University of California Cooperative Extension

KERN FIELD CROPS

Kern County • 1031 S. Mt. Vernon Avenue • Bakersfield, CA 93307 • 661-868-6218

October 2012

2012 Kern County Wheat Variety Performance Trial

The 2012 California wheat crop was 737,000 acres including 137,000 acres of Durum wheat. Non-durum acreage decreased by 41,000 acres, a 6% decrease from 2011. Durum wheat acreage increased 27% for the second straight year. The 12 year Durum acreage average is 110,800 acres with the low and high at 65,000 acres and 176,000 acres in 2006 and 2009, respectively. PR 1404 (118,500 acres), Joaquin (78,000 acres), Red Wing (67,000), Cal Rojo (49,500 acres) and Ultra (40,000 acres) were the leading red wheat cultivars by acreage. This represents a slight change in variety preference. Acreage planted to PR 1404 and Redwing increased slightly whereas planted acreage of Joaquin substantially decreased. Blanca Grande 515 (30,500 acres) led the hard white wheat acreage in the state and the San Joaquin Valley. Orita (33,000) was the leading durum variety. Volante was the most widely planted Durum wheat in the San Joaquin Valley representing 58% of the acreage.

Cereal grain variety evaluations were conducted at multiple locations throughout California. The Kern County results are shown in Tables 1 and 2. The tests included advanced breeding lines but only the top yielding experimental variety is included in these tables. Multi-site/year averages and additional information are included in an Agronomy Progress report published annually. Copies are available at the local county extension office or on the web at

http://agric.ucdavis.edu/crops/cereals/cereal.htm.

Varietal differences in Stripe Rust resistance, based on observations from the 2011 and 2012 University of California statewide variety tests, are as follows:

Common Wheat	
Highly Susceptible:	Anza, Joaquin, Mika, Redwing
Susceptible:	Express, Redwing, WB-Cristallo
Resistant:	Blanca Royale, Blanca Grande 515, Cal Rojo, Lassik, New Dirkwin, Patwin, Patwin 515, WB-Patron, WB-Rockland, WB-Perla
Durum Wheat	
Resistant:	Crown, Duraking, Helios, Platinum, Q-Max

Table 1. 2010 Kern County Durum Wheat Variety Trial Results.

Cultivar	Yield	Test Weight	Plant Height	†BYDV	Protein	Lodging Harvest
	-- lbs/acre --	-- lbs/bu --	-inches -		-- % --	
Duraking	5760	61.1	35	1.0	11.8	6.8
Helios	5740	60.3	34	1.0	11.4	7.3
Saragolla	5490	62.4	36	1.5	11.4	7.8
Topper	5480	62.3	37	2.0	10.6	7.5
Platinum	5050	62.6	31	1.3	11.6	6.5
Maestrale	4770	61.2	40	1.0	11.4	8.0
Q-Max	4720	57.9	33	1.0	12.5	7.8
Crown	4650	56.2	35	1.5	12.8	7.8
††UC 1690	6080	62.9	34	1.8	12.4	7.3
Mean	4960	61.2	35	4.3	12.0	7.2
CV %	12.7	1.1	5.6	37.6		11.7
$LSD_{0.05}$	890	1.3	4	ns		1.2

†Ratings scale for diseases (area of flag 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%.
††Top yielding experimental variety included for comparison.

Planted:	December 4, 2011
Prior Crop:	cotton
Fertilizer:	about 379# N total
Seeding Rate:	1,200,000 seeds/acre
Water Applied	about 2.6 acre feet
Harvested:	July 2012

Table 2. 2010 Kern County Common Wheat and Triticale Variety Trial Results.

