



Small Grain News



November 2002

Choosing Wheat, Durums, Triticale, Barley Varieties for grain or silage for 2003

Steve Wright, Lee Jackson, Carol Collar, Bruce Roberts, Ron Vargas, Brian Marsh, Lalo Banuelos

Season Review

The 2002 season caught many growers by surprise with freeze damage on early-planted small grains. The best time to plant small grain cereal crops is mid-November through mid-December in our area. Many growers planted too early last year and suffered yield loss from frost, insect, disease and lodging damage. In the dryland areas many fields were chopped for silage, sheared off, or tilled under because of drought conditions.

The UC regional testing program led by Small Grains Extension Specialist Lee Jackson evaluates current and new cultivars and advanced breeding lines from public and private breeding programs developing small grains (wheat, barley, oat, and triticale) for California. The following summaries are highlights of the many tests conducted in the San Joaquin Valley. If you want more detail of the individual trial locations call me at 559-685-3309 ext 215.

Hard Red and Hard White Wheat Variety Selections

High grain yield, high grain protein content, and acceptable end-use quality are important attributes for fall-sown hard spring wheats. Currently the varieties Summit and Stander have the best resistance to wheat stripe rust. These varieties are among the highest yielding varieties and have acceptable protein.

Durum Wheat Selections

Durum wheat is grown specifically for its durum semolina, high protein content bran that is used to make macaroni, spaghetti, and other noodle products. The semolina produces a firm, translucent product that imparts a rich yellow color to the noodle products. Durum wheat has been grown primarily in the Imperial Valley of California in recent years and now is becoming popular in the San Joaquin Valley. It provides an attractive alternative to hard spring wheats in the San Joaquin Valley because most current durum cultivars are resistant to leaf rust and high quality durum cultivars access a premium market. High protein content, good protein quality and semolina color, and minimal black point incidence are very important attributes for cultivars. Also, cultivars with good lodging resistance have less vulnerability to black point. Current cultivars differ considerably in end-use quality and in yield potential. The cultivars Kofa and Kronos have the best end-use quality, but are among the lowest in grain yield. Higher yielding cultivars with high quality are under development. The results below highlight the performances of most of the currently available durums in this region.

The durum wheats tend to flower later and mature later which could require a later irrigation cutoff than is required for a wheat like Yecora Rojo. Growers considering durum wheat production should recognize this need for possible changes in late season irrigation management and also assess whether the market outlook for durum wheat compensates for yields that could be potentially lower than the standard hard red wheat variety.

Grain quality is more important in durum wheat production than with hard red wheat. Desirable grain quality should be near or above 13 percent

yet relatively free of blackpoint, a fungal disease which discolors the kernel and semolina flour. Incidence of this disease is influenced by choice of durum variety along with other cultural practices such as irrigation and nitrogen fertility.

Barley

Barley acreage has been reduced dramatically over the past several years. Yield decreases have been partly due to barley stripe rust. The varieties UC937 and UC933 have good resistance to barley stripe rust and also have good resistance to scald and net blotch. These are the best choice of the currently available barleys for fall sowing in the Central Valley in areas vulnerable to stripe rust.

Local Winter Forage Trial Results

Carol Collar, Kings Co. Farm Advisor

Results of last year's forage trial are attached. The trial included two triticale cultivars, seven wheat cultivars and one forage mix comprised of oats, wheat and rye. Yields ranged from 14 to 22 tons per acre. Ordinarily, yields are reported on a moisture-corrected basis, but I have reported the yields on an as harvested basis this year. The field was cut in the boot to flower stage of maturity, which required swathing and field wilting for about one day prior to chopping. Field wilting complicated any kind of moisture correction. That is because different varieties dry differently because of windrow size. A big, tall variety with a huge windrow dries much more slowly than a short variety with a small windrow. The moisture correction would not be meaningful for comparing varieties unless the sample had been taken prior to field drying.

