

# University of California - FUSARIUM RACE 4 FIELD SCREENING TRIALS - 2016

2/19/2017 update

## COMBINED (TULARE COUNTY and KERN COUNTY) Test Sites - Fusarium Race 4 DISEASE SCREENING DATA SUMMARY

Screening Trials included:

- (1) COMMERCIAL ENTRIES FROM UNIVERSITY OF CALIFORNIA COTTON VARIETY TRIALS; (2) SEED COMPANY NUMBERED EXPERIMENTAL CULTIVAR ENTRIES; and  
(3) PUBLIC AND PRIVATE BREEDER ENTRIES FROM THE RBTN (Regional Breeder Testing Network) TRIALS

**EVALUATIONS / SCREENING TRIALS DONE IN COTTON FIELDS NATURALLY-INFESTED WITH RACE4-Fusarium oxysporum**

Evaluations done May-August 2016

Additional race 4 FOV inoculum (approximately 2 g/plot) added at planting with planted cotton cultivars (FOV-4 grown on rye seed)

\* most ratings done in window of time of approximately 8 to 9.5 weeks after average emergence date

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Dan Munk (UCCE Fresno Co); Brian Marsh (UCCE Kern Co)

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Grower Cooperators who generously provided farm sites for FOV screening, seed companies and breeders

**The Tulare County site is a naturally infested field site** where presence of the race 4 Fusarium pathogen had been confirmed in prior pathology studies. Averages and standard deviations of data are shown.

This site had a moderate severity infestation of Race 4 Fusarium (Hutmacher assessment), and was a new test site in 2016 (next to the 2015 site) and observed symptoms were not as severe as in prior

years at the same farm. All except the most Fusarium race 4 susceptible cultivars (some of the check varieties in table) had very high survival rates (>80%) at this site/year. For screening purposes

for race 4 Fusarium resistance, at this site and year we consider Vascular Root Staining numbers of 0.5-0.6 or lower as having some potential resistance, and should be included in future field tests.

**The Kern County site is a naturally infested field site** where presence of the race 4 Fusarium pathogen had been confirmed in prior pathology studies. Averages and standard deviations of data are shown.

This site had a light to moderate infestation of Race 4 Fusarium (Hutmacher assessment), and was a 2nd year test site for 2016, with observed symptoms that were mild to moderate except in the more

susceptible varieties. All except the most Fusarium race 4 susceptible cultivars (some of the check varieties in table) had very high survival rates (>80%) at this site/year. For screening purposes

for race 4 Fusarium resistance, at this site and year we consider Vascular Root Staining numbers of 0.4-0.45 or lower as having some potential resistance, and should be included in future field tests.

**Foliar Damage/Disease Severity Index scale:** 0 = no symptoms; 1 = epinasty and slight dwarfing; 2 = 1 to 30% of leaves chlorotic; 3 = 31 to 80% of leaves chlorotic and severe stunting;

4 = 81 to 100% of leaves chlorotic; and 5 = plant death.

**Root Vascular Staining Index scale:** 0 = no vascular root staining evident, 1 = light vascular root staining evident as spotty areas, 2 = more continuous than 1,

but light colored staining covering an area between one quarter and one half of the stem cross-section, 3 = moderate brown/black staining evident in a band encircling most of the stem cross section,

4 = brown/black staining evident across most vascular tissue in stem cross section, and 5 = plant severely damaged or plant death with staining evident throughout a cross-section of root tissue (Ulloa et al. 2006, 2009a).

Cultivar Name or Experimental Number	Entry # For Test	TEST SITE	Type of Cotton (p=pima; u=upland; h=hybrid) RBTN = entry in Regional Breeder Testing Network	Whole Plot Foliar Damage Rating (index is 0 to 5 damage severity rating scale) (0= no damage; 5=most severe)	Individual Sampled Plant Foliar Rating (index is 0 to 5 damage severity rating scale) (0= no damage; 5=most severe)	Sampled Plant Root Vascular Stain (index is 0 to 5 damage severity rating scale) (0= no damage; 5=most severe)	Plant height 8 -9 weeks post emergence (inches)	# of Main Stem Nodes 8-9 weeks post emergence	Survival Percent (8-9 week rating divided divided by initial) (as %)	
Phy-725RF	601	Tulare County	u	mean	1.33	0.00	1.33	21.70	13.50	85.70
				std dev	0.58	0.00	1.18	3.50	2.99	
		Kern County		mean	2.00	0.40	1.40	17.60	13.00	84.00
				std dev	0.00	0.89	0.89	2.30	1.00	
Phy764 WRF	602	Tulare County	u	mean	1.00	0.13	1.00	19.90	12.60	90.90
				std dev	1.00	0.52	1.07	4.68	2.67	
		Kern County		mean	1.00	0.00	0.89	20.20	11.80	91.70
				std dev	0.00	0.00	0.55	2.59	1.30	