Variety	Yield	Test Weight	Plant Height	†BYDV	Protein	Lodging Harvest
	-- lbs/acre --	-- lbs/bu --	-inches -	5/17	%	
Wheat						
Joaquin	6460	61.2	32	1.5	12.2	1.8
Redwing	6010	58.3	30	1.8	12.5	2.0
Blanca Grande 515	5800	63.7	35	1.0	12.5	7.0
WB-Perla	5590	61.7	31	1.3	12.4	3.8
Blanca Fuerte	5530	61.2	31	2.3	11.4	1.3
Express	5460	61.3	35	1.8	12.4	5.8
Patwin 515	5430	59.0	32	1.8	12.2	1.0
Cal Rojo	5380	58.4	32	1.8	12.2	1.0
WB-Cristallo	5370	61.0	35	2.0	12.3	4.3
Blanca Royale	5290	59.8	33	1.0	12.8	1.8
WB-Rockland	5220	60.4	32	1.8	12.9	1.0
WB-Patron	4590	59.0	35	2.5	12.5	4.5
Anza	4570	51.0	33	1.5	10.9	4.0
Mika	3100	60.4	39	1.8	13.1	7.5
New Dirkwin	2850	56.4	39	1.5	12.0	5.8
††WB DA905-10	6170	61.6	35	1.0	11.7	3.3
Triticale						
Mean	5260	60.2	33	3.0	12.1	3.0
CV %	8.6	1.0	4	40.8		40.8
$LSD_{0.05}$	640	1.2	3	1.7		1.7

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

††Top yielding experimental variety included for comparison.

Nitrogen Fertilizer Recommendation Based on Early-Spring Chlorophyll Meter Readings

Nitrogen fertilizer is the most used and often the most mismanaged nutrient input. Nitrogen management has tremendous implications on crop productivity, quality and environmental stewardship. Sufficient nitrogen is needed to optimum yield and quality. Soil and in-season plant tissue testing for nitrogen status are a time consuming and expensive process. Real time sensing of plant nitrogen status can be a useful tool in managing nitrogen inputs. The following is the result of two year's data of a multi-location project to assess the usefulness of using chlorophyll meters for making nitrogen fertilizer recommendations in wheat.

Plots at multiple locations in the southern San Joaquin Valley had nitrogen applications of 0, 100, 200, and 300 lbs. nitrogen per acre applied at planting. At growth stage Feekes 5, nitrogen was applied so that each plot had received a total of 300 lbs N/acre. Plant nitrogen status was tested at Feekes 3, 5 and 8 and 10 (tillering through flag leaf extension). Plant nitrogen measurements were made by reflectance, transmittance/absorbance, and wet chemistry.

Good correlations (R^2>0.52) were observed between meter readings and V5 nitrogen concentration (Figure 1). There were some differences between varieties at the different locations. The difference between the meter reading of the well fertilized treatment and the other treatments was calculated. Very good correlation was observed (R^2=0.69) for the SPAD meter readings (Figure 2).

Grain yields were equivalent for all locations where total nitrogen applied was the same. The total nitrogen applied was greater than the typical amount (50 to 100 lbs N/A depending on yield potential). There was not a decline in yield for over fertilization that can occasionally occur. Once the crop was sufficiently fertilized meter readings became inconclusive and were of no benefit for determining nitrogen status, silage yield and protein and grain yield and protein.

Early season nitrogen fertilizer recommendation is as follows:

Apply the expected full nitrogen fertilizer rate on a reference area at least three weeks prior to sampling where plants are actively growing. The reference area should be representative of the field and can be several small areas throughout the field or a strip through the field. SPAD meter measurements should be made mid leaf on the upper most fully exposed leaf for greatest consistency and accuracy. Plants and leaves that are not representative of the field, under stress or insect damaged should not be sampled. At Feekes 5 to 6, compare the readings from the reference areas to readings from the remainder of the field. Because individual plants vary, at least 30 readings should be made throughout the field and reference area. The difference between the averages of the readings will give an indication of the need for additional nitrogen fertilizer.

The nitrogen rate calculation is: $N = 45 + 14D$

where

N = Recommended Nitrogen Rate in lbs N/A
D = Difference in SPAD meter reading between measured crop and reference area

As an example, if the average meter reading between the fertilizer reference sites and the field was 10, then the recommendation nitrogen fertilizer rate would be 45 + (14 * 10) for a total of 185 lbs N/A.

Figure 1. V5 Tissue Nitrogen Concentration versus SPAD Reading.

