



Agronomy Notes

October 2005

University of California
Cooperative Extension

Colusa, Sutter, Yuba and
Glenn Counties



Choosing a wheat variety for the 2005-06 crop year----

What's a grower to do?

By Jerry Schmierer, Agronomy Farm Advisor
Colusa, Sutter & Yuba Counties

There is no "silver bullet" variety. We have treated the variety Summit as a silver bullet for the last two years, but it has become tarnished when new strains of Stripe Rust developed that have resulted in isolated severe Stripe Rust infections on Summit. It was only a couple of years ago in 2003 when the variety Express, a then Stripe Rust resistant variety, experienced a similar problem. A couple of years before that in 2000, the variety RSI5, another Stripe Rust resistant variety met its demise to a new strain of Stripe Rust. This is a reoccurring theme! With each new outbreak of a new strain of Stripe Rust that infects a previously resistant variety, almost the entire wheat acreage in California has shifted to another "resistant" variety. That many acres of one variety sets up the repeating scenario of a shift in Stripe Rust strains followed by wide spread dissemination of spores through out the Central Valley. How do we get off this merry-go-round?

In the long run, not having a "silver bullet" variety is probably a good thing. We need to learn from our mistakes and not put all of our eggs (planted acres) in one basket (one variety). There are actually a number of varieties to choose from. Table 1. lists the yield results of the common released wheat varieties that have been tested by U.C. in the Sacramento Valley. Table 2. has the protein results and Table 3. has the Stripe Rust ratings for those varieties.

There are 3 white wheat varieties on the list. Blanca Grande (ranked #3 in yield), Clear White (#4) and Wincal 14 (#6). Blanca Grande has had the better yield and protein while all three have had consistently low Stripe Rust ratings. Because only a small percentage of total acreage is planted to these varieties, more than likely the development of new Stripe Rust strains that overcome their genetic resistance will be slow in coming. White wheat must be kept separate from the red wheat varieties that occupy the majority of the market.

With 4 competitive red wheat varieties on the list, Summit still holds the #1 yield spot. This reflects the fact that the 2004-05 trial locations (with the exception of UC Davis) did not experience the new strain of Stripe Rust that affects Summit. There are 2 newly named varieties on the list: Solano (ranked #2 in yield) and Dash 12 (#5). Solano and Express both have high protein content at 13.4 % average over the 3 year period compared to Summit at 12.6% and Dash 12 at 12.8%. The other red variety, Anza should not be considered because of its lack of Stripe Rust resistance, low protein and low yield.

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For special assistance regarding our programs, please contact us.

This last year, much of the Summit acreage was not affected with the new strain of Stripe Rust. The severe outbreaks were geographically isolated, but were quite severe. One interesting observation was a field of Express along side of a Summit field that was hit hard by Stripe Rust. The Stripe Rust in the Express field did not develop as quickly or severely as in the Summit field. We know that there are many different strains of Stripe Rust out there, that they change over time and a susceptible variety like RSI 5 can again look like a resistant variety simply because the strains that effect that variety are no longer present. With that in mind, perhaps we should not be so quick to throw out a variety like Express or Summit simply because they have a Stripe Rust problem for a period of time. Valley wide we should be planting more than one variety and we should be using other tools like fungicides to help manage this disease. The plant breeders have done an excellent job of providing us with disease resistant varieties, but the diseases are changing faster than they can develop new varieties. With that in mind, I would like to offer some suggestions for Stripe Rust management.

Stripe Rust Management Plan:

1. Don't plant all the same variety. If the whole valley is planted to the same variety like it has been in the past, one outbreak of a new strain can quickly and easily become an epidemic. Planting multiple varieties will lower your risk of loss from Stripe Rust.
2. Budget and plan for a fungicide application in March, if needed to control Stripe Rust.
3. Monitor your fields in January and February for early symptoms of Stripe Rust developing on the lower leaves. If Stripe Rust starts early, it can be more severe than if it develops later.
4. Find out what is happening around the valley. Is some other area being hit by Stripe Rust on one or more of the varieties that you are growing? Continue to monitor your fields for diseases.
5. Monitor the weather conditions. Rain in February and March is conducive to Stripe Rust development. If you need to treat with fungicides, it will probably be in March because of the crop stage limitations of the fungicides. Look at the long range forecast for the likelihood of rain in April. Monitor your fields.
6. Treat with a fungicide, in a timely manner, to protect the flag leaf, head and grain development if ***all three of the following conditions are met:***
 - a. You have a variety that is susceptible to the Stripe Rust strains that are occurring in your area.
 - b. Signs of Stripe Rust are showing up in your field.
 - c. Weather conditions that are conducive to Stripe Rust development. Optimum conditions are temperatures between 50-60 degrees F. with intermittent rain or fog (needs mild temperatures and moisture). Conversely, high temperatures and no rain in March and April, like occurred in 2004, retard the development of Stripe Rust and reduce the need for treatment.