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
Daytona RF	603	Tulare County	u	mean	1.67	0.53	1.47	18.53	12.47	96.30	
				std dev	0.58	0.92	1.06	3.60	2.50		
		Kern County		mean	2.00	0.40	1.20	21.00	11.40	85.70	
				std dev	0.71	0.89	0.84	2.35	1.14		
FM 1830 GLT	604	Tulare County	u	mean	0.67	0.00	1.40	20.13	12.60	97.70	
				std dev	0.58	0.00	0.74	1.46	1.30		
		Kern County		mean	1.00	0.00	0.20	16.60	11.60	90.50	
				std dev	0.00	0.00	0.45	1.95	1.82		
FM 1900 GLT	605	Tulare County	u	mean	0.67	0.07	1.13	19.80	13.13	94.80	
				std dev	0.58	0.26	0.99	3.30	1.13		
		Kern County		mean	1.00	0.00	0.00	19.40	12.80	100.00	
				std dev	0.00	0.00	0.00	2.70	0.84		
FM 1911 GLT	606	Tulare County	u	mean	0.67	0.13	0.47	14.00	11.90	92.00	
				std dev	0.58	0.35	0.64	2.62	1.37		
		Kern County		mean	1.00	0.00	0.60	18.40	11.00	93.50	
				std dev	0.00	0.00	0.55	2.30	2.34		
FM 2007 GLT	607	Tulare County	u	mean	1.00	0.00	0.10	18.60	12.67	95.70	
				std dev	0.00	0.00	0.32	2.56	1.76		
		Kern County		mean	1.00	0.00	0.40	19.60	12.00	90.70	
				std dev	0.00	0.00	0.55	1.34	1.22		
FM 2334 GLT	608	Tulare County	u	mean	0.50	0.00	0.13	16.30	10.70	90.90	
				std dev	0.71	0.00	0.35	3.37	1.64		
		Kern County		mean	1.00	0.00	0.00	20.80	11.80	79.50	
				std dev	0.00	0.00	0.00	3.35	1.48		
DP 1614 B2XF	609	Tulare County	u	mean	1.00	0.00	0.33	15.07	11.40	90.70	
				std dev	0.00	0.00	0.72	3.22	1.68		
		Kern County		mean	1.00	0.00	0.00	15.20	10.00	84.40	
				std dev	0.00	0.00	0.00	4.09	1.73		
DP 1555 B2RF	610	Tulare County	u	mean	0.67	0.00	0.93	19.50	12.40	85.50	
				std dev	0.58	0.00	0.88	3.21	1.26		
		Kern County		mean	1.00	0.00	1.00	17.80	10.80	76.50	
				std dev	0.00	0.00	1.00	3.27	1.79		
DP 1646 B2XF	611	Tulare County	u	mean	1.33	0.20	0.47	20.60	12.40	88.70	
				std dev	0.58	0.56	0.74	3.96	1.40		
		Kern County		mean	0.00	0.00	0.60	24.40	13.00	96.10	
				std dev	0.00	0.00	0.55	2.61	1.71		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
DP 1639 B2XF	612	Tulare County	u	mean	0.67	0.07	0.14	16.80	10.60	99.40	
				std dev	0.58	0.27	0.53	3.70	2.30		
	Kern County	mean	2.00	0.63	1.20	17.00	10.40	97.10			
		std dev	0.00	0.89	0.84	2.65	1.34				
BX 1739 GLT	613	Tulare County	u	mean	0.67	0.07	0.73	21.27	13.47	93.00	
				std dev	0.58	0.26	0.80	1.39	1.60		
	Kern County	mean	1.00	0.00	0.80	21.40	13.20	100.00			
		std dev	0.00	0.00	0.45	2.07	1.30				
BX 1733 GLT	614	Tulare County	u	mean	0.67	0.40	0.80	19.40	10.60	99.50	
				std dev	1.15	0.83	1.01	3.21	1.52		
	Kern County	mean	2.00	0.40	0.60	14.20	12.40	90.20			
		std dev	0.00	0.89	0.89	0.84	3.78				
BX 1737 GLT	615	Tulare County	u	mean	1.67	0.60	1.07	21.80	14.40	100.00	
				std dev	0.58	0.83	1.16	1.64	2.07		
	Kern County	mean	2.00	1.40	1.60	16.80	11.20	95.10			
		std dev	0.00	0.89	0.55	1.48	1.10				
BX 1738 GLT	616	Tulare County	u	mean	0.00	0.07	0.60	19.10	11.40	92.40	
				std dev	0.00	0.26	0.63	3.63	1.65		
	Kern County	mean	1.00	0.00	0.60	25.20	12.80	90.90			
		std dev	0.00	0.00	0.55	0.84	0.84				
BX 1773 GLTP	617	Tulare County	u	mean	0.33	0.00	0.60	17.70	12.40	97.90	
				std dev	0.58	0.00	0.91	1.89	0.70		
	Kern County	mean	1.00	0.00	0.40	19.60	12.20	93.30			
		std dev	0.00	0.00	0.55	2.70	0.45				
BX 1775 GLTP	618	Tulare County	u	mean	0.67	0.20	0.80	16.50	13.60	86.90	
				std dev	1.15	0.56	1.01	3.54	1.78		
	Kern County	mean	2.00	0.40	0.40	13.40	11.40	100.00			
		std dev	0.00	0.86	0.89	1.14	1.14				
BX 1736 GLT	619	Tulare County	u	mean	0.67	0.27	0.87	14.70	11.20	83.40	
				std dev	0.58	0.59	0.99	2.58	1.48		
	Kern County	mean	2.00	0.40	0.40	18.00	11.40	69.80			
		std dev	0.00	0.89	0.89	2.12	0.55				
BX 1776 GLTP	620	Tulare County	u	mean	0.67	0.13	0.67	16.60	13.00	94.00	
				std dev	0.58	0.35	0.98	1.52	0.71		
	Kern County	mean	2.00	0.60	1.20	21.20	12.80	86.20			
		std dev	0.00	0.89	0.84	3.83	1.92				

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
MON 15R513 B2XF	621	Tulare County	u	mean	0.33	0.07	0.93	16.90	10.40	99.40	
				std dev	0.58	0.26	0.88	2.56	1.78		
		Kern County		mean	1.00	0.00	0.20	23.00	11.40	87.50	
				std dev	0.00	0.00	0.45	2.83	0.89		
MON 15R535 B2XF	622	Tulare County	u	mean	0.67	0.07	0.47	13.60	10.00	96.10	
				std dev	0.58	0.26	0.64	1.14	0.71		
		Kern County		mean	1.42	0.80	1.00	16.80	11.20	100.00	
				std dev	0.46	1.10	1.00	1.64	0.84		
MON 15R556 B2XF	623	Tulare County	u	mean	1.00	0.07	0.53	18.60	12.20	95.70	
				std dev	0.00	0.26	0.83	1.14	1.30		
		Kern County		mean	1.00	0.20	0.20	12.40	9.20	90.00	
				std dev	0.00	0.45	0.45	2.88	2.59		
MON 16R229 B2XF	624	Tulare County	u	mean	0.67	0.13	0.40	17.20	13.00	82.40	
				std dev	0.58	0.35	0.74	2.40	1.89		
		Kern County		mean	1.00	0.00	0.40	16.00	10.80	86.70	
				std dev	0.00	0.00	0.55	0.71	0.84		
MON 16R247 NRB	625	Tulare County	u	mean	1.00	0.07	0.20	19.73	12.33	95.30	
				std dev	0.00	0.26	0.41	3.53	1.76		
		Kern County		mean	1.00	0.00	0.00	21.00	11.40	100.00	
				std dev	0.00	0.00	0.00	2.55	1.52		
MON 16R251 NRB	626	Tulare County	u	mean	1.00	0.13	0.87	19.00	11.00	95.10	
				std dev	0.00	0.35	1.13	3.33	0.67		
		Kern County		mean	2.00	0.60	0.80	16.40	10.00	97.40	
				std dev	0.00	0.89	1.10	3.65	1.58		
DG 3445 B2XF	627	Tulare County	u	mean	0.67	0.07	0.73	18.20	12.30	92.80	
				std dev	0.58	0.26	1.03	1.23	1.64		
		Kern County		mean	1.00	0.00	0.20	18.40	11.40	72.20	
				std dev	0.00	0.00	0.45	1.14	1.14		
DG 3526 B2XF	628	Tulare County	u	mean	1.00	0.07	1.13	17.73	11.47	93.20	
				std dev	0.00	0.26	1.06	2.76	2.20		
		Kern County		mean	1.00	0.00	0.40	12.00	8.60	94.30	
				std dev	0.00	0.00	0.55	2.65	1.14		
CPS CT15574 B2RF	629	Tulare County	u	mean	1.00	0.13	0.73	18.30	13.40	96.20	
				std dev	1.00	0.52	0.96	1.95	1.58		
		Kern County		mean	1.00	0.00	0.20	14.80	11.80	83.30	
				std dev	0.00	0.00	0.45	1.30	2.17		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
BX 1774 GLTP	630	Tulare County	u	mean	1.00	0.20	1.33	18.10	13.60	87.20	
				std dev	1.00	0.56	0.90	3.14	1.43		
	Kern County	mean	0.60	0.00	0.20	19.20	12.80	100.00			
		std dev	0.58	0.00	0.45	2.49	1.10				
FM 2322 GL	631	Tulare County	u	mean	0.50	0.07	0.80	21.40	11.60	92.00	
				std dev	0.71	0.26	0.77	1.52	2.07		
	Kern County	mean	1.00	0.00	0.40	23.00	12.20	87.20			
		std dev	0.00	0.00	0.55	2.35	0.45				
ST 4946 GLB2	632	Tulare County	u	mean	0.33	0.20	1.20	21.20	13.00	88.00	
				std dev	0.58	0.41	1.08	1.48	1.58		
	Kern County	mean	0.71	0.20	0.40	20.80	12.40	97.70			
		std dev	0.55	0.45	0.55	1.79	1.34				
ST 4848 GLT	633	Tulare County	u	mean	1.33	0.14	0.60	20.07	11.47	97.30	
				std dev	0.58	0.53	0.99	4.11	1.68		
	Kern County	mean	2.00	0.70	1.45	16.00	10.60	89.50			
		std dev	0.45	0.55	0.80	2.12	0.89				
Phy805 RF	634	Tulare County	p	mean	1.33	0.33	1.53	16.20	14.00	82.70	
				std dev	0.58	0.62	0.92	1.64	1.87		
	Kern County	mean	2.00	0.40	1.60	12.80	12.20	96.30			
		std dev	0.00	0.89	0.55	1.30	1.92				
PX 8188 RF	635	Tulare County	p	mean	0.33	0.13	0.47	16.80	12.33	97.00	
				std dev	0.58	0.35	0.64	2.91	1.63		
	Kern County	mean	1.00	0.00	0.20	16.60	11.20	86.80			
		std dev	0.00	0.00	0.45	2.07	0.84				
Phy 841 RF	636	Tulare County	p	mean	1.00	0.10	1.10	16.80	11.20	97.40	
				std dev	0.00	0.32	0.88	3.05	1.99		
	Kern County	mean	1.00	0.20	0.20	16.20	11.20	86.70			
		std dev	0.00	0.45	0.45	2.77	1.64				
Phy 881 RF	637	Tulare County	p	mean	1.33	0.10	0.90	16.20	11.50	90.90	
				std dev	0.58	0.32	0.88	1.14	0.97		
	Kern County	mean	1.00	0.00	0.45	17.60	11.80	92.20			
		std dev	0.00	0.00	0.27	1.52	1.64				
DP 348 RF	638	Tulare County	p	mean	0.00	0.00	0.40	17.67	12.93	96.70	
				std dev	0.00	0.00	0.74	2.19	2.05		
	Kern County	mean	1.00	0.00	0.40	15.40	11.20	95.70			
		std dev	0.45	0.00	0.55	2.70	2.39				

