of triticale as a grass cover crop as a fall planting ahead of tomatoes. Field trials for 2007 were located in two commercial fields in the Woodland area. Grass was seeded in the late fall and germinated with rain. Broadcast seeding rate was about 80 lbs per acre through a grain drill, planting only the tops of preformed beds. One site included a full broadcast seeding into the furrows as well. Glyphosate was applied to terminate cover crop growth to facilitate seedbed preparation in the spring ahead of transplanting tomatoes.

Spraying with herbicide to limit triticale growth to 8 inches or so would reduce tillage problems compared to allowing growth to exceed 12 inches tall. Modification of seedbed tillage equipment is needed with the cover crops. Rolling, cutting blades or disks facilitate tilling the vegetative cover. The short, closely spaced coiled shanks of Alloway-type cultivators drag debris and plug, causing 'mucho problemas'.

In one of the two trials in 2007, a 25% yield response occurred with a 6-ton yield gain above 25 tons per acre. In the other test, the yields were similarly low, but without a response from the triticale planting.

In summary, over the last two years, in 2 of the 5 trials, we measured a tomato yield response from 20 to 25% with the fall-planted triticale as a winter cover crop. While we had no rainfall runoff to measure in 2007, the previous winter, rainfall runoff reduction was substantial. It is likely that many different cover crop plant species from legumes to mustards to grasses would provide similar rainfall runoff reduction benefits.

While we did not repeat testing our success with wheat, we suspect that volunteer wheat in the population density we observe locally, will also provide a similar benefit when allowed to grow to 8 or 9 inches before killing with herbicides. Our limited experience suggests that a 30-day window is minimally needed ahead of any seedbed tillage to more easily manage the plant debris.

The research was supported with CTRI funding. Grower cooperators were Kirk Aoki, Blake Harlan and Jim Borchard, Jr. RSI as well as Ag Seed Unlimited donated the Trios Biocrop triticale seed. Testing will continue, but peripherally in a tillage reduction project at UC Davis.

Table 4. Effect of cover crops on tomato fruit yield and quality, Woodland-UCD, 2006 & 2007.

Trial	tomato crop Year	Cover crop treatment	Total Fruit Biomass (tons/acre)	Marketable yield (tons/acre)	Soluble solids (□Brix)
UCD	2006	fallow		53	5.3
		early Trios		51	5.4
		early wheat		54	5.5
		late Trios		53	5.5
		late wheat		48	5.7
			ns	ns	
Grower 1	2006	fallow		57	5.1
		early Trios		58	5
		early wheat		56	4.8
		late Trios		58	4.9
			ns	ns	
Grower 2	2006	fallow		39 b	5.7 a
		early Trios		47 a	5.1 b
		early wheat		45 a	5.4 ab
		late Trios		47 a	5.2 ab
Grower 2	2007	fallow	23.4	20.5	6.4
		early Trios	24.8	21.5	6.6
			ns	ns	ns
Grower 3	2007	fallow	25.0 b	20.1	5.0
		early Trios	31.4 a	26.3	4.8
		early broadcast Trios	31.1 a	24.9	4.7
			ns	ns	ns

# SOUTH SACRAMENTO VALLEY PROCESSING TOMATO PRODUCTION MEETING

University of California Cooperative Extension Farm Advisors

Colusa/Sutter/Yuba and Yolo/Solano/Sacramento Counties

## Woodland Community & Senior Center

2001 East Street, Woodland 95776

(From Highway 113, exit on CR 25A, head west to East Street. Right turn on East St. for ~1 mile)

Meeting rooms are located on south side of main building

**8:00 am to noon, Tuesday, January 8, 2008**

---

---

7:30-	Doors will open — Coffee and refreshments will be ready  <i>Moderator:</i> Mike Murray, County Director/ Farm Advisor, Colusa/Sutter/Yuba
8:20-8:40	<i>Multiple Plants per Transplant Plug:</i> Gene Miyao, Farm Advisor, Yolo/Solano/Sacramento counties
8:40-9:00	<i>Weed Control Update Focusing on Organics:</i> Tom Lanini, Weed Management Specialist, UCD
9:00-9:20	<i>Nematode Control Strategies Update:</i> Becky Westerdahl, Nematologist, UC Davis.
9:20-9:40	<i>Pesticide Regulation Update for Processing Tomatoes:</i> Dennis Chambers, Deputy Ag Commissioner, Yolo County.
9:40-10:00	————— Short Break —————
10:00-10:30	<i>1) Fertigation &amp; 2) Evaluation of Triticale Cover Crop:</i> Tim Hartz, Veg Crop Specialist, UCD
10:30- 11:00	<i>Spotted Wilt and Tomato Yellow Leaf Curl Virus Update:</i> Bob Gilbertson, Plant Pathologist, UC Davis.
11:00- 11:20	<i>Powdery Mildew Control Update:</i> Brenna Aegerter, Farm Advisor, San Joaquin County
11:20- 11:40	<i>Fusarium and Verticillium Wilt Control Strategies:</i> Mike Davis, Plant Pathologist, UC Davis.
11:40- noon	<i>Processing Tomato Promotion with Tomato Wellness Council:</i> Ross Siragusa, President/CEO, California Tomato Growers Association

---

---

### *Hall Rental and Refreshments Courtesy of:*

Dow AgroSciences (Jill LeVake-Scott)  
Syngenta (Dave Vitolo)  
Bayer (Bob Austin)

BASF (Jim Gaggero)  
DuPont (Tim Butler)  
Valent USA (JR Gallagher)

Meeting is open to any interested party. Meeting facility is handicap accessible. 

**PCA Credits: 2.25 hours plus 1/3 hr laws requested**

**Upcoming Tomato Meetings:**

Jan 8, 2008 (Tues) — S. Sacramento Valley Tomato Production Meeting, Woodland Community & Senior Center, 2001 East Street, Woodland. **Note:** location change

Jan 31 2008 (Thurs) — Upper San Joaquin Valley Tomato Production Meeting, Modesto in conjunction with CA Tomato Growers Association annual meeting.

February 5-6, 2008 (Tues-Wed) California League of Food Processors Expo & Showcase, Sacramento Convention Center.

Best wishes for a Happy Holiday Season,

Gene Miyao  
Farm Advisor, Yolo, Solano & Sacramento counties

---

The University of California prohibits discrimination against or harassment of any person employed by or seeking employment with the University on the basis of race, color, national origin, religion, sex, physical or mental disability, medical condition (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or status as a covered veteran (covered veterans are special disabled veterans, recently separated veterans, Vietnam era veterans, or any other veterans who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized). University policy is intended to be consistent with the provisions of applicable State and Federal laws. Inquires regarding the University's equal employment opportunity policies may be directed to the Affirmative Action/Staff Personnel Services Director, University of California, Agriculture and Natural Resources, 300 Lakeside Drive, 6<sup>th</sup> Floor, Oakland, CA 94612-3550, (510) 987-0096.

UNIVERSITY OF CALIFORNIA  
COOPERATIVE EXTENSION  
70 COTTONWOOD STREET  
WOODLAND, CALIFORNIA 95695

TOMATO INFO NEWSLETTER  
17 December 2007