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Fresno County Small Grain Variety Performance Trials

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Small grain variety tests were conducted at multiple locations throughout California, coordinated by Wheat Breeder Jorge Dubcovsky. The results from Fresno County small plot trials are shown on the following pages. The regional wheat, barley and triticale trials were conducted at the Westside Research and Extension Center in Five Points. A special thanks to Milky Way Dairy and WSREC for their cooperation in these studies. An Agronomy Progress Report containing more detailed results from all trials is available at: http://smallgrains.ucdavis.edu and http://cetulare.ucanr.edu.

2013 started off with almost no rain, resulting in poor yields in the dry land regions and requiring most of the small grains to be irrigated up in the irrigated wheat growing regions. Those fields not being irrigated up with sprinklers often ended up with poor, non uniform stands. In many fields, weeds, especially grasses, caused severe competition to slow emerging small grains. This also created less than optimum conditions for good root growth. Warm weather in May caused a lot of silage to be harvested on the dry side. Although there was little rain, temperature conditions were ideal for wheat stripe rust on some varieties. There were large acreages planted to susceptible varieties. Several fields were treated with fungicides one to two times.

Wheat varieties have different levels of genetic resistance to stripe rust, and as several new races of rust develop, the resistance breaks down. Often, our best silage varieties are also the high yielding grain varieties with high protein, resistance to disease and resistance to lodging and early maturing. A dual purpose variety gives options, particularly when grain prices are high and silage prices low or vice versa, or when water may be limited. Choose more than one variety or grain type to reduce the impacts of weather, disease, harvest schedules, and economics.

- First and foremost, select and plant varieties with good resistance along with high yield potential.
- Second, a well-timed fungicide application has shown to reduce the yield loss even in resistant varieties when weather conditions favor the disease. Stripe rust resistance based on observations from the University of California statewide variety tests indicate:

Highly Susceptible: Joaquin, Mika, Bonus, Brooks, Anza, Blanca Grande, Yecora Rojo, Dirkwin

Susceptible: WB-Paloma, Pacheco, Summit

Moderately Susceptible: PR 1404, Redwing, Kronos, Duraking, Clear White, Cristallo

Moderately resistant: Trical 118, Westmore, Ultra, Camelot, Crown, Platinum, Topper, Blanca Fuerte, Volante, Trical 105, Desert King

Resistant: Cal Rojo, Blanca Grande 515, Summit 515, Lariat, Lassik, Patwin, Blanca Royale, Rockland, Fortissimo, SY 158T