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
DP 358 RF	639	Tulare County	p	mean	0.00	0.00	0.30	17.60	12.07	96.30	
				std dev	0.00	0.00	0.48	2.64	1.75		
		Kern County		mean	1.00	0.00	0.40	15.20	12.20	93.80	
				std dev	0.00	0.00	0.55	2.68	1.64		
DP/OA - Exp 38	640	Tulare County	p	mean	0.50	0.10	0.10	13.90	11.10	97.30	
				std dev	0.71	0.32	0.32	1.91	1.91		
		Kern County		mean	1.00	0.00	0.60	17.60	11.80	97.20	
				std dev	0.00	0.00	0.72	1.95	1.64		
DP/OA - Exp 48	641	Tulare County	p	mean	0.00	0.13	0.13	19.20	12.20	95.30	
				std dev	0.00	0.52	0.35	1.40	2.62		
		Kern County		mean	0.00	0.00	0.60	17.20	12.00	94.20	
				std dev	0.00	0.00	0.55	2.39	2.92		
HA 1432	642	Tulare County	h	mean	0.67	0.00	0.87	20.27	12.87	87.80	
				std dev	0.58	0.00	1.06	2.81	2.33		
		Kern County		mean	1.00	0.00	0.40	19.20	13.20	96.00	
				std dev	0.00	0.00	0.55	1.30	1.30		
HA 690	643	Tulare County	h	mean	0.00	0.07	0.53	20.40	12.20	91.00	
				std dev	0.00	0.26	0.74	1.90	1.48		
		Kern County		mean	0.00	0.00	0.40	26.40	15.20	96.10	
				std dev	0.00	0.00	0.55	2.70	2.39		
HA 701	644	Tulare County	h	mean	0.33	0.00	0.80	21.40	12.80	96.10	
				std dev	0.58	0.00	0.86	2.07	1.30		
		Kern County		mean	1.00	0.00	0.47	23.60	12.60	98.20	
				std dev	0.00	0.00	0.71	1.14	1.95		
Phy 802 RF	645	Tulare County	p	mean	1.00	0.00	0.27	15.60	11.30	94.40	
				std dev	0.00	0.00	0.59	0.84	0.95		
		Kern County		mean	1.00	0.00	0.00	14.60	10.20	81.10	
				std dev	0.00	0.00	0.00	1.52	0.45		
Phy 811 RF	646	Tulare County	p	mean	0.67	0.00	0.20	16.90	11.60	98.50	
				std dev	0.58	0.00	0.41	2.42	1.78		
		Kern County		mean	0.74	0.00	0.40	16.20	11.20	100.00	
				std dev	0.51	0.00	0.55	1.79	0.84		
Mon-Exp 21-4	647	Tulare County	p	mean	0.67	0.07	0.47	17.80	12.70	86.60	
				std dev	0.58	0.26	0.83	1.40	1.57		
		Kern County		mean	0.00	0.00	0.20	13.00	11.00	100.00	
				std dev	0.00	0.00	0.45	1.00	1.22		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
Mon-Exp 21-5 (DP	648	Tulare County	p	mean	0.33	0.00	0.40	20.20	12.80	98.00	
				std dev	0.58	0.00	0.63	0.84	2.68		
		Kern County		mean	1.00	0.00	0.49	20.00	12.80	93.10	
				std dev	0.00	0.00	0.38	1.41	1.48		
Mon-Exp 21-7	649	Tulare County	p	mean	0.33	0.07	0.20	19.40	10.80	93.30	
				std dev	0.58	0.26	0.41	3.21	1.48		
		Kern County		mean	0.79	0.00	0.20	16.00	12.60	86.50	
				std dev	0.41	0.00	0.45	1.57	1.14		
Mon-Exp 22-3	650	Tulare County	p	mean	0.67	0.13	0.33	16.80	12.80	94.60	
				std dev	0.58	0.35	0.49	1.30	1.10		
		Kern County		mean	1.00	0.00	0.20	11.20	10.40	90.20	
				std dev	0.00	0.00	0.45	1.48	0.55		
Mon-Exp 22-4	651	Tulare County	p	mean	0.67	0.07	0.13	19.20	13.20	91.80	
				std dev	0.58	0.26	0.52	1.74	1.26		
		Kern County		mean	0.88	0.00	0.00	12.60	10.20	91.70	
				std dev	0.61	0.00	0.00	1.14	0.84		
Mon-Exp 22-6	652	Tulare County	p	mean	0.67	0.07	0.13	19.80	12.80	90.60	
				std dev	0.58	0.26	0.35	2.66	1.32		
		Kern County		mean	1.00	0.00	0.20	17.40	11.20	93.80	
				std dev	0.00	0.00	0.45	1.14	0.84		
Mon-Exp 23-3	653	Tulare County	p	mean	0.33	0.00	0.13	16.93	12.33	99.50	
				std dev	0.58	0.00	0.35	4.64	1.35		
		Kern County		mean	0.79	0.00	0.00	15.40	12.20	98.30	
				std dev	0.51	0.00	0.00	1.14	1.10		
Mon-Exp 23-4	654	Tulare County	p	mean	0.33	0.07	0.47	14.40	11.60	98.50	
				std dev	0.58	0.26	0.64	2.07	2.79		
		Kern County		mean	1.00	0.00	0.00	14.60	11.80	100.00	
				std dev	0.00	0.00	0.00	1.14	1.30		
Mon-Exp 23-5	655	Tulare County	p	mean	0.00	0.00	0.40	18.40	13.20	95.90	
				std dev	0.00	0.00	0.63	3.38	1.82		
		Kern County		mean	0.67	0.00	0.40	17.80	11.40	100.00	
				std dev	0.79	0.00	0.55	2.28	1.67		
Mon-Exp 23-9	656	Tulare County	p	mean	0.67	0.00	0.13	14.00	11.40	92.90	
				std dev	0.58	0.00	0.35	1.22	1.14		
		Kern County		mean	0.00	0.00	0.80	17.20	12.80	98.20	
				std dev	0.00	0.00	0.84	1.48	0.84		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
Mon-Exp 24-5	657	Tulare County	p	mean	0.00	0.07	0.47	16.20	12.40	79.40	
				std dev	0.00	0.26	0.52	1.87	1.26		
		Kern County		mean	1.00	1.20	1.20	18.40	12.40	90.90	
				std dev	0.00	0.84	0.84	1.52	1.14		
Mon-Exp 25-3	658	Tulare County	p	mean	0.33	0.00	0.15	15.20	12.20	95.70	
				std dev	0.58	0.00	0.38	0.45	0.84		
		Kern County		mean	0.88	0.20	0.00	13.20	10.20	72.50	
				std dev	0.63	0.45	0.00	2.17	1.48		
Mon-Exp 25-4	659	Tulare County	p	mean	0.00	0.07	0.80	17.80	13.10	91.20	
				std dev	0.00	0.26	0.77	1.23	1.10		
		Kern County		mean	1.00	0.00	0.60	18.40	11.00	97.40	
				std dev	0.00	0.00	0.55	3.51	1.87		
Mon-Exp 25-12	660	Tulare County	p	mean	0.33	0.07	0.13	15.20	11.50	89.20	
				std dev	0.58	0.26	0.35	1.75	0.71		
		Kern County		mean	1.00	0.00	0.20	16.20	12.00	95.20	
				std dev	0.00	0.00	0.45	1.48	1.22		
Mon-Exp 26-3	661	Tulare County	p	mean	0.67	0.20	0.60	17.30	12.60	90.70	
				std dev	0.58	0.41	0.83	3.40	1.26		
		Kern County		mean	0.88	0.00	0.40	17.60	11.60	96.40	
				std dev	0.61	0.00	0.55	1.67	1.34		
Mon-Exp 26-7	662	Tulare County	p	mean	1.00	0.33	1.00	15.70	11.00	81.00	
				std dev	1.00	0.72	0.85	1.64	1.76		
		Kern County		mean	1.89	2.20	2.00	13.60	11.40	100.00	
				std dev	0.77	0.84	0.71	2.61	1.52		
Mon-Exp 26-13	663	Tulare County	p	mean	0.33	0.00	0.13	17.30	12.70	99.50	
				std dev	0.58	0.00	0.35	1.25	2.16		
		Kern County		mean	1.00	0.00	0.40	17.80	12.60	95.70	
				std dev	0.00	0.00	0.55	1.64	1.14		
Mon-Exp 27-3	664	Tulare County	p	mean	1.00	0.13	0.47	15.60	12.90	97.70	
				std dev	0.00	0.35	0.74	1.58	0.99		
		Kern County		mean	1.00	0.39	0.63	18.20	12.00	100.00	
				std dev	0.00	0.45	0.46	1.30	0.71		
Tam 13Q-18	665	Tulare County	u - RBTN	mean	0.67	0.00	0.40	16.50	12.00	83.20	
				std dev	0.58	0.00	0.63	3.89	2.05		
		Kern County		mean	0.00	0.00	1.20	22.00	13.60	95.70	
				std dev	0.00	0.00	1.10	3.08	1.52		



