

UC Davis Small Grains/Alfalfa/Biofuels Field Day

Pest Management, Drip Irrigation in Alfalfa, Varieties, Economics

Wednesday, May 9, 2012 8:15am-3:45 pm

(PCA & CCA Units Offered – Register on-site)

UC Davis Agronomy Field Headquarters, Hutchison Road, Davis, CA (*directions: take 113 near Davis to Hutchison Rd. Go west. Right at first rotary, left at second rotary, about 1/3 mile down on the left.*)

8:15 a.m.-Noon Small Grains Field Day

Noon-Barbeque Lunch (Many thanks to our Sponsor—California Crop Improvement Association)

12:45 p.m.-3:45 p.m. Alfalfa & Forage Field Day

Wheat Crop Conditions

Overall crop is in much better condition since the rains started in late December. We still have lost some fields from drought after emergence. Many fields have stands of mixed maturities and wholes, making for parts of the field heading and other parts still in the boot. I expect this to even out some as the crop matures and starts to dry. Stripper headers will have a more difficult time harvesting from some of this unevenness. Watch your soil moisture until the milk stage to avoid pinched grain and low bushel weights.

Prevalent Small Grain Diseases

Stripe Rust is active in Redwing, WB-Cristallo, Joaquin, Sonora and Wilt Wolkoring. I have also seen some in all the Triticale varieties in my trials. Good adult plant resistance in the triticale, but you still need to monitor these fields. A few Redwing fields are being treated.

Barley Yellow Dwarf Virus is heavier than I have seen in the past seasons with Patwin being especially susceptible. I have several Patwin fields that are showing symptoms in 75 to 85% of the plants. Oats are also heavily impacted this season showing red leaves. No treatment possible, see disease cycle in Guide Lines.

Powdery Mildew can be found low down in most fields with a few (Summit 515 and Cal Rojo) fields with white mildew colonies up into the heads. Hot weather will help here. Protect the flag leaf if necessary.

Septoria is evident in most fields low in the canopy. We should make it to harvest without losses this year.

Russian Wheat Aphid is causing the most damage I have seen in over 15 years in the Rio Vista area. I am finding it in most fields south of Woodland. Symptoms are curled upright leaves with white parallel with veins striping. Plants are stunted. Damage is from toxin induced by aphid feeding. Other aphid species like to hide out in the curled leaves. They did not cause the damage, the Russian Wheat aphid is the culprit. See IPM Guidelines for further information.

Go to UC IPM [Pest Management Guidelines](#) and the [Small Grains Production Manual](#) for additional descriptions and information.

Looks like good, warm grain development weather. If you have Summit515 or Blanca Grande 515 please remember to check falling numbers (FN) as you start to harvest. Both of these varieties are naturally low. If below 300 wait to harvest 2 weeks and try again. If below 250 it probably won't make 300. I really do not know where the minimum threshold is, our research just showed that FN increases with time both in the field and in storage.

Good luck with the crop.

2011 Grain Corn Research Results

Every year, for the past 11 years, I have provided grain corn variety trial results to the corn growers of Yolo, Solano, and Sacramento counties. These trials provide the grower with nonbiased information about comparative grain yield potential and quality, pest resistance, location suitability, production capability, and appropriate use of new genetic traits. I evaluate each variety in replicated trials for the following: Plant Stand, Days to Bloom, Maize Dwarf Mosaic, Fusarium Ear Rot, Head Smut, Common Smut, Ear Height, Lodging, Bushel Weight (Test Wt.), and Grain Yield adjusted to 15% moisture. A complete listing of all my Corn Studies may be found at the following web site: http://ceyolo.ucdavis.edu/Custom_Program724/ Annually, I invite all the corn seed companies to send their top two best varieties for each of the three trial locations. Occasionally, you may find more than two varieties from a company in a trial. Those additional varieties are provided by the grower cooperators. I always want the grower to see how the varieties they are using compare with what the seed companies have selected. You can tell which entries are grower selections by the name "Grower" in the Company Name column. Please select the Corn Trial nearest to your farm and use this information to help you select the grain corn varieties best suited for your growing conditions.

Locations: UC Davis – represents the warmer regions of the three counties with mineral soils, furrow irr.
 Hastings Island, Solano County – mineral soils, furrow irrigated with delta climate
 Tyler Island, Sacramento County – peat soils sub-irrigated with delta climate

Table 1.