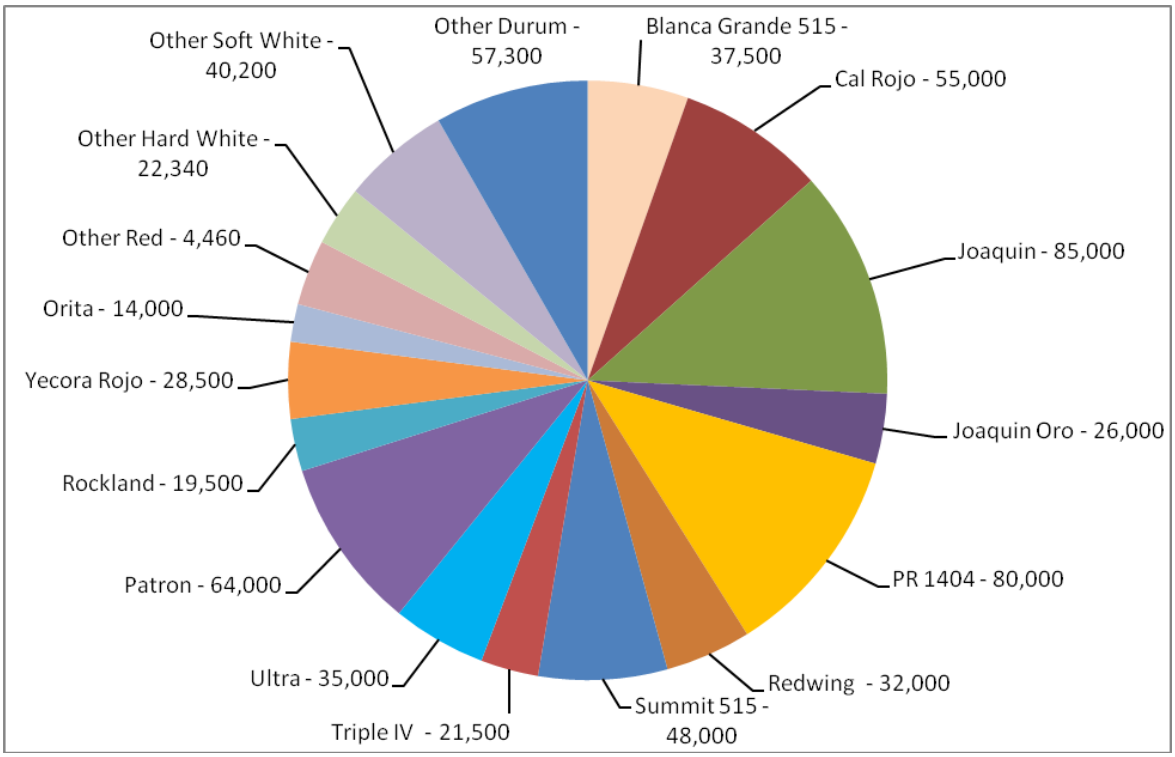
2013 California Wheat Variety Survey
California Wheat Commission

An estimated 690,000 acres of wheat were planted in California for the 2013 harvest year, down 6% from acreage reported in last year's Variety Survey. Red wheat showed a 5% increase in acreage from last year; white varieties showed a similar percentage decrease. A large downward shift in Durum acreage occurred this planting season. Only 52% of last year's acreage was planted, due mainly to lower Durum prices. Approximately 75% of the California acreage planted this season was planted to red wheat varieties, with 10% and 15% planted to Durum and white varieties, respectively. About 82% of all California wheat acres were planted in the Central Valley of California, with nearly 65% grown in the San Joaquin Valley alone.

RED AND WHITE WHEAT:
Hard Red wheat remains the top wheat class grown in California. The varieties Joaquin and Cal Rojo were the top (predominately grain-use) red varieties planted in the state; PR 1404 and WB-Patron headed the list of forage-type wheat varieties planted. Blanca Grande 515, with over 60% of Hard White acres sown, was the leading Hard White variety. As usual, the Intermountain region had the vast majority of Soft White acres; Yamhill and Alpowa topped this region's wheat variety plantings. Yecora Rojo still dominates the Southern California region.

DURUM:
Durum planted acreage in both the San Joaquin Valley and Southern California was considerably down this year. Desert King, Orita, and Havasu were still the top planted varieties in Southern California. San Joaquin Valley Durum plantings were fairly equally split among Volante, Westmore, and Platinum, the top three Durum varieties in that region.