			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
Tam 11L-24	666	Tulare County	u - RBTN	mean	1.00	0.07	0.60	18.20	12.73	83.90	
				std dev	0.00	0.26	0.74	2.78	1.87		
		Kern County		mean	1.00	0.00	1.00	23.20	12.60	95.60	
				std dev	0.00	0.00	0.71	1.92	0.55		
PD 07040	667	Tulare County	u - RBTN	mean	1.33	0.20	0.93	17.90	11.10	89.10	
				std dev	0.58	0.56	0.96	3.38	1.97		
		Kern County		mean	1.00	0.00	1.13	15.60	12.00	100.00	
				std dev	0.00	0.00	0.74	0.55	0.71		
PD 09084	668	Tulare County	u - RBTN	mean	1.33	0.20	0.73	20.20	12.00	98.00	
				std dev	0.58	0.56	0.88	2.01	3.80		
		Kern County		mean	1.00	0.20	1.00	19.20	12.60	100.00	
				std dev	0.00	0.45	0.71	4.44	1.67		
PD 08028	669	Tulare County	u - RBTN	mean	1.00	0.27	1.40	15.90	12.10	94.20	
				std dev	1.00	0.59	1.12	1.97	1.97		
		Kern County		mean	1.79	0.80	1.60	17.20	11.20	87.20	
				std dev	0.88	1.10	0.89	3.77	1.30		
PD 09046	670	Tulare County	u - RBTN	mean	1.00	0.20	0.67	15.87	12.40	85.20	
				std dev	0.00	0.41	1.05	5.50	2.80		
		Kern County		mean	1.00	0.00	1.40	17.60	12.00	75.00	
				std dev	0.00	0.00	0.89	1.82	2.12		
Ark 0812-87ne	671	Tulare County	u - RBTN	mean	0.67	0.27	1.13	17.80	10.20	93.10	
				std dev	1.15	0.59	0.83	2.68	2.17		
		Kern County		mean	1.00	0.00	0.40	21.60	12.00	100.00	
				std dev	0.00	0.00	0.55	3.13	0.71		
Ark 0818-23	672	Tulare County	u - RBTN	mean	1.00	0.07	0.60	19.07	12.27	92.40	
				std dev	0.00	0.26	0.74	2.81	2.02		
		Kern County		mean	1.00	0.20	0.89	21.40	13.00	89.70	
				std dev	0.00	0.31	0.55	1.67	0.71		
Ark 0824-89	673	Tulare County	u - RBTN	mean	1.33	0.13	0.67	22.10	12.40	90.60	
				std dev	0.58	0.52	1.05	3.11	2.37		
		Kern County		mean	1.00	0.00	0.20	25.20	12.80	100.00	
				std dev	0.00	0.00	0.45	3.11	1.10		
Ark 0822-48	674	Tulare County	u - RBTN	mean	0.67	0.20	0.64	19.00	11.60	86.70	
				std dev	0.58	0.41	0.63	2.75	1.26		
		Kern County		mean	0.00	0.00	0.40	18.40	11.40	100.00	
				std dev	0.00	0.00	0.89	1.14	1.52		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
Ark 0819-89	675	Tulare County	u - RBTN	mean	0.33	0.27	1.13	19.20	14.10	95.10	
				std dev	0.58	0.70	0.99	1.69	1.66		
		Kern County		mean	2.00	0.00	1.00	21.00	13.00	100.00	
				std dev	0.00	0.00	1.00	1.73	1.22		
NM 13G1029	676	Tulare County	u - RBTN	mean	1.00	0.07	0.60	21.00	12.10	81.90	
				std dev	0.00	0.26	0.99	2.83	1.85		
		Kern County		mean	1.00	0.00	0.40	23.00	11.20	89.14	
				std dev	0.00	0.00	0.55	5.87	1.30		
NM 13G2019	677	Tulare County	u - RBTN	mean	1.00	0.13	1.33	15.40	10.60	98.50	
				std dev	1.00	0.52	0.90	1.14	1.52		
		Kern County		mean	1.71	0.80	1.20	22.40	12.20	100.00	
				std dev	0.93	1.10	1.10	1.82	0.90		
AU 77082	678	Tulare County	u - RBTN	mean	1.00	0.09	0.60	21.50	12.80	92.10	
				std dev	0.00	0.30	0.83	3.87	1.81		
		Kern County		mean	1.00	0.00	0.80	19.60	12.60	100.00	
				std dev	0.00	0.00	1.10	0.89	1.14		
AU 82074	679	Tulare County	u - RBTN	mean	1.00	0.13	1.33	19.60	11.40	94.70	
				std dev	0.00	0.35	1.11	3.24	1.96		
		Kern County		mean	1.00	0.00	0.20	21.60	11.60	100.00	
				std dev	0.00	0.00	0.45	1.52	1.82		
GA 2011113	680	Tulare County	u - RBTN	mean	1.00	0.13	0.87	18.87	12.27	95.30	
				std dev	0.00	0.35	0.83	3.38	1.10	90.60	
		Kern County		mean	0.79	0.00	1.00	24.20	13.20		
				std dev	0.55	0.00	1.00	2.49	1.10		
GA 2012050	681	Tulare County	u - RBTN	mean	1.33	0.20	1.33	18.80	11.00	89.40	
				std dev	0.58	0.56	1.05	3.55	2.16	69.00	
		Kern County		mean	1.00	0.00	0.40	21.00	12.40		
				std dev	0.00	0.00	0.55	3.94	1.14		
GA 2012082	682	Tulare County	u - RBTN	mean	1.00	0.13	1.13	20.33	12.07	91.00	
				std dev	1.00	0.52	0.92	5.78	3.06		
		Kern County		mean	1.00	0.00	1.20	23.20	13.80	93.00	
				std dev	0.00	0.00	0.84	3.11	1.10		
GA 2012141	683	Tulare County	u - RBTN	mean	1.00	0.00	1.11	24.50	16.00	85.40	
				std dev	0.00	0.00	1.05	1.73	0.82		
		Kern County		mean	1.00	0.20	1.00	19.80	12.40	91.50	
				std dev	0.00	0.45	0.71	3.27	1.82		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
MD 16-1	684	Tulare County	u - RBTN	mean	0.33	0.07	0.47	22.50	12.30	100.50	
				std dev	0.58	0.26	0.83	4.67	2.06		
		Kern County		mean	1.00	0.00	0.40	18.00	10.60	89.30	
				std dev	0.00	0.00	0.85	4.56	1.14		
MD 16-2	685	Tulare County	u - RBTN	mean	1.00	0.00	0.60	22.00	12.00	91.10	
				std dev	0.00	0.00	0.83	2.12	2.12		
		Kern County		mean	1.00	0.00	0.20	22.00	11.60	98.00	
				std dev	0.00	0.00	0.45	3.16	2.88		
MS 0152-3-11	686	Tulare County	u - RBTN	mean	1.00	0.13	0.80	18.90	13.70	96.00	
				std dev	0.00	0.35	0.77	2.33	2.41		
		Kern County		mean	1.00	0.00	0.00	24.60	13.40	95.70	
				std dev	0.00	0.00	0.00	2.88	0.89		
MS 0043-28-1	687	Tulare County	u - RBTN	mean	1.33	0.20	0.73	19.20	11.67	85.50	
				std dev	0.58	0.56	1.03	3.17	1.80		
		Kern County		mean	1.20	0.00	0.89	23.60	12.60	98.00	
				std dev	0.65	0.00	0.55	2.19	0.89		
DP-393	688	Tulare County	u - RBTN	mean	1.00	0.40	0.87	17.20	11.60	93.90	
				std dev	1.00	0.63	0.92	1.23	1.26		
		Kern County	check variety	mean	1.00	0.40	1.10	21.40	11.20	100.00	
				std dev	0.00	0.35	0.55	2.30	1.48		
DP-493	689	Tulare County	u - RBTN	mean	1.00	0.20	0.67	21.60	13.60	73.30	