2011 UC Cooperative Extension Corn Variety Trial - UC Davis

Cooperator: Jim Jackson Plant Science UC Davis

Experimenters: Brittan, Kochi

Planting Date: April 19, 2011

Harvest Date: October 21, 2011

Initials	Entry Name/NO.	Company Name	Stand Plants/A	Days to Bloom	Fusarium Common	Smear (%)	Ear Height (in)	Bushel Wt. (lbs/bu)	Grain Yield ¹ (lbs/A)	Duncan's Multiple Range Test (5%)
					ear rot (%)					
DK	DKC62-63GENVT3P	Dekalb	32234	84	2	0	55	59.2	12890	A
NT	5H-515	NuTech Seed	32234	91	3	1	68	60.9	12763	A
DK	DKC64-83GENVT3P	Dekalb	36590	89	1	3	57	60.3	12423	A
CP	6331VT3	Croplan	32234	85	2	0	54	58.0	12329	A
ES	ES7443VT3P	Eureka Seeds	36590	87	1	1	56	58.8	11467	B
CP	6818VT3/P	Croplan	32234	92	0	1	62	59.3	11438	B
ES	ES7532VT3	Eureka Seeds	31363	91	7	9	59	57.1	11369	BC
NT	3A-511	NuTech Seed	32234	91	1	4	67	58.8	11347	BC
NT	5H-716	UCD	30492	91	10	6	68	61.4	11159	BC
INT	9640VT3	Integra	33106	84	5	1	59	58.3	10922	BC
INT	9613VT3	Integra	29621	86	4	0	52	57.9	10781	C
INT	9650VT3PRO	Integra	32234	89	13	7	59	56.6	10161	D
Average			32597	88	4	3	59	58.9	11587	
Coefficient of Variation			4.4	0.6	21.8	25.1	3.9	1.0	2.2	
LSD @ 5%			3158.3	1.2	1.8	1.4	5.3	1.3	558.5	
Significant Variety effect			**	**	**	**	**	**	**	
Rep effect					**				*	

* 95% Significance

** 99% Significance

¹ Yield adjusted to 15% moisture

I am disappointed this season in the overall yields at the UC Davis trial, **Table 1**. I do not feel we are seeing the full yield potential of these varieties. Both irrigation and fertility are suboptimal here. I would consider these as very conservative figures. Bushel Weight (Test Weight) was a little low all over this season which is a reflection of the cooler weather we had. I see a higher Fusarium Ear Rot pressure at UCD than I do in the Delta which has become the norm. I have some concern for the Integra varieties that have consistently shown higher susceptibility to ear rot. UCD also tends to have higher Common (Boil) Smut levels as well.

Table 2.
2011 UC Cooperavive Extension Corn Variety Trial - Hastings Island

Cooperator: Mark Boyd, Hastings Island Land Company
 Experimentors: Brittan, Kochi
 Planting Date: April 27, 2011
 Harvest Date: October 21, 2011

Initials	Entry Name/NO.	Company Name	Stand Plants/A	Days to Bloom	Fusarium Ear Rot (%)	Head Smut (%)	Ear Height (in)	Moisture at Harv. (%)	Bushel Wt. Calculated lbs/bu	Grain Yield ¹ (lbs/A)	Duncan's Multiple Range Test (5%)
CP	6818RRS39	Croplan	33106	92	0	0	59	18.8	58.1	15126	A
DK	DKC62-63GENVT3P	Dekalb	34848	87	0	0	52	16.7	59.4	15068	A
CP	6331VT3	Croplan	32234	92	0	0	53	16.9	58.2	14469	B
CP	6818VT3/P	Croplan	35719	90	0	0	58	18.2	58.1	14368	BC
NT	5H-716	NuTech S	32234	83	0	0	69	18.1	60.5	14184	BCD
ES	ES7443VT3P	Eureka Se	33977	85	1	0	53	16.4	59.3	14151	BCD
INT	9613VT3	Integra	32234	88	1	0	57	15.6	58.3	13919	BCDE
PI	32T82	Grower	34848	85	0	0	55	16.5	60.9	13735	CDEF
ES	ES7532VT3	Eureka Se	35719	85	1	0	62	16.2	57.4	13568	DEF
PI	31G97	Grower	33977	89	2	0	64	16.6	60.4	13462	EF
INT	9650VT3PRO	Integra	33977	86	0	0	59	16.5	56.4	13431	EF
INT	9640VT3	Integra	32234	92	2	0	52	15.6	58.2	13407	EF
NT	5H-717	NuTech S	32234	91	0	0	62	18.2	60.1	13302	EF
ES	ES7548VT3	Eureka Se	34848	86	0	0	59	15.2	55.4	13294	EF
DK	DKC64-83GENVT3P	Dekalb	32234	91	3	0	55	15.0	60.2	13079	FG
INT	9651VT3	Integra	33106	86	0	0	58	17.3	56.1	12586	G
Average			33596	88	1	0	58	16.7	58.5	13822	
Coefficient of Variation			2.9	1.3	73.0	NA	1.3	2.2	1.2	2.0	
LSD @ 5%			2083.3	2.5	0.8		1.5	0.8	1.5	600	
Significant Variety effect			**	**	NS		**	**	**	**	
Rep effect								**			

* 95% Significance ** 99% Significance

¹ Yield adjusted to 15% moisture

NS= Not Significant, NA= Not Analyzed

In **Table 2**, yields on Hastings Island are up into the seven ton/acre range where I expect them to be for this grower and location. Crop Plan CP 6818RRS39, provided by the grower, and DeKalb DKC62-63GENVT3Pro had the best yield and similar bushel (test) weight. It appears the CP variety takes five days longer to mature than DeKalb. We did not have heavy winds this season so no lodging occurred. Even though we are in the Delta, there is not the Head Smut pressure here as on Tyler Island. This is mainly due to the crop rotation program this grower has. Crop rotation is the best way to avoid build up of soil inoculum of this disease.

