University of California Cooperative Extension • Tulare County

Small Grain News

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Kings and Tulare Small Grain Variety Performance Trials

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The 2004 California wheat crop was 662,000 acres including 117,000 acres of Durum wheat. Summit (210,300 acres) and Yecora Rojo (80,100) were the leading red wheat varieties by acreage. Blanca Grande (74,000) and Kronos (55,000) were the leading white and durum varieties. Hard white wheat acreage more than doubled from the previous year. The change in varieties planted was due to varietal differences in disease resistance. Bonus, Express and Yecora Rojo acreage dramatically decreased while Summit acreage increased four fold. Mohawk (19,000) was the most widely planted Durum wheat in the San Joaquin Valley followed closely by Kronos (16,000).

Small grain variety tests were conducted at multiple locations throughout California. The results from Kings and Tulare Counties small plot trials are shown on the following pages. The regional wheat, barley and triticale trials in Kings County were conducted at Hansen Farms near Corcoran. The dryland wheat and barley trials were conducted at Changala Farm near Ducor. The small grain silage study was large scale, conducted at Milky Way Dairy with Gil Replogle. An Agronomy Progress Report containing more detailed results from all trials is available at http://agric.ucdavis.edu/crops/cereals/cereal.htm or on the Tulare County website at http://cetulare.ucdavis.edu. Stripe rust had a significant impact on grain yield in 2003 and 2004. Wheat varieties have different levels of genetic resistance to stripe rust and as new races of rust develop, the resistance breaks down.

While there are no guarantees the central valley will experience similar conditions during the next growing season there are proven steps growers can take to prevent the reoccurrence of the disastrous results of 2002-03.

Generally, our best wheat silage varieties are also the high yielding grain varieties with high protein, resistance to disease and resistance to lodging.

- First and foremost, select and plant moderately resistant or resistant varieties.

- Secondly, a well-timed fungicide application has been shown to reduce the yield loss in moderately susceptible to susceptible varieties.

Stripe Rust resistance based on observations from the University of California statewide variety tests:

Highly Susceptible: Dirkwin, Bonus, Brooks, Cavalier
Susceptible: Yecora Rojo, Anza, Klasic, Eldon, Yolo, Kern, Serra, Stander
Moderately Susceptible: Express
Moderately Resistant: Stellar, Wincal 14, Clean White
Resistant: Summit, Blanca Grande, Plata

Release of Desert Durum Wheat "ORO"

Oro was developed by the University of California wheat breeding program. This line was tested as UC1375 in Elite and Regional Trials in 2002, 2003 and 2004. During the three years of testing Oro showed high yield potential and good pasta quality. Oro represents a significant yield increase over the current dominant variety Kronos and maintains high quality standard required for the Desert Durum class. In the 2002 and 2003 field tests at Davis, Kings, Kern, Madera and Imperial Valley, Oro was resistant to the current races of leaf rust, strip rust, black point and Barley Yellow Dwarf virus.

Variety	Sacramento lbs/a	San Joaquin lbs/a	Imperial lbs/a	Arizona lbs/a
Oro	**6,290**	**6,570**	**7,080**	**5,961**
Kronos	4,300	5,290	6,540	5,630
Ocotillo	4,810	5,440	6,990	5,261

Considering the average of the last three years of trials in CA and AZ, Oro has shown significant higher yields than the dominate variety Kronos in the Imperial Valley (540 lbs higher), the San Joaquin Valley (1,280 lbs higher), and Arizona (331 lbs higher). Selection for disease and pest resistance, yield, was conducted the UC Desert Research & Extension Center and in grower fields in the San Joaquin and Sacramento Valley. Complete yield and quality data is available at http://agronomy.ucdavis.edu/Dubcovsky/Breeding/Oro.pdf.

Oro is not under Plant Variety Protection. Funding for this project came for the University of California, the California Wheat Commission and the California Crop Improvement Association.

Table 1. Common Wheat Grain Yields – Kings & Tulare Counties						
	Kings				Tulare Rainfed	
Name	2003	2004	Test Wt. (lbs/bu)	Protein	2003	2004
Anza	5,280	3,880	63.3	13.3	1,580	760
Yecora Rojo	3,800	3,050	59.8	12.6	1,790	1,230
Serra	5,290	4,070	61.8	12.5	2,290	1,140
Express	5,120	4,640	61.2	13.5	1,860	1,240
Cavalier	3,640	3,290	58.7	13.3	1,960	1,050
Stander	6,760	6,200	62.5	13.4	1,680	790
Summit	7,240	6,880	63.1	12.9	1,790	1,160
Blanca Grande	7,750	5,250	65.3	15.1	1,760	1,420
Beth Hashita	6,220	4,630	61.1	13.8	1,570	1,190
Wincal 14	5,300	4,880	63.3	12.7	1,750	430
Stellar	--	6,400	64.7	14.1	--	1,060

Table 2. Common Wheat Disease Summary Kings County						
	Stripe Rust		**Leaf Rust**	**Lodging**		
Name	**2003**	**2004**	**2003**	**Soft Dough**	**Harvest**	**Plant Ht (in)**
Anza	3.5	5.3	1	1.3	1	38
Yecora Rojo	5.8	8	1	1	2.3	35
Serra	3.8	6	1	3.5	6.3	41
Express	4	5	1	1	5	40
Cavalier	6	8	1	1	2.5	37
Stander	1.3	6.5	2.3	1	1	34
Summit	1	1	1	1	1	37
Blanca Grande	1.3	1.5	1.8	1.5	4.8	39
Beth Hashita	1	1	1.5	1	1.3	35
Wincal 14	2	2	1	--	--	38
Stellar	--	2.5	--	1	1.5	32

Rating scale for diseases (area of flag-1 leaf affected), lodging, and blackpoint: 1 = 0-3%, 2 = 4-14%, 3 = 15-29%, 4 = 30-49%, 5 = 50-69%, 6 = 70-84%, 7 = 85-95%, 8 = 96-100%.