				std dev	0.00	0.41	0.82	3.72	2.55		
		Kern County	check variety	mean	1.00	0.20	1.00	15.60	11.80	92.90	
				std dev	0.00	0.45	1.00	4.16	0.84		
FM 958	690	Tulare County	u - RBTN	mean	1.00	0.07	0.87	19.80	12.00	92.20	
				std dev	0.00	0.26	0.92	2.82	1.41		
		Kern County	check variety	mean	2.00	0.40	1.00	18.20	13.20	96.60	
				std dev	0.00	0.89	0.71	2.39	0.84		
SG-105	691	Tulare County	u - RBTN	mean	1.00	0.27	0.53	17.93	12.40	93.00	
				std dev	1.00	0.59	0.92	4.27	2.69		
		Kern County	check variety	mean	1.00	0.00	1.71	24.40	13.50	100.00	
				std dev	0.00	0.00	0.65	1.52	0.71		
UA-222	692	Tulare County	u - RBTN	mean	1.33	0.33	0.87	20.40	14.27	86.80	
				std dev	0.58	0.72	0.99	3.20	1.79		
		Kern County	check variety	mean	0.00	0.00	0.43	20.40	13.60	100.00	
				std dev	0.00	0.00	0.69	1.52	2.30		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
OA-21	693	Tulare County	p	mean	0.33	0.00	0.33	19.10	12.50	83.60	
				std dev	0.58	0.00	0.49	2.23	1.27		
		Kern County		mean	1.00	1.00	0.60	16.80	11.20	61.50	
				std dev	0.00	0.00	0.55	2.39	1.48		
OA-22	694	Tulare County	p	mean	1.00	0.00	0.40	18.40	13.10	93.40	
				std dev	0.00	0.00	0.74	1.96	1.37		
		Kern County		mean	1.00	1.00	0.20	16.80	12.00	100.00	
				std dev	0.00	0.00	0.45	2.05	1.22		
OA-23	695	Tulare County	p	mean	0.17	0.00	0.30	17.93	12.47	95.80	
				std dev	0.41	0.00	0.48	1.94	2.03		
		Kern County		mean	1.00	1.00	0.60	17.80	12.40	90.00	
				std dev	0.00	0.00	0.55	1.48	1.14		
OA-24	696	Tulare County	p	mean	0.33	0.07	0.60	19.00	13.20	92.90	
				std dev	0.58	0.26	0.74	0.71	1.30		
		Kern County		mean	0.79	0.00	0.60	13.80	11.40	100.00	
				std dev	0.45	0.00	0.55	1.10	1.34		
OA-25	697	Tulare County	p	mean	2.00	0.80	2.13	15.40	11.13	79.60	
				std dev	0.00	0.94	0.74	3.48	2.72		
		Kern County		mean	3.00	2.20	2.40	11.20	11.00	94.70	
				std dev	0.00	0.45	0.55	2.49	1.22		
OA-26	698	Tulare County	p	mean	2.00	1.20	1.87	13.50	10.90	71.70	
				std dev	1.00	0.94	1.19	3.63	1.79		
		Kern County		mean	3.00	0.40	1.00	11.40	10.60	78.70	
				std dev	0.00	0.89	1.00	0.89	1.52		
OA-27	699	Tulare County	p	mean	0.67	0.13	0.40	18.00	13.20	88.70	
				std dev	0.58	0.35	0.63	1.63	1.55		
		Kern County		mean	1.00	0.00	0.60	13.00	9.00	100.00	
				std dev	0.00	0.00	0.55	1.22	1.58		
OA-28	700	Tulare County	p	mean	1.33	0.60	1.30	16.47	12.20	92.10	
				std dev	0.58	0.97	0.82	2.83	2.01		
		Kern County		mean	3.00	2.00	1.60	15.00	11.20	75.00	
				std dev	0.00	0.00	0.55	2.35	0.84		
OA-29	701	Tulare County	p	mean	0.33	0.00	0.47	17.30	11.20	94.40	
				std dev	0.58	0.00	0.74	1.42	1.81		
		Kern County		mean	1.00	0.00	0.40	13.20	11.40	85.70	
				std dev	0.00	0.00	0.55	1.92	0.89		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
OA-30	702	Tulare County	p	mean	2.00	0.80	1.67	16.10	11.30	85.10	
				std dev	0.00	0.94	1.05	2.77	2.26		
		Kern County		mean	2.00	2.00	2.00	5.00	6.00	100.00	
				std dev	0.00	0.00	0.00	0.00	0.00		
OA-31	703	Tulare County	p	mean	2.00	0.53	1.93	14.90	11.90	75.50	
				std dev	0.00	0.83	0.88	1.10	1.45		
		Kern County		mean	1.79	0.60	1.60	17.00	12.40	78.90	
				std dev	0.93	0.89	0.55	2.92	1.52		
OA-32	704	Tulare County	p	mean	1.33	0.47	0.87	15.50	12.10	91.50	
				std dev	1.15	0.83	0.83	3.75	2.60		
		Kern County		mean	2.00	0.60	1.40	14.00	11.60	82.50	
				std dev	0.00	0.89	0.55	4.36	3.65		
OA-33	705	Tulare County	p	mean	0.33	0.00	0.07	18.27	11.87	97.50	
				std dev	0.58	0.00	0.26	2.60	1.19		
		Kern County		mean	1.00	0.27	0.60	14.60	12.60	97.10	
				std dev	0.00	0.55	0.55	2.30	0.55		
OA-34	706	Tulare County	p	mean	1.33	0.20	0.53	15.80	10.60	92.00	
				std dev	0.58	0.56	0.74	2.90	2.12		
		Kern County		mean	1.00	0.00	0.80	15.00	11.80	92.30	
				std dev	0.00	0.00	0.84	3.32	1.92		
OA-35	707	Tulare County	p	mean	0.67	0.33	0.07	17.27	12.33	89.20	
				std dev	0.58	0.19	0.26	2.84	1.23		
		Kern County		mean	1.00	0.00	0.20	16.20	11.80	94.70	
				std dev	0.00	0.00	0.45	1.48	1.10		
OA-36	708	Tulare County	p	mean	2.00	1.00	1.93	15.73	12.20	88.10	
				std dev	0.00	1.00	1.03	3.31	1.52		
		Kern County		mean	1.79	1.33	1.33	10.67	10.67	100.00	
				std dev	0.93	1.53	0.58	1.53	0.58		
OA-37	709	Tulare County	p	mean	0.33	0.13	0.27	20.60	14.40	94.90	
				std dev	0.58	0.52	0.59	1.34	0.55		
		Kern County		mean	1.00	0.00	0.40	14.40	12.80	100.00	
				std dev	0.00	0.00	0.55	1.95	1.64		
OA-38	710	Tulare County	p	mean	0.33	0.00	0.53	20.00	13.27	95.80	
				std dev	0.58	0.00	0.74	1.51	1.91		
		Kern County		mean	1.00	0.00	0.60	16.20	12.40	90.00	
				std dev	0.00	0.00	0.55	1.30	0.89		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
OA-39	711	Tulare County	p	mean	1.33	0.60	1.00	15.90	11.00	85.40	
				std dev	0.58	0.83	1.07	2.02	1.70		
		Kern County		mean	2.00	0.40	0.80	17.60	12.40	100.00	
				std dev	0.00	0.89	0.84	2.07	0.89		
OA-40	712	Tulare County	u	mean	0.67	0.00	0.27	18.80	12.10	94.70	
				std dev	0.58	0.00	0.46	1.75	11.60		
		Kern County		mean	1.79	1.40	2.00	16.00	1.52	96.20	
				std dev	0.93	1.34	0.71	2.00			
OA-41	713	Tulare County	u	mean	1.67	0.40	1.00	19.00	13.10	85.00	
				std dev	0.58	0.74	1.00	0.82	1.52		