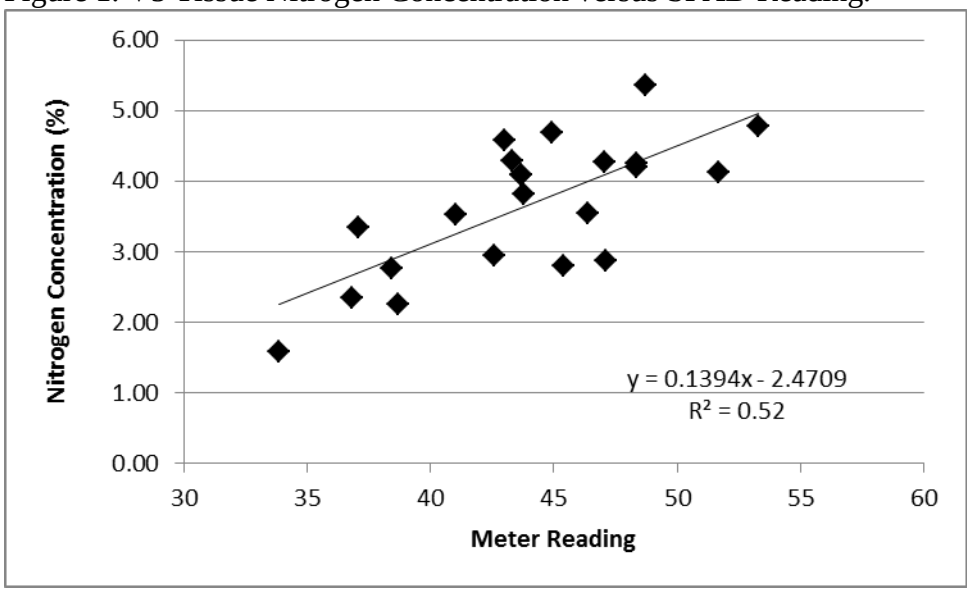
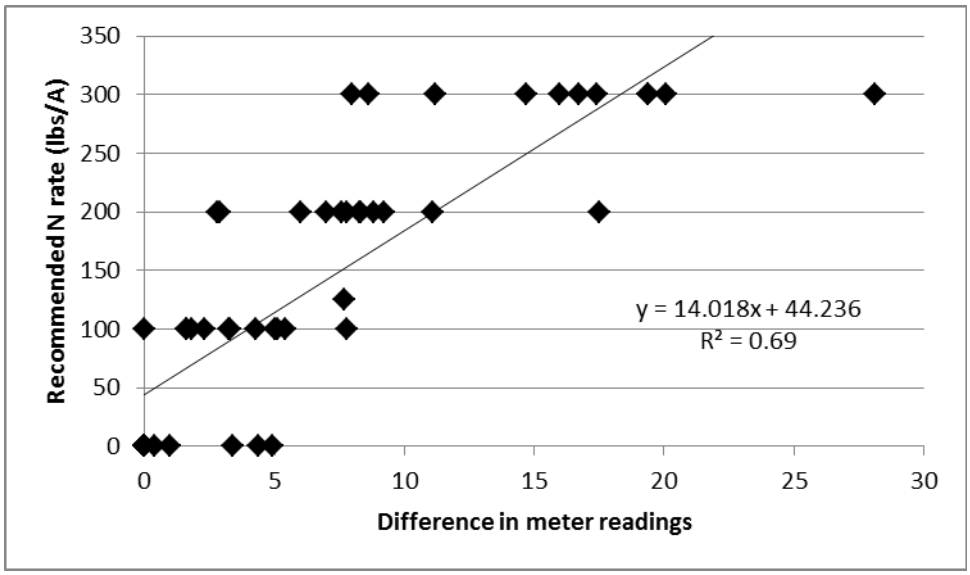


Figure 2. Recommended Nitrogen Rate versus SPAD Differential.



Disclaimer: Discussion of research finding necessitates using trade names. This does not constitute product endorsement, nor does it suggest products not listed would not be suitable for use. Some research results included involve use of chemicals, which are not currently registered for use, or may involve use which would be considered out of label. These results are reported but are not a recommendation from the University of California for use. Consult the label and use it as the basis of all recommendations.

Brian Marsh, Farm Advisor
Cotton, Small Grains, Corn & Silage