CA Wheat and Durum Acreage - 2013



http://www.californiawheat.org/

2013 Fresno Common Wheat

	Test Wt (lbs/bu)	Plant Ht (in)	Lodging Harvest	Shatter	Stripe Rust 4/29	BYDV 4/29
CULTIVARS						
ANZA	63.0	36	1.0	1.0	3.3	1.8
YECORA ROJO	64.5	29	1.0	1.0	2.5	1.3
EXPRESS	63.7	35	1.0	1.0	1.3	1.8
MIKA	61.7	40	1.0	1.0	3.0	2.0
PATWIN	61.4	32	1.0	1.0	1.0	1.0
JOAQUIN	64.3	34	1.0	1.0	6.5	1.0
CAL ROJO	62.5	27	1.0	1.0	1.0	2.5
LASSIK	63.1	33	1.0	1.0	1.0	1.0
REDWING	61.8	29	1.0	1.0	1.0	1.0
BLANCA ROYALE	63.8	30	1.0	1.0	1.0	1.0
BLANCA FUERTE	65.2	28	1.0	1.0	1.0	1.0
PR 1404	62.5	40	1.0	1.0	1.0	2.0
WB-CRISTALLO	63.8	31	1.0	1.0	1.0	1.3
TRIPLE IV	62.1	38	1.8	1.0	3.3	2.8
LARIAT	63.8	32	1.0	1.0	1.0	1.0
ULTRA	65.0	28	1.0	1.0	1.0	1.0
FV 2808	62.5	38	1.0	1.0	1.5	2.0
WB-ROCKLAND	64.0	30	1.0	1.0	1.0	1.5
BLANCA GRANDE-515	65.5	32	1.0	1.0	1.0	1.0
SUMMIT 515	63.7	30	1.0	1.0	1.0	1.0
SY 314	62.3	30	1.0	1.0	1.0	1.0
NEW DIRKWIN	58.6	37	1.0	1.3	1.0	1.5
PATWIN 515	62.9	30	1.0	1.0	1.0	1.3
WB-JOAQUIN ORO	63.9	35	1.0	1.0	1.0	2.3
WB-PERLA	63.8	32	1.0	1.0	1.0	1.3
WB-9229	63.5	31	1.0	1.0	1.0	1.3
WB-PATRON	63.5	36	1.0	1.0	1.0	2.0
EXCEDE	54.7	29	1.0	1.0	1.0	1.0
ADVANCED LINES						

WWW CABR3509W	64.0	33	1.0	1.0	3.8	1.8
08SB100	64.1	35	1.0	1.0	1.1	1.7
08SB0658-B	63.5	34	1.0	1.0	1.0	1.0
WINCAL 09196	64.2	30	1.0	1.0	1.0	1.0
ATOMO	64.2	33	1.0	1.0	1.8	1.3
LG 08SB0738	63.4	33	1.0	1.0	1.0	1.0
LG 08SB0008-B	62.2	30	1.0	1.0	2.3	1.5
WWW BR2308W	62.8	34	1.0	1.0	3.5	1.3
UC 12210/10	62.4	32	1.0	1.0	1.0	1.5
UC 12010/20	62.5	36	1.0	1.0	1.0	1.5
UC 12010/25	63.5	35	1.0	1.0	1.0	1.0
UC 12013/33	61.9	29	1.0	1.0	1.0	1.0
UC 12013/34	62.7	35	1.0	1.5	1.0	1.0
UC 12014/35	63.0	35	1.0	1.0	1.0	1.3
APB 770229	63.4	37	1.0	1.0	1.0	1.5
APB 430701	62.5	38	1.0	1.0	1.0	1.8
WB SJ909-368	64.4	35	1.0	1.0	1.0	1.5
WB DA907-047	64.1	31	1.0	1.0	1.0	1.5
WB DA908-306	64.3	32	1.0	1.0	1.0	1.5
WB YU909-005	62.9	37	1.0	1.0	1.0	1.5
WWW CABR3477W	63.5	36	1.0	1.0	1.8	1.0
WWW CABR3439	63.5	31	1.0	1.0	6.5	1.3
WWW IDCHBR1971B	59.6	37	1.0	1.0	3.8	1.5
TRITICALE						
TRICAL 105	59.6	38	1.0	1.0	1.0	1.0
TRICAL 118	58.6	37	1.0	1.0	1.0	1.0
CAMELOT	55.2	36	1.0	1.0	1.0	1.0
SY 158T	58.3	34	1.0	1.0	1.0	1.0
SY 115T	59.0	34	1.0	1.0	1.0	1.0
MEAN	62.6	33	1.0	1.0	1.5	1.4
CV	1.1	4.6	12.7	10.2	37.1	40.4
LSD (.05)	1.4	3	0.2	0.1	0.8	0.8