		Kern County		mean	2.00	1.00	2.40	16.20	11.00	100.00	
				std dev	0.00	1.41	0.55	2.68	0.71		
OA-42	714	Tulare County	u	mean	1.67	0.33	1.20	17.40	10.80	92.30	
				std dev	0.58	0.72	1.08	4.35	2.04		
		Kern County		mean	1.00	0.00	1.20	21.80	13.00	98.00	
				std dev	0.00	0.00	0.84	1.30	0.71		
OA-43	715	Tulare County	u	mean	0.33	0.07	0.53	20.40	12.30	93.10	
				std dev	0.58	0.26	0.74	3.47	1.77		
		Kern County		mean	1.00	0.00	0.40	22.00	13.60	97.70	
				std dev	0.00	0.00	0.55	1.41	1.14		
OA-44	716	Tulare County	u	mean	1.00	0.13	0.67	19.67	13.07	92.30	
				std dev	1.00	0.52	1.11	2.13	1.03		
		Kern County		mean	1.00	0.00	0.80	20.20	11.00	100.00	
				std dev	0.00	0.00	1.10	2.49	0.71		
OA-45	717	Tulare County	u	mean	1.00	0.07	1.07	23.00	12.90	94.20	
				std dev	0.00	0.26	0.80	3.65	2.18		
		Kern County		mean	1.00	0.00	0.60	20.80	12.80	100.00	
				std dev	0.00	0.00	0.55	2.68	1.30		
OA-46	718	Tulare County	u	mean	0.67	0.07	0.73	18.60	11.60	93.80	
				std dev	0.58	0.26	0.80	2.30	0.89		
		Kern County		mean	1.47	1.00	1.60	18.00	11.40	95.80	
				std dev	0.63	1.00	0.55	1.22	1.14		
OA-47	719	Tulare County	u	mean	0.67	0.27	0.93	16.30	11.70	92.40	
				std dev	0.58	0.46	1.22	3.37	2.54		
		Kern County		mean	1.00	0.00	0.40	22.80	13.00	98.00	
				std dev	0.00	0.00	0.55	2.28	0.71		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
OA-48	720	Tulare County	u	mean	0.67	0.13	0.67	16.60	11.70	96.20	
				std dev	0.58	0.35	0.82	1.90	1.25		
		Kern County		mean	1.00	0.00	0.20	21.80	12.60	90.20	
				std dev	0.00	0.00	0.45	1.30	1.67		
OA-49	721	Tulare County	u	mean	1.33	0.20	1.20	19.93	12.53	92.20	
				std dev	0.58	0.56	1.21	3.28	2.85		
		Kern County		mean	1.00	0.00	0.90	21.40	12.80	97.40	
				std dev	0.00	0.00	0.55	1.67	1.30		
OA-50	722	Tulare County	u	mean	1.67	0.47	0.73	20.87	13.07	95.40	
				std dev	0.58	0.83	0.88	2.13	1.62		
		Kern County		mean	1.00	0.00	1.00	22.20	11.40	98.30	
				std dev	0.00	0.00	0.71	2.49	1.34		
15 WSCV PROG-34	723	Tulare County	u	mean	1.00	0.07	0.27	16.53	11.93	82.00	
				std dev	0.00	0.26	0.70	1.81	1.71		
		Kern County		mean	2.00	0.40	0.60	13.20	10.00	97.60	
				std dev	0.00	0.89	0.89	2.77	1.41		
14 WSCV PROG-37	724	Tulare County	u	mean	1.00	0.13	0.27	13.40	11.40	88.10	
				std dev	0.00	0.35	0.46	3.21	2.70		
		Kern County		mean	1.00	0.00	0.20	18.40	11.00	80.00	
				std dev	0.00	0.00	0.45	1.14	0.71		
14 WSCV PROG-56	725	Tulare County	u	mean	1.67	0.27	0.73	14.10	11.60	87.10	
				std dev	0.58	0.70	0.96	1.85	1.43		
		Kern County		mean	1.00	0.20	0.60	12.80	11.00	77.80	
				std dev	0.00	0.45	0.55	2.77	1.22		
14 WSCV PROG-86	726	Tulare County	u	mean	1.00	0.13	0.47	17.80	11.90	91.40	
				std dev	1.00	0.52	0.74	3.94	2.08		
		Kern County		mean	2.00	2.20	1.60	16.80	13.00	87.80	
				std dev	0.00	1.30	1.14	2.39	2.12		
13 WSCV F4-560	727	Tulare County	u	mean	1.00	0.47	1.13	19.60	14.20	93.30	
				std dev	1.00	0.74	1.25	3.44	1.48		
		Kern County		mean	2.00	0.80	1.00	14.80	11.20	87.30	
				std dev	0.00	1.10	1.00	2.68	1.79		
13 WSCV F4-861	728	Tulare County	u	mean	0.67	0.07	0.27	16.60	10.00	90.80	
				std dev	0.58	0.26	0.46	3.21	3.08		
		Kern County		mean	2.00	1.60	1.60	12.80	11.20	94.30	
				std dev	0.00	0.89	0.89	1.64	1.30		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
NB 502-71T	729	Tulare County	u	mean	1.33	0.27	1.20	18.00	11.80	97.10	
				std dev	0.58	0.59	1.08	3.50	1.32		
		Kern County		mean	1.00	0.00	0.80	12.40	10.40	88.60	
				std dev	0.00	0.00	0.84	2.30	1.52		
14 PL944-3	730	Tulare County	u	mean	1.00	0.27	0.67	15.80	11.40	96.20	
				std dev	1.00	0.46	1.05	1.48	0.97		
		Kern County		mean	1.00	0.00	1.00	18.20	12.20	100.00	
				std dev	0.00	0.00	0.71	2.39	1.64		
14 PL944-7	731	Tulare County	u	mean	0.67	0.07	1.07	18.13	12.00	90.60	
				std dev	0.58	0.26	0.88	2.42	1.51		
		Kern County		mean	0.83	0.20	0.60	15.40	10.60	90.00	
				std dev	0.51	0.45	0.55	3.36	2.07		
14 PL014-3V	732	Tulare County	u	mean	1.67	0.40	1.07	20.40	11.50	90.70	
				std dev	0.58	0.83	0.96	2.01	1.43		
		Kern County		mean	1.00	0.00	0.80	19.40	11.80	96.40	
				std dev	0.00	0.00	0.84	1.52	0.84		
12 VCTR-307-3	733	Tulare County	u	mean	0.67	0.13	1.00	16.07	11.33	96.20	
				std dev	0.58	0.35	0.93	2.58	1.18		
		Kern County		mean	1.00	0.00	1.00	18.00	12.20	75.40	
				std dev	0.00	0.00	1.00	2.55	0.45		
14 WSTRF4-262	734	Tulare County	u	mean	1.67	0.53	1.00	17.80	12.20	91.10	
				std dev	0.58	0.83	1.00	1.10	1.64		
		Kern County		mean	2.00	0.80	1.60	18.80	11.80	100.00	
				std dev	0.00	1.10	0.89	2.77	1.64		
14 WSTRF4-746	735	Tulare County	u/h?	mean	1.00	0.13	1.07	17.80	11.20	88.00	
				std dev	1.00	0.52	1.10	2.62	2.01		
		Kern County		mean	1.00	0.00	0.60	15.23	9.80	76.50	
				std dev	0.00	0.00	0.89	3.83	2.59		
14 WSTRF4-747	736	Tulare County	u	mean	1.00	0.33	1.13	15.60	10.50	87.50	
				std dev	0.00	0.49	1.25	2.95	2.17		
		Kern County		mean	1.00	0.00	1.00	18.20	11.20	78.90	
				std dev	0.00	0.00	0.71	3.03	1.64		
14555-1201D	737	Tulare County	u	mean	1.00	0.00	0.33	14.87	11.67	87.70	
				std dev	0.00	0.00	0.62	5.74	1.23		
		Kern County		mean	2.00	0.40	2.00	17.60	11.40	96.60	
				std dev	0.00	0.89	0.71	0.55	1.14		



