Assessment of *Tomato spotted wilt virus* **(TSWV) symptom incidence in processing tomato varieties in 2007 to 2012.**

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INTRODUCTION: *Tomato spotted wilt virus* is common in many processing tomato production areas in California and economic loss due to this virus has been reported. Variety is a factor that can be considered when evaluating the risk of loss due to TSWV. Genetic resistance (SW5) is in commercially available processing and fresh market tomato varieties, but among varieties lacking this gene, there are apparent differences in susceptibility to the disease. Differences in incidence of plants expressing symptoms have been recorded in 8 variety trials with 10 to 16 entries each grown in Fresno County from 2007 to 2012. The resistant varieties tested consistently had no or very low TSWV incidence, while some varieties consistently had the highest incidence. This information is intended for use as one of several factors in determining relative risk of experiencing losses due to TSWV

METHODS: *Tomato spotted wilt virus* (TSWV)-symptom incidence among processing tomato varieties was compared in studies conducted at University of California West Side Research and Extension Center (WSREC) in Five Points from 2007 to 2012 and in a commercial field in 2012. Entries were selected by seed companies and processors. The variety comparisons presented were one of 6 locations of the UCCE Statewide Processing Tomato Variety Evaluation trials. Details on yield and quality of these entries can be accessed at http://cemerced.ucdavis.edu/files/60020.pdf. The variety comparison project is funded by California Tomato Research Institute (CTRI).

At WSREC, all trials were on a Panoche Clay Loam and were sprinkled for 3 weeks after planting and drip irrigated for the remainder of the season except in 2007 when furrow irrigation was used after planting. Also, in 2012, the earlier trial was planted in a commercial field north of UC WSREC. The experimental design for all trials was a four replication randomized complete block. Plot size was one bed x 50-100ft row, single plant row per bed except for trials established only for disease comparisons where plots were 20-50 ft in length. Additional trial details are as follows:

Trial Year	Plant date	Planting method	TSWV rated	Harvest date
2007	8 Mar	direct seed	3 Aug	7 Aug
2008 #1	16 Apr	transplant	18 Aug	21 Aug
2008 #2	13 May	transplant	16 Sep	18 Sep
2008 #3	13 May	direct seed	23 Sep	24 Sep
2009	22 May	transplant	21 Sep	22 Sep
2010 #1	16 Apr	transplant	3 Jun	27 Aug
2010 #2	20 May	transplant	3 Jul	16 Sep
2010 #3	18 Apr	transplant	9 Aug	--------
2011 #1	8 Mar	direct seed	4 Aug	5 Aug
2011 #2	14 Apr	transplant	22 Aug	23 Aug
2011 #3	17 May	transplant	23 Aug	--------
2012 #1	5 Apr	transplant	15 Jun	7 Aug
2012 #2	3 May	transplant	19 Aug	--------

The number of plants expressing TSWV-symptoms was recorded. Plant canopies were moved and carefully inspected. Shoots which bore symptomatic fruit were traced to a plant to help ensure that the count was accurate. Representative samples were tested with TSWV immunostrips (AgDia). Percentages of plants expressing symptoms were calculated. Analysis of Variance was performed and Least Significant Difference was used for separation (data not shown).

RESULTS and DISCUSSION: Percentage TSWV-symptomatic plants differed statistically among entries lacking the resistance gene (SW5) in 12/13 variety trials. Entries with genetic resistance consistently had no or very low TSWV symptom incidence. Based on incidence ranking among varieties within a minimum of 3 trials, variety response to TSWV was separated into four categories. Variety placement into categories and processed use of the variety is as follows:

Genetic resistance (SW5)		**Low**		**Variable or Medium**		**High**	
AB 8058	paste	BQ 163	paste, peel	H 2005	multi use	H 8004	multi use
H 5608	paste	H 2206	multi use	SUN 6366	multi use	BOS 602	multi use
N 6394	multi use	UG19406	multi use	H 1015	early multi	H 8504	paste
H 5508	paste	SUN 6368	peel, solids	NDM 5578	multi use	HM 6898	multi use
H 5608	multi use	H 4007	multi use	CXD 282	multi use	H 2601	pear
N 6385	peel, solids	K 2769	----------	AB 2	multi use	AB 3	multi use
UG 15908	peel	H 3044	multi use	H 9780	multi use	NUN 672	viscosity
		N 6397	multi use	K 2770	----------	APT410	multiuse
		UG 15308	peel	CXD 255	multi use		
		BQ 205	multi use	HMX 7885	pear		
		UG 4305	multi use	PX 1723	dice, peel		

Variety response to TSWV is one factor for considering when evaluating TSWV risk. Other factors to consider include planting date, surrounding crops, proximity to weedy fallow fields and site history.