Fresno Durum Wheat

Entry	Name	Test Wt (lbs/bu)	Plant Ht (in)	Lodging Harvest	BYDV 4/23
CULTIVARS					
	DURAKING	62.9	34	1.0	2.5
	KRONOS	62.8	34	1.0	1.3
	CROWN	62.1	38	1.0	1.5
	PLATINUM	61.6	36	1.0	1.3
	TOPPER	64.9	35	1.0	1.0
	DESERT KING	63.0	32	1.0	1.0
	FORTISSIMO	62.6	32	1.0	1.0
	VOLANTE	64.1	30	1.0	1.0
	Q-MAX	63.2	36	1.0	1.0
	WESTMORE	62.4	34	1.3	1.0
	MAESTRALE	63.9	35	1.3	1.0
	SARAGOLLA	64.3	32	1.3	1.0
	TIPAI	64.3	34	1.0	1.5
	DESERT KING-HP	61.0	33	1.0	1.0
ADVANCED LINES					
	APB D1-2	62.9	32	1.0	1.0
	UC 1690	63.1	35	1.3	1.3
	WWW NDPRD3D13	64.0	36	1.0	1.0
	WWW UT07412	63.4	32	1.0	1.0
	LG KIKO NICK	63.7	33	1.0	1.0
	LG ATHORIS	63.8	36	1.0	1.3
	UC 1717	62.8	34	1.0	1.0
	LG IMHOTEP	64.5	37	1.0	1.0
	LG ALIROR	64.9	37	1.0	1.0
	WWW D2517	64.7	31	1.0	1.0
	WWW CANBELL013	62.8	38	1.0	1.5
	APB D6-419	63.2	38	1.0	1.0
	APB D7-12	62.3	38	1.0	1.5
	APB KRLCD	63.1	35	1.0	1.0
	UC 12210/8	63.5	36	1.0	1.0
	UC 12210/9	64.0	34	1.0	1.3
	UC 12213/43	61.8	35	1.3	1.8
	UC 12216/5	62.5	35	1.3	1.3
	WWW AUD31370	63.4	34	1.0	1.3
MEAN		63.3	34	1.0	1.2
CV		0.8	4	19.9	34.4
LSD (.05)		1	3	ns	0.6