			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
15 WSCV PROG-73	738	Tulare County	u/h?	mean	1.33	0.27	1.20	16.50	12.10	93.60	
				std dev	0.58	0.59	1.15	3.02	1.10		
		Kern County		mean	1.00	0.20	0.80	14.00	10.20	86.50	
				std dev	0.00	0.45	1.10	1.22	0.84		
Phy PX8501 RF	739	Tulare County	p	mean	0.00	0.07	0.53	17.30	11.50	95.20	
				std dev	0.00	0.26	0.74	2.26	1.90		
		Kern County		mean	1.00	0.00	0.40	18.20	11.80	97.70	
				std dev	0.00	0.00	0.55	2.68	1.92		
Phy PX8502 RF	740	Tulare County	p	mean	1.00	0.07	0.40	15.20	11.30	89.00	
				std dev	0.00	0.26	0.74	1.48	1.70		
		Kern County		mean	1.00	0.00	0.40	19.00	12.40	93.30	
				std dev	0.00	0.00	0.55	0.71	0.89		
Phy PX8503 RF	741	Tulare County	p	mean	0.67	0.27	0.60	16.20	11.00	88.70	
				std dev	0.58	0.46	0.74	4.16	2.79		
		Kern County		mean	1.00	0.00	0.40	16.20	11.60	100.00	
				std dev	0.00	0.00	0.55	1.30	1.52		
Phy PX 8504 RF	742	Tulare County	p	mean	0.33	0.13	0.87	19.40	12.40	87.40	
				std dev	0.58	0.35	0.92	1.14	0.55		
		Kern County		mean	1.00	0.00	0.60	14.00	10.40	100.00	
				std dev	0.00	0.00	0.55	1.22	1.82		
Bayer BX16-1	743	Tulare County	u	mean	0.80	0.20	0.56	20.00	12.47	88.20	
				std dev	0.84	0.58	0.82	2.30	1.30		
Bayer BX16-2	744	Tulare County	u	mean	1.50	0.20	0.60	19.20	12.00	84.10	
				std dev	0.58	0.62	1.05	5.05	2.20		
Bayer BX16-3	745	Tulare County	u	mean	0.67	0.00	0.20	20.50	12.20	93.80	
				std dev	0.58	0.00	0.56	2.12	1.40		
Bayer BX16-4	746	Tulare County	u	mean	1.67	0.67	0.87	20.00	11.90	75.10	
				std dev	0.58	0.98	0.83	2.45	2.08		
Bayer BX16-5	747	Tulare County	u/h?	mean	0.00	0.00	0.00	17.60	10.80	88.20	
				std dev	0.00	0.00	0.00	1.52	0.45		
Bayer BX 16-6	748	Tulare County	u	mean	1.00	0.20	0.67	18.40	12.20	90.40	
				std dev	1.00	0.56	0.82	1.95	1.79		
Bayer BX16-7	749	Tulare County	u	mean	1.00	0.20	0.80	21.13	13.07	87.20	
				std dev	1.00	0.56	0.94	3.98	1.87		
Bayer BX16-8	750	Tulare County	u	mean	1.00	0.13	0.73	18.80	10.80	94.50	
				std dev	1.00	0.52	0.96	5.54	2.95		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
Bayer BX16-9	751	Tulare County	u	mean	0.67	0.20	0.80	20.20	11.70	96.80	
				std dev	1.15	0.56	1.01	2.74	1.16		
Bayer BX16-10	752	Tulare County	u	mean	0.33	0.00	0.87	18.73	10.93	84.50	
				std dev	0.58	0.00	1.06	3.22	1.49		
Bayer BX16-11	753	Tulare County	u	mean	1.33	0.29	0.71	23.56	12.00	95.20	
				std dev	1.15	0.73	0.83	4.19	1.22		
Bayer BX16-12	754	Tulare County	u	mean	0.67	0.13	0.80	17.80	13.30	98.20	
				std dev	1.15	0.52	0.77	2.30	1.64		
Bayer BX16-13	755	Tulare County	u	mean	0.33	0.00	0.60	20.47	12.53	90.30	
				std dev	0.58	0.00	0.83	3.81	1.73		
Bayer BX16-14	756	Tulare County	u	mean	1.00	0.27	1.33	20.00	11.60	74.60	
				std dev	0.00	0.46	0.72	3.13	2.12		
Bayer BX16-15	757	Tulare County	u	mean	1.33	0.27	0.93	16.70	10.70	86.50	
				std dev	0.58	0.70	0.96	2.00	1.34		
Bayer BX16-16	758	Tulare County	u	mean	1.33	0.27	0.87	18.20	11.07	86.50	
				std dev	0.58	0.59	0.99	4.06	1.67		
Bayer BX16-17	759	Tulare County	u	mean	0.33	0.07	0.60	20.10	13.10	95.60	
				std dev	0.58	0.26	0.74	4.72	1.79		
Bayer BX16-18	760	Tulare County	u	mean	1.00	0.27	1.73	20.07	12.13	83.80	
				std dev	1.00	0.59	0.88	4.08	2.26		
Phy 725 RF Natl St	761	Tulare County	u	mean	1.00	0.30	1.70	19.40	13.10	95.10	
				std dev	0.00	0.67	0.95	3.17	1.20		
Phy 725 RF Natl St	762	Tulare County	u	mean	0.67	0.13	1.27	20.00	11.60	87.50	
				std dev	0.58	0.35	1.10	4.00	1.71		
FM 2484 B2F	763	Tulare County	u	mean	1.00	0.00	1.00	19.00	13.70	84.00	
				std dev	0.00	0.00	0.85	2.94	2.50		
		Kern County		mean	2.00	0.60	0.80	18.00	12.80	100.00	
				std dev	0.00	1.34	0.84	2.74	1.30		
Phy 725 RF Natl St	764	Tulare County	u	mean	0.67	0.07	1.40	21.60	11.60	96.20	
				std dev	0.58	0.26	0.91	3.51	1.14		