Economics of fungicide applications:

Results from our fungicide trials conducted over the last 3 years have shown that ***when all three of the above conditions are present***, the application of fungicides increased yield and bushel weight over the untreated check. That resulted in an increase in income of \$50 to \$100 per acre from a \$25/acre (range from \$20 to \$36 /A) fungicide application. In other words, \$50/A increase in income minus \$25/A cost = net profit of \$25/A (100% return on investment in a 5 month time period).

More information on controlling Stripe Rust with fungicides is coming in the November Agronomy Notes newsletter.
If you have questions or comments, please contact me. Jerry Schmierer

"2005 Regional Barley, Common and Durum Wheat, Triticale, and Oat Performance Tests in California", by L.F. Jackson, J. Dubcovsky, L.W. Gallager, O. Chicaiza, D. Stewart, L.K. Gibbs, D. Prato-Mayo, D. Kirby, H. Carlson, M. Canevari, B. Marsh, H. Meister, D. Munier, S. Orloff, B. Roberts, J. Schmierer, R. Vargas, R. Wilson and S. Wright

Table 1. Sacramento Valley irrigated wheat yield summary. Yields are in pounds per acre and the numbers in parentheses indicate the relative rank in the column.

Wheat Varieties	Type	Average 2003-05 12 Loc-Yr	Butte			Colusa			UC Davis			Sac-SJ Delta		
			2005	2004	2003	2005	2004	2003	2005	2004	2003	2005	2004	2003
ANZA	HRS	3370 (8)	2120 (8)	4780 (6)	2750 (7)	4320 (8)	5510 (8)	2710 (8)	3170 (8)	3170 (8)	2420 (8)	4380 (5)	1640 (8)	3510 (7)
EXPRESS	HRS	4130 (7)	4410 (4)	4590 (9)	4040 (6)	5180 (5)	6150 (7)	3870 (6)	3860 (7)	4920 (6)	3350 (7)	4080 (7)	1850 (7)	3200 (8)
SUMMIT	HRS	5940 (1)	4950 (1)	5560 (2)	6000 (1)	5870 (1)	6870 (3)	7570 (1)	4290 (3)	6440 (1)	6260 (1)	6030 (1)	4180 (2)	7310 (1)
BLANCA GRANDE	HWS	5380 (3)	4640 (3)	5030 (4)	4460 (4)	4920 (6)	7090 (1)	6050 (3)	5340 (1)	6200 (2)	6040 (2)	4990 (3)	3230 (4)	6540 (3)
DASH 12	HRS	4820 (5)	4090 (6)	5230 (3)	5060 (3)	5530 (2)	6690 (5)	5120 (5)	3910 (6)	5350 (5)	4620 (4)	3890 (8)	2920 (5)	5370 (4)
CLEAR WHITE	HWS	4840 (4)	4330 (5)	4600 (8)	2640 (8)	5520 (3)	6760 (4)	5560 (4)	4260 (4)	5530 (4)	4370 (5)	4950 (4)	4390 (1)	5160 (5)
SOLANO	HRS	5480 (2)	4930 (2)	4850 (5)	5700 (2)	5450 (4)	6880 (2)	6720 (2)	4210 (5)	5840 (3)	5260 (3)	5240 (2)	3890 (3)	6730 (2)
WINCAL 14	HWW	4180 (6)	2890 (7)	5670 (1)	4120 (5)	4500 (7)	6610 (6)	3400 (7)	4310 (2)	4800 (7)	3430 (6)	4140 (6)	2380 (6)	3880 (6)
CV		10.2	15.2	8.5	14.6	9.9	6.3	12.7	11	6.8	10.8	8.8	25.7	6.8
LSD _(.05)		180	1010	620	660	720	540	560	700	480	450	610	930	310

Table 2. Wheat grain protein summary for the Sacramento Valley. Grain protein is expressed at 12% moisture basis.