2013 Fresno Barley

Entry	Name	Yield (lbs/acre)		Test Wt (lbs/bu)	Plant Ht (in)	Lodging Soft Dough	Lodging Harvest	Shatter	Stripe Rust 4/29	BYDV 4/29	Powdery Mildew 4/29
CULTIVARS											
	UC 603	5780	(31)	52.8	35	1.3	1.5	1.3	1.0	1.0	1.0
	MAX	7240	(12)	54.3	28	1.0	1.3	1.0	2.8	1.0	1.3
	UC 933	6600	(16)	53.8	32	1.0	1.8	1.0	1.0	1.0	1.0
	MELTAN	6130	(24)	56.4	31	1.0	1.0	1.0	1.0	1.5	1.0
	ISHI	7460	(5)	52.8	34	1.0	1.3	1.0	1.0	1.0	1.0
	TAMALPAIS	6120	(25)	60.0	27	1.0	1.0	1.0	1.0	1.0	1.0
ADVANCED LINES											
	UCD UFRGS-028152	2290	(43)	44.2	46	1.0	1.3	5.0	1.0	1.0	1.0
	UCD 08YP 111	7510	(4)	52.4	35	1.0	1.0	1.0	1.0	1.0	1.0
	WWW BA4513	7030	(14)	53.7	31	1.0	1.0	1.0	1.0	1.0	1.0
	UCD B369	7400	(6)	51.6	32	1.0	1.3	1.0	1.0	1.0	1.0
	UCD B398	7810	(1)	52.2	33	1.0	1.3	1.0	1.0	1.0	1.0
	UCD B366	7190	(13)	50.4	37	1.8	2.8	1.0	1.0	1.0	1.0
	UCD B372	7360	(8)	52.0	33	1.0	1.3	1.0	1.0	1.0	1.0
	UCD A237	7580	(2)	52.1	31	1.0	1.0	1.0	1.0	1.0	1.0
	UCD C43	5830	(30)	60.1	33	1.0	1.0	1.0	1.0	1.0	1.0
	UCD C51	6520	(20)	57.4	34	1.8	2.3	1.0	1.0	1.0	1.0
	UCD 1280	6280	(22)	54.3	40	1.3	3.5	2.3	1.0	1.0	1.0
	UCD 1284	7530	(3)	51.3	37	2.3	3.0	1.5	1.0	1.0	1.0
	UCD 1286	7400	(7)	51.4	31	1.0	1.5	1.0	1.0	1.0	1.0
	UCD 1317	6230	(23)	56.4	35	1.0	1.8	1.0	1.0	1.0	1.0
	UCD 1318	6350	(21)	61.6	32	1.0	2.3	1.0	1.0	1.0	1.0
	UCD 1319	5980	(28)	60.6	30	1.0	1.5	1.3	1.0	1.0	1.0
	UCD 1321	6020	(27)	60.0	30	1.0	1.0	1.0	1.0	1.0	1.0
	UCD 1322	4860	(35)	55.7	36	2.0	4.5	2.0	1.0	1.0	1.0
	UCD 1323	5570	(33)	56.5	35	1.8	3.5	1.8	1.0	1.0	1.0
	UCD 1325	5880	(29)	56.1	36	2.5	4.3	1.5	1.0	1.0	1.0
	WWW BA4545	6590	(17)	51.3	33	2.0	2.3	1.0	1.0	1.0	2.0
	APB E-1	5650	(32)	59.3	31	1.3	2.3	1.0	1.0	1.0	1.0
	APB E-3	5450	(34)	55.7	31	1.0	2.0	1.0	1.0	1.0	1.0
	UCD UYP 231	3870	(39)	62.6	37	1.0	2.0	2.8	1.0	1.0	1.0
	UCD UYP 213	6530	(19)	52.3	32	1.0	1.3	1.0	1.0	1.0	1.0
	UCD UYP 306	6580	(18)	61.9	29	1.0	1.0	1.0	1.0	1.0	1.0
	UCD UYP 210	7300	(10)	51.2	31	1.0	1.0	1.0	1.0	1.0	1.0
	UCD UYP 275	6650	(15)	51.0	33	1.0	1.5	1.0	1.3	1.0	1.0
	UCD UYP 3	7270	(11)	51.8	33	1.0	1.5	1.0	1.0	1.0	1.0
	UCD UYP 2	6060	(26)	60.5	33	1.0	1.3	1.0	1.0	1.0	1.0
	UCD K1-11C	2790	(42)	49.4	40	1.0	1.5	5.8	1.0	1.0	1.0
	UCD K2-A	3900	(38)	47.8	39	1.0	2.0	4.3	1.0	1.0	1.0
	UCD K3-4H	3500	(40)	50.2	39	1.0	1.8	4.3	1.0	1.0	1.0
	UCD K11-B	3340	(41)	50.0	39	1.0	1.5	4.8	1.0	1.0	1.0
	UCD K12-3J	4260	(36)	45.4	39	1.0	1.8	2.8	1.0	1.0	1.0
	UCD 11 MQ 12	4240	(37)	55.7	38	1.3	2.0	4.7	1.0	1.0	1.0
MEAN		6040		54.1	34	1.2	1.8	1.7	1.0	1.0	1.0
CV		9.8		1.8	6.8	56.2	62.0	36.1	26.0	8.7	30.5
LSD (.05)		830		2.0	5		1.5	0.9	0.4	0.1	ns

Rating scale for diseases (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%.
BYDV, lodging, and shatter ratings (see scale above) were based on percentage of plants showing symptoms.
Numbers in parentheses indicate relative rank in column.