			Type of		Whole Plot Foliar	Individual Sampled	Sampled Plant	Plant height	# of Main	Survival	
Cultivar Name	Entry #		Cotton (p=pima;		Damage Rating	Plant Foliar Rating	Root Vascular Stain	8 -9 weeks	Stem Nodes	Percent	
or Experimental	For	TEST	u=upland;		(index is 0 to 5	(index is 0 to 5	(index is 0 to 5	post emergence	8-9 weeks	(8-9 week rating divided	
Number	Test	SITE	h=hybrid)		damage severity	damage severity	damage severity	(inches)	post emergence	divided by initial)	
			RBTN = entry in		rating scale)	rating scale)	rating scale)			(as %)	
			Regional Breeder		(0= no damage;	(0= no damage;	(0= no damage;				
			Testing Network		5=most severe)	5=most severe)	5=most severe)				
Phy 499 WRF	765	Tulare County	u	mean	1.67	0.33	1.20	17.00	13.40	91.70	
				std dev	0.58	0.72	0.94	1.73	1.52		
		Kern County		mean	2.00	0.40	0.40	19.60	11.60	94.10	
				std dev	0.00	0.89	0.89	2.30	0.55		
Phy 725 RF Natl St	766	Tulare County	u	mean	1.67	0.33	1.40	21.00	13.20	75.80	
				std dev	0.58	0.72	0.74	2.54	1.14		
Phy 725 RF Natl St	767	Tulare County	u	mean	1.33	0.47	1.47	18.30	11.90	84.80	
				std dev	0.58	0.74	0.99	2.75	1.52		
DP 744	addt'l check	Tulare County	p	mean	3.00	3.50	3.40	9.10	6.70	16.60	
			highly	std dev	1.00	0.61	0.62	1.40	1.90		
		Kern County	susceptible	mean	2.73	3.10	3.70	10.60	9.40	40.10	
			Pima check	std dev	0.89	0.70	0.89	2.62	1.36		
DP 340	addt'l check	Tulare County	p	mean	2.44	2.10	2.46	14.63	12.30	62.90	
			moderately	std dev	0.71	0.58	1.10	2.15	1.23		
		Kern County	susceptible	mean	1.88	2.33	2.13	12.96	11.40	73.30	
			Pima check	std dev	0.53	0.80	0.58	1.70	1.90		
FM 2334 GLT	addt'l check	Tulare County	u	mean	1.00	0.10	0.67	18.48	12.44	88.30	
				std dev	0.63	0.40	0.80	2.82	1.98		
Phy 802 RF	addt'l check	Tulare County	p	mean	0.83	0.22	0.81	17.88	12.92	95.60	
				std dev	0.75	0.58	0.87	3.27	2.00		
	C1 check	Kern County		mean	1.00	0.05	0.35	10.65	10.40	94.55	
				std dev	0.00	0.22	0.49	2.89	1.85		
	C2 check	Kern County		mean	1.31	0.11	0.39	11.70	10.90	86.00	
				std dev	0.48	0.47	0.61	1.59	1.37		
	D1 check	Kern County		mean	1.50	0.45	0.60	12.35	11.35	81.90	
				std dev	0.51	0.94	0.99	2.52	1.23		
	D2 check	Kern County		mean	1.33	0.13	0.93	13.90	11.30	89.90	
				std dev	0.49	0.52	0.96	2.27	1.03		
	E1 check	Kern County		mean	2.00	1.30	1.40	7.87	9.67	77.23	
				std dev	0.00	0.67	0.52	2.00	1.72		
	E2 check	Kern County		mean	2.33	1.47	1.67	17.88	12.92	95.60	
				std dev	0.49	0.83	0.87	3.27	2.00		