When reviewing the data, keep in mind that none of these forages have exactly the same maturity. They were all harvested on the same day, yet they were in various growth stages. The ideal growth stages for winter forage harvest are either boot stage or soft dough stage. In this trial we missed boot stage on all but two of the entries. One was X2210 triticale which was the least mature and one of the wettest (low DM %) entries. It also had the highest protein and lowest fiber level. This typifies boot stage compared to later growth stages –

nutritional value is higher, but yield is lower. The added nutritional value at boot stage comes at a cost, but depending on a grower's situation, that may be acceptable. In the case of this grower, the goal was to harvest early so that corn could be planted early. The X2210 triticale got off to a terrible start and had a poor stand. It would not be a good choice to plant based on just one year of testing.

Four of the wheats in this trial had already headed out and were flowering at harvest. **Flower stage is the latest stage one should consider for early harvest.** Sometimes the goal is to harvest at boot stage but that becomes impossible because of rainy weather or equipment problems. After boot stage, the crop heads out and then the grain heads produce flowers. Once flowering is complete, the grain kernels begin to fill with a milky fluid, (milk stage). When starch formation in the kernel is complete we say the crop is at soft dough stage. If flower stage is missed, DO NOT HARVEST AT MILK STAGE. The feeding value of the crop at milk stage is poorest, and studies have found that the forage is unpalatable (it doesn't taste good) to animals at milk stage. So if you miss the earlier stages, then wait until soft dough stage to harvest. For more detailed information about growth stages of winter cereals visit my website. There you can view photos to help you recognize each growth stage.

TABLE 1

University of California Cooperative Extension
2002 Kings County Winter Forage Variety Trial
Carol Collar, UC Farm Advisor
Bill Longfellow, Grower/Cooperator

Planted December 7, 2001

Harvested April 11, 2002

Cultivar	Cereal type	Growth stage at harvest	Tons/acre as harvested	% DM at harvest	Plant ht. (in)	% CP	% ADF	% NDF
Baglietto Forage Mix	Oats, Wheat, Rye	Heading	22.2	17.6	46	13.4	36.3	53.8
Trical 105	Triticale	Heading	21.5	19.8	44	15.5	38.7	61.0
Kama	Wheat	Heading	20.1	21.1	34	14.3	37.3	59.6
Baglietto SSK	Wheat	Flower	19.1	23.4	37	14.4	37.4	57.9
X2210	Triticale	Early boot	18.1	18.9	41	16.3	36.7	53.1
Dariel	Wheat	Boot	18.0	22.0	33	14.6	36.9	55.6
Express	Wheat	Heading	17.6	25.1	35	13.7	38.6	58.9
Bonus	Wheat	Flower	17.4	23.1	33	14.9	37.0	59.8
Zancor *	Wheat	Flower	16.5	24.2	38	14.0	37.7	58.3
Brooks	Wheat	Flower	14.5	28.0	34	13.4	36.0	56.7
Mean (3 reps)			18.5	22.3	37.5	14.5	37.3	57.5
CV %			8.81	7.82	3.4	7.56	2.45	2.36
LSD(.05)			2.822	3.024	2.182	1.892	1.580	2.349

Previous Crop: Cotton

Plot size: 20' X 1300', 3 replications

Planting rate: approx. 150 to 200 lbs./acre

Irrigations: Two irrigations with dairy lagoon water

Herbicide: 2,4-D in mid-February

* = non-certified seed

Comments: Very little disease or insect pressure. Slight rust on Brooks. Plant maturity ranged from early boot to flower stage. There was no lodging at this growth stage. Field was wilted for one day - swathed on 4/11 and chopped on 4/12. Percent dry matter at harvest represents the chopped forage on 4/12. Call Carol Collar at 582-3211 ext. 2730, or email ccollar@ucdavis.edu if you have any questions about this data.