BYDV ratings (see scale above) were based on percentage of plants showing foliar symptoms.

Table 3. 2004 Durum Wheat Test Kings County

					Lodging			
Name	Yield (lbs/a)	Test Wt (lbs/bu)	Black Point	Plant Ht (in)	soft dough	Harvest	BYDV 4/30	Stripe Rust 4/30
BRAVADUR	3810	62	1	38	1.3	6.3	1	2
DURAKING	6780	63.2	1	37	1	3	1.3	2.5
KOFA	4110	62.2	1.5	39	1	6	1.3	6.8
KRONOS	3730	62.5	1	39	1.3	7.5	2.3	4
RIA	4370	60.6	1.5	38	1	5.5	1.3	5.3
MOHAWK	3540	62	1	37	2.5	7.8	1.5	4
CROWN	5500	61.3	2	40	1	3.3	2.3	1
MATT	4240	62.3	1.5	36	3.8	6.8	2.5	3
PLATINUM	5970	63.7	1	36	1	6.5	1.8	1
TOPPER	5680	61.8	1	39	1	3.3	2.3	3
ORITA	4500	57.9	1	37	1	4	1	4.8
CANDURA	3860	62.3	1	38	1	7.5	2	4.8
ORO	6690	64.2	1	38	1	2.8	1.5	1

Rating scale for diseases (area of flag-1 leaf affected), lodging, and blackpoint: 1 = 0-3%, 2 = 4-14%, 3 = 15-29%, 4 = 30-49%, 5 = 50-69%, 6 = 70-84%, 7 = 85-95%, 8 = 96-100%.

BYDV ratings (see scale above) were based on percentage of plants showing foliar symptoms.

Table 4. 2004 Kings (Irrigated) and Tulare (Rainfed) Triticale Test

	Yield (lbs/a)		Test Wt (lbs/bu)		Plant Ht (in)		Lodging		BYDV	Stripe Rust
Name	Kings	Tulare	Kings	Tulare	Kings	Tulare	Soft Dough	Harvest	4/30	4/30
TRICAL 105	4,960	460	58.6	54.9	41	26	1	1.3	3	1
TRICAL 96	6,900	580	58.1	54.5	37	25	1	1	1	3.8
TRICAL 111	5,330	190	56.5	-	42	23	1	1	1.5	1
RSI 97TV38011	7,660	1000	60.1	55.6	39	24	1	1	1	1
RSI 98TV46506	6,730	-	57.6	-	38	-	1	1	1	1.5
RSI 00TV60147	6,110	-	54.5	-	37	-	1	1	1	2.3

Rating scale for diseases (area of flag-1 leaf affected), lodging, and blackpoint: 1 = 0-3%, 2 = 4-14%, 3 = 15-29%, 4 = 30-49%, 5 = 50-69%, 6 = 70-84%, 7 = 85-95%, 8 = 96-100%.

BYDV ratings (see scale above) were based on percentage of plants showing foliar symptoms.

Table 5. 2004 KINGS BARLEY TEST AND TULARE RAINFED TEST												
Name	Yield (lbs/a)		Test Wt (lbs/a)		Plant Ht (in)		Lodging			Kings Disease		
Cultivars	Kings	Tulare	Kings	Tulare	Kings	Tulare	soft dough	harvest	BYDV	Net Blotch	Leaf Rust	Stripe Rust
UC 603	4,140	870	51.6	49.3	32	24	4.5	4.5	1.5	1	1	1
MAX	4,330	260	53.1	-	32	16	5	5	1	1	1	4
PATTI	4,300	650	53.8	46.1	37	18	6	6.8	1	1	1	1
UC 933	3,890	1,130	53	46.3	30	22	6.3	6	1	1	1	1
UC 937	3,790	1,130	51.5	48.3	25	21	6.3	6.8	2.3	1	1	1
MELTAN	1,300	1,080	54.3	53	35	22	4.3	7.5	4	2.8	1	1
UC 969	3,990	1,130	53.7	50.9	38	25	5	5	1	1	1	1
COMMANDER	3,750	780	54.9	47.7	34	19	5.5	6.5	1	1	2	2.8
TRADITION	2,380	1,360	53.9	50.7	30	29	7	7	1.5	1	1	1

Rating scale for diseases (area of flag-1 leaf affected), lodging, and blackpoint: 1 = 0-3%, 2 = 4-14%, 3 = 15-29%, 4 = 30-49%, 5 = 50-69%, 6 = 70-84%, 7 = 85-95%, 8 = 96-100%.
BYDV ratings (see scale above) were based on percentage of plants showing foliar symptoms.

Table 6. Small Grain Silage Trial - Plot Size 20 X 1200' 4 Reps Steve Wright, Gene Askland, Carol Collar				
Varieties	**Type**	**Tons/A at 70% H2O**	**% H2O at Harvest**	**% Lodging at Harvest)**
Summit	Hard Red Wheat	19.94	64.4	0
Stellar	Hard Red Wheat	18.64	62.4	0
Plata	Hard White	21.6	68.1	0
Trical 96	Triticale	20.03	66.5	0
Crown	Durum	19.76	70.9	40
Blend	HR, White, Triticale	19.42	63.6	0

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