Wheat Varieties	Average 2003-05 12 Loc-Yr	2005			
		Butte	Colusa	UC Davis	Sac/SJ Delta
ANZA	11.5	13.0	10.7	12.1	12.0
EXPRESS	13.4	12.9	13.3	13.8	13.0
SUMMIT	12.6	13.8	11.5	13.3	12.5
BLANCA GRANDE	13.0	14.5	11.7	14.1	13.0
DASH 12	12.8	13.3	12.3	13.3	12.3
CLEAR WHITE	12.5	13.5	12.1	13.7	12.0
SOLANO	13.4	14.0	11.6	13.4	13.1
WINCAL 14	12.4	13.7	10.5	11.8	12.2
LSD _(.05)	0.5				

Table 3. Wheat stripe rust summary for the Sacramento Valley. The rating (percentage of flag leaf affected) scale is: 1= 0-3%, 2=4-14%, 3=15-29%, 4=30-40%, 5=50-69%, 6=70-84%, 7=85-95%, and 8=96-100%.

Wheat Varieties	Ave. 2005 4 Loc	Ave. 2004 5 Loc	Ave. 2003 4 Loc	2005			
				Butte	Colusa	UC Davis	Sac-SJ Delta
ANZA	5.7	6.1	4.5	7.8	4.3	5.0	5.5
EXPRESS	3.3	2.8	3.5	4.8	3.3	3.3	2.0
SUMMIT	2.1	1.2	1.5	1.3	2.0	3.5	1.8
BLANCA GRANDE	1.3	1.0	1.3	1.0	1.8	1.5	1.0
DASH 12	1.4	1.7	2.2	1.8	1.3	1.0	1.5
CLEAR WHITE	1.6	1.9	2.2	2.5	1.0	1.3	1.8
SOLANO	3.8	1.3	1.5	3.5	4.8	3.8	3.0
WINCAL 14	2.2	2.1	3.9	3.8	1.0	3.0	1.0
CV				37.8	41.2	42.1	36.7
LSD _(.05)				1.3	1.3	1.4	1.3

35th California Alfalfa & Forage Symposium

Visalia Radisson, Visalia, CA – December 12-14, 2005



Monday, December 12, 2005

10:00 a.m. – 5:00 p.m. Agricultural Tour of the Lower San Joaquin Valley

Visit the heart of California's alfalfa production and dairy region – agricultural sites of interest including Friesian Horses, Heritage Museum, dairy farm, cheese making, alfalfa and winter forage production. For further details, see website. Includes lunch and returns about 5:00 p.m. Space is Limited, so sign up early, first- come first-served.

Make your hotel plans now at the **Visalia Radisson** (559-636-1111 or 800-333-3333) at the \$89 symposium rate. For registration, see <http://alfalfa.ucdavis.edu> or use the form below.

Tuesday, December 13, 2005

Main Session – Industry Trends and Environmental Issues

Moderator: Carol Frate, UCCE, Tulare, CA

- 8:00 Announcements & Welcome
- 8:15 Alfalfa supply and demand situation – Bees Butler, UC Davis, CA
- 8:40 Critical issues facing the dairy industry – Mike Marsh, Western United Dairymen, Modesto, CA
- 9:05 Air quality issues with the dairy forage system – Frank Mitloehner, UC Davis
- 9:30 Implications of deficit irrigation management of alfalfa – Steve Orloff, UCCE, Yreka, CA
- 9:55 Discussion

10:00 Break

Main Session – Industry Trends and Environmental Issues (continued)

Moderator: Ron Vargas, UCCE, Madera, CA

- 10:30 Recycling manures using forage crops – Marsha Mathews, UCCE Advisor, Modesto, CA
- 10:55 Central Valley waivers and forage crops – Allan Fulton, UCCE Red Bluff, CA
- 11:20 Groundwater protection areas and Forages – Larry Schwankl, UC Davis
- 11:45 Discussion

12:00 Banquet Lunch (raffles and awards)

Breakout Session I. Pest Management

Moderators: Tim Hays, PCA, Lancaster, CA; Mike Rethwisch, UCCE, Blythe, CA

- 1:30 Problem weeds in hay and forages for livestock—Birgit Puschner, UC Davis
- 1:50 Stand establishment: Round-Up and other herbicides—Mick Canevari, UCCE, Stockton, CA
- 2:10 Controlling weeds in established alfalfa —Ron Vargas, UCCE Madera, CA
- 2:30 Sclerotinia in alfalfa: biology and control – Carol Frate, UCCE, Tulare, CA
- 2:50 Discussion