DM = Dry matter; CP = Crude protein; ADF = Acid detergent fiber; NDF = Neutral detergent fiber

TABLE 2: 2002 AND 2000-2002 COMMON WHEAT YIELD SUMMARY (LB/ACRE)						
Name	San Joaquin Valley			Rainfed Tests		
	2002	2001-02	2000-02	2002	2001-02	2000-02
	3 Loc.	6 Loc/Yr	9 Loc/Yr	3 Loc.	7 Loc/Yr	10 Loc/Yr
CULTIVARS						
ANZA	6410	5790	5 820	3150	2650	2840
YECORO ROJO	6290	5680	5730	3110	2710	2950
YOLO	7180	6400	6140	3130	2760	2940
KLASIC	6920	6490	6340	3880	3250	3300
SERRA	5780	5720	5880	3550	2950	3070
EXPRESS	6360	5600	5670	3700	3020	3070
CAVALIER	6690	6120	6040	3640	3120	3240
BROOKS	6820	6170	6030	3420	3030	3140
CUYAMA	7710	6790	6660	3310	3040	-
BON	7280	6480	6360	3580	2990	3160
KERN	7120	6270	6360	3600	3050	3180
ELDON	6600	5990	6150	2740	2460	-
STANDER	6800	5980	5960	3620	3010	3060
SUMMIT	7180	6250	6410	3350	2920	3030
BLANCA GRANDE	7130	6370	6340	3550	-	-
PLATA	7330	6360	6320	3560	-	-
BETH HASHITA	5920	5540	5670	3520	-	-
DARIEL	6490	5920	5970	3370	-	-
KAMA	6650	5810	6060	3280	-	-
CV	7	6.9	7.7	16.2	15.3	13.7
LSD (.05)	380	240	220	440	240	190

TABLE 3: 2002 COMMON WHEAT GRAIN PROTEIN & DISEASE SUMMARY

	2 Loc. (Madera, Kern, & Kings)		Kings	
	Protein		Stripe Rust	Leaf Rust
Name	Mean			
CULTIVARS				
ANZA	11.5		1.3	1.3
YECORO ROJO	13.5		4.3	4.8
YOLO	11.2		1.8	1.5
KLASIC	12.5		4.3	4.5
SERRA	12.1		1.0	1.8
EXPRESS	13.0		1.0	1.0
CAVALIER	12.4		5.5	4.8
BROOKS	12.8		4.3	3.0
CUYAMA	11.7		3.5	1.3
BONUS	12.4		4.8	1.8
KERN	12.2		2.0	1.5
ELDON	13.0		3.0	2.3
STANDER	11.9		1.0	1.3
SUMMIT	12.1		1.0	1.0
BLANCA GRANDE	12.7		1.0	1.5
PLATA	11.6		1.0	1.0
BETH HASHITA	12.5		1.0	1.0
DARIEL	11.6		2.0	1.0
KAMA	11.5		2.8	1.3

Rating scale (area of flag-1 leaf affected): 1 = 0-3%, 2 = 4-14%, 3 = 15-29%,

4 = 30-49%, 5 = 50-69%, 6 = 70-84%, 7 = 85-95%, 8 = 96-100%.

TABLE 4: 2002 AND 2000-2002 DURUM WHEAT YIELD SUMMARY (LB/ACRE)

		San Joaquin Valley		
		2002	2001-02	2000-02
Name		3 Loc.	6 Loc/Yr	9 Loc/Yr
CULTIVARS				
YECORO ROJO		6250	5850	5830
DURAKING		6990	6500	6560
KOFA		6430	5780	5730
KRONOS		5910	5650	5920
RIA		5980	5490	5680
MOHAWK		6920	6260	6290
DELUXE		6530	5990	6250
CROWN		6610	6010	6110
MATT		5940	5480	5720
PLATINUM		7020	6240	6520
TOPPER		6570	5950	5980
ORITA		6730	5860	5820
CV		8.2	7.6	7.8
LSD (.05)		420	260	220