Tyler Island grain corn trial, **Table 3** (next page), had similar yields to the Hastings trial but with less uniformity between replications. At Hastings, it took 600 lbs/ac of grain yield to significantly separate one variety from another and 550 lbs/ac at the UCD location. But at Tyler Island, it took 1174 lbs/ac to separate one variety from another. There is also a significant replication effect for grain yield letting me know that the yield across varieties varied between reps. I have had this same field for the last 5 years and it is saltier on the north side of this field, lowering yields slightly. With better data uniformity I get better separation, meaning it takes less yield to significantly separate out the varieties.

Always remember to check my Field Crops web site for the results of past research:

<http://ceyolo.ucdavis.edu/>

Table 3.
2011 UC Cooperavive Extension Corn Variety Trial - Tyler Island

Cooperator: Steve and Gary Mello
 Experimentors: Kent Brittan, Mark Kochi
 Planting Date: May 2, 2011
 Harvest Date: October 20, 2011

Entry Initial: Name/NO.	Company Name	Stand Plants/A	Days to Bloom	Fusarium Head Plants Ear Bushel				Wt. lbs/bu	Yield ¹ (lbs/A)	Duncan's Multiple Range Test (5%)	
				ear rot (%)	Smut (%)	Lodged (%)	Height (in)				
ES ES7443VT3P	Eureka Seeds	39204	79	1	1	3	53	59.5	15339	A	
DK DKC64-82	Grower	33106	79	1	4	1	56	59.8	15152	AB	
CP 6818VT3/P	Croplan	36590	80	2	3	1	54	58.4	15005	ABC	
NT 5H-515	NuTech Seed	38333	81	3	0	5	68	59.8	14914	ABCD	
CP 6818RR S39	Grower	34848	80	0	4	2	58	57.9	14878	ABCD	
PI 32T82	Grower	36590	80	1	1	17	57	59.5	14634	ABCD	
INT 9650VT3PRO	Integra	37462	81	0	5	0	58	56.9	14556	ABCDE	
DK DKC62-61	Grower	37462	79	2	6	0	51	58.3	14238	ABCDE	
DK DKC61-22	Grower	38333	80	2	17	0	57	58.3	14224	ABCDEF	
INT 9664VT3PRO	Grower	38333	80	0	5	0	53	57.9	14172	ABCDEF	
DK DKC64-83GENVT3P	Dekalb	36590	79	3	5	0	52	60.4	14079	ABCDEFG	
INT 9673	Grower	35719	80	1	12	3	60	55.5	13937	BCDEFG	
ES ES7532VT3	Eureka Seeds	35719	80	0	6	0	60	56.2	13764	CDEFG	
INT 9613VT3	Integra	35719	80	1	26	0	48	58.3	13643	DEFG	
INT 9640VT3	Integra	35719	81	1	4	0	58	58.3	13248	EFG	
CP 6331VT3	Croplan	36590	79	1	12	0	48	57.5	12891	FGH	
NT 5H-716	NuTech Seed	37462	82	1	8	2	72	59.6	12788	GH	
DK DKC62-63GENVT3P	Dekalb	34848	78	3	15	1	51	58.3	11867	H	
Average		36590	80	1	7	2	56	58.3	14074		
Coefficient of Variation(%)		5	1	29	19	44	5	1.1	4		
LSD @ 5%		3566	1	1	3	2	6	1.4	1174		
Significant Variety effect			**	**	**	**	**	**	**		
Rep effect				*					**		
				* 95% Significance		** 99% Significance					

¹ Yield adjusted to 15% moisture

In addition to the corn variety trials, I also conducted Fusarium Ear Rot (*Fusarium verticillioides*) and Head Smut (*Sphacelotheca reiliana*) screening trials for the seed companies. These disease screening trials allow the seed companies to privately screen their germplasm for these two important diseases. Southern Sacramento Valley, from Davis south into the Delta, has the some of the highest Fusarium Ear Rot natural inoculum levels in North America. Tyler Island also has very high Head Smut inoculum levels due to many years of back-to-back corn production. These disease trials are why we now have such low incidences of lost corn crops to ear rot and head smut. Over the past eleven years I personally looked at over 850,000 ears of corn to provide this information.

Respectfully,
 Kent Brittan



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