3:00 Break

- 3:30 Biological control of weevils; current status – Karey Windbiel, UC Davis
- 3:40 Controlling weevils in alfalfa – Larry Godfrey, UC Davis
- 3:55 Control of beet armyworm & alfalfa caterpillar – Eric Natwick, UCCE, El Centro, CA
- 4:15 Rodents and their control – Terry Salmon, UCCE, San Diego, CA
- 4:35 New insect threats to California forages – Charlie Summers, Kearney Ag Center, Parlier, CA
- 4:55 Discussion

5:00-6:30 Exhibit Hall Mixer: Refreshments and Cash Bar

Breakout Session II. Producing High Quality Forages for Dairy Systems

Moderators: Steve Wright, UCCE, Tulare, CA and Carol Collar, UCCE, Hanford, CA

- 1:30 Winter forage options for dairy systems – Gene Aksland, Resource Seeds, Visalia, CA
- 1:50 Utilizing the BMR trait in sudangrass and sorghums– Jon Reich, Cal West, Woodland, C
- 2:10 Cool season annual and perennial grasses – Devesh Singh, Barenbrug USA, Tangent, OR
- 2:30 Update on elephantgrass research and its potential as a forage crop – Dave Goorahoo, Center for Irrigation Technology, CA State University, Fresno, CA
- 2:50 Discussion
- 3:00 Break**
- 3:30 Changing role of forage fiber in dairy rations – Peter Robinson, UC Davis, CA
- 3:50 Harvesting silage corn at the right time – Roger Vinande, Pioneer Hi-Bred, Modesto, CA
- 4:10 Monitoring phosphorus for alfalfa production – Jerry Schmierer, UCCE, Colusa, CA
- 4:30 Producing organic alfalfa – Rachael Long, UCCE, Woodland, CA
- 4:50 Discussion

5:00-6:30 p.m. Exhibit Hall Mixer: Refreshments and Cash Bar

Wednesday, December 14, 2005

6:30 a.m. Complimentary CAFA Breakfast (See CAFA booth for tickets.)

Main Session – Forage Quality

Moderator: Blake Sanden, UCCE, Bakersfield, CA

- 8:05 Diurnal changes in forage quality – Hank Mayland, USDA-ARS, Kimberly, ID
- 8:30 What are you missing with your hay quality tests? – Mary B. Hall, USDA-ARS, Madison, WI
- 8:55 Balancing quality and yield using cutting schedules and varieties – Dan Putnam, UC Davis
- 9:20 Postharvest changes in alfalfa quality– Alan Rotz, USDA-ARS, College Park, PA
- 9:45 Discussion

9:55 Break

Main Session – Forage Quality and Genetic Engineering

Moderator: Mick Canevari, UCCE, Stockton, CA

- 10:20 Establishing a top-notch alfalfa stand – Shannon Mueller, UCCE, Fresno, CA
- 10:45 Do GE crops impact animal health and food products?—Alison Van Eenennaam, UC Davis
- 11:10 Coexistence of GE and non-GE alfalfa – Dan Putnam, UC Davis
- 11:35 Reinventing alfalfa – future innovations for alfalfa – Neal Martin, Madison, WI
- 12:00 Discussion

12:10 Adjourn

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35th California Alfalfa and Forage Symposium – Registration Form	
Please complete one form per person attending. Name	
Company/Ranch	Address
City, State, Zip Code	Phone Fax
E-mail (important) Confirmation by E-Mail only.	<input type="checkbox"/> Pre-Symposium Tour \$40.00
<input type="checkbox"/> Pre-Registration (before 12/1/05) \$125.00	<input type="checkbox"/> Late Registration (after 12/1/05) \$160.00
<input type="checkbox"/> Single Day Registration \$100.00 (circle 12/13/2005 or 12/14/2005)	
<input type="checkbox"/> Guest Banquet Lunch Ticket \$27.00	
<input type="checkbox"/> Additional Copy of Proceedings @ 12.00 ea. (one included with registration)	
☞ Register online go to our website at http://alfalfa.ucdavis.edu .	
Mail your check, made payable to “UC Regents,” to Janice Corner (jecorner@ucdavis.edu or 530-752-7091), Department of Plant Sciences, PRB, MS-5, UC Davis, Davis, CA 95616-8780.	

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