TABLE 5: 2002 DURUM WHEAT GRAIN PROTEIN, STRIPE RUST & BLACK POINT SUMMARY

Name	3 Loc. (Madera, Kern, & Kings)	Protein	Stripe Rust	Black Point
		MEAN	MEAN	MEAN
			Madera & Kings	Kern & Kings
CULTIVARS				
YECORO ROJO		-	2.8	1.5
DURAKING		12.5	1.2	1.0
KOFA		13.3	1.4	1.3
KRONOS		12.8	1.3	1.3
RIA		12.5	1.2	1.3
MOHAWK		12.1	1.2	1.0
DELUXE		12.8	1.0	1.5
CROWN		13.0	1.0	1.0
MATT		12.9	1.0	1.8
PLATINUM		11.4	1.0	1.0
TOPPER		11.6	1.0	2.0
ORITA		13.2	1.7	2.0

Grain protein % expressed at 12% moisture basis

TABLE 6: 2002 AND 2001-2002 TRITICALE YIELD SUMMARY (LB/ACRE)

	San Joaquin Valley	
	2002	2001-2002
	1 Loc	2 Loc/Yr
Name		
CULTIVARS		
JUAN	7070	6630
TRICAL 105	6250	6110
TRICAL 96	6980	6500
TRICAL 111	6840	6290
YOLO	6970	6470

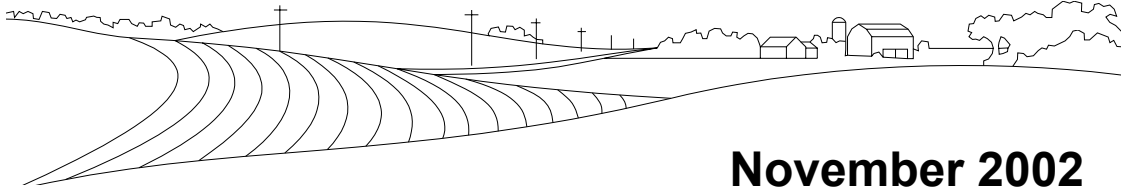
TABLE 7: 2002 AND 2000-2002 BARLEY YIELD & STRIPE RUST SUMMARY (LB/ACRE)

	San Joaquin Valley			Rainfed Tests			Stripe Rust
	Kern, Kings, & Madera			Tulare & San Luis Obispo			Location
	2002	2001-2002	2000-2002	2002	2001-2002	2000-2002	Kings
Name	2 Loc	4 Loc/Yr	6 Loc/Yr	2 Loc	4 Loc/Yr	6 Loc/Yr	2002
CULTIVARS							
UC 603	4940	4830	4830.0	3200	2200	2950	1.0
MAX	6060	4930	-	2700	1770	-	7.0
PATTI	5860	6080	5330.0	2850	1990	2690	1.0
UC 933	5630	6050	5600.0	3650	2810	3510	1.0
UC 937	5940	5970	5690.0	3300	2360	3110	1.0
MELTAN	3160	3910	3770	3660	2810	3400	1.0
UC 969	4920	5290	5170	2820	2200	3060	2.3
COMMANDER	5540	-	-	2770	-	-	8.0
CV	15.4	12.8	13.5	15.4	21.1	14.7	35.6
LSD (.05)	730	490	400	490	350	260	1.4

Rating scale (area of flag-1 leaf affected): 1 = 0-3%, 2 = 4-14%, 3 = 15-29%,

4 = 30-49%, 5 = 50-69%, 6 = 70-84%, 7 = 85-95%, 8 = 96-100%.

Small Grain News



November 2002

Steve D. Wright
Steve Wright, Farm Advisor

The University of California prohibits discrimination against or harassment of any person 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 (special disabled veteran, Vietnam-era veteran or any other veteran 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. Inquiries regarding the University's nondiscrimination policies may be directed to the Affirmative Action Director, University of California, Agriculture and Natural Resources, 300 Lakeside Drive, 6th Floor, Oakland, CA 94612-3560. (510) 987-0096.

Presorted Standard
Postage & Fees Paid
USDA
Permit No. G-268

Cooperative Extension
U.S. Dept of Agriculture
University of California
Oakland, CA 94612-3560
----- 54
Official Business
Penalty for Private Use \$300