ENTRY	COMMON WHEAT STRIPE RUST EVALUATION SUMMARIES								
	FRESNO				KINGS			TULARE	
	2010	2011	2012	2013	2010	2011	2012	2010	2011
Joaquin	1.3	7.5	7.5	6.5	3.3	6.8	7.5	1.0	7.3
Redwing	1.0	1.0	1.8	1.0	1.0	1.8	3.5	1.0	1.8
Blanca Grande 515	-	1.0	1.0	1.0	-	1.0	1.0	-	1.0
Cal Rojo	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Yecora Rojo	8.0	8.0	-	2.5	8.0	7.8	-	4.5	7.3
Blanca Royale	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Blanca Fuerte	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Summit 515	-	1.0	-	1.0	-	1.0	-	-	-
Expresso	1.0	1.0	-	-	1.0	2.0	-	1.0	1.0
Anza	5.8	6.8	4.8	3.3	4.0	4.0	5.0	3.3	5.0
Express	3.8	3.8	1.0	1.3	4.0	2.0	1.0	1.0	1.3
Cristallo	1.0	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.5
Lariat	1.0	-	-	-	1.0	-	-	1.0	-
Paloma	1.0	4.3	-	-	1.0	3.0	-	1.0	4.5
Joaquin Oro	-	-	-	1.0	-	-	-	-	-
Ultra	-	-	-	1.0	-	-	-	-	-

Rating scale for diseases (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 Silage Variety Trial 2013 – Tulare County

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This trial was conducted at the Milky Way Dairy in Visalia, CA. The varieties were planted on November 26, 2012 using a 20 ft Kraus planter at a seeding rate of 135 lbs/A of wheat and 120 lbs/A of triticale. The plots were 20 feet by 1470 feet with four replications. Tons/A results varied from 24.6 to 30.4. Stripe rust susceptible varieties were not included in this study to reduce the spread of pathogen to neighboring fields.

Treatments followed by the same letter are not statistically different

Variety	Tons/A @ 70% H2O	Harvest % H2O	Lodging %	ADF	NDF	Lignin	TDN	Ash
Summit 515	30.4a	59.6	3	32.1	47.3	4.7	59.4	10.7
Blanca Royale	28.1 b	59.3	28	29.6	44.7	4.4	60.8	10.4
Cal Rojo	28.0 bc	57.2	1	31.0	45.7	4.4	59.7	11.4
Ultra	27.8 bc	60.8	6	31.0	45.8	4.5	59.5	11.7
Patwin	27.6 bcd	63.7	3	32.0	47.1	4.5	59.2	11.6
SY 314	27.4 bcd	59.1	0	31.9	47.1	4.5	59.1	11.4
WB-Patron	26.9 bcde	61.4	46	31.0	46.1	4.6	60.1	10.4
Tricale 158 EP	26.2 cdef	68.7	9	35.2	51.8	5.3	58.2	10.3
Blanca Grande 515	25.8 def	56.2	64	30.0	44.9	4.4	59.4	11.7
Tricale 115	25.6 ef	66.1	0	31.8	47.6	4.9	60.9	9.6
FV 2808 (Beardless)	24.6 f	67.2	74	33.9	48.1	4.8	57.9	12.6
LSD	1.85							
%CV	4.71							

Preparing the Cotton Crop for Harvest: *Strategies in 2013*

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Defoliation

Although it is one of the last management decisions in the cotton production cycle, defoliation timing and application are critical to producing a profitable crop. Improper timing will compromise both cotton yield and quality. In light of the premium and discounts for fiber quality the proper use of harvest aid chemicals is of paramount importance.

Nitrogen Nutrition Effects

- Influence vegetative growth and maturity and extent of natural senescence at time of defoliation
- High nitrogen concentrations in plant tissue delay abscission zone formation in both leaf petioles and sutures in the boll walls

Crop Water Status

- Water stress at the time of defoliation tends to reduce response to harvest aids
- Wilted leaves tend to delay absorption
- Increasing water stress hastens boll opening, but sufficient moisture must remain for defoliants to activate the abscission layer

Importance of Proper Timing

- Reducing potential of sticky cotton
- Economic incentive to defoliate and harvest early
- Better weather & more hours for harvest – early
- Improper timing – reduction of fiber quality and yield
- Decisions have to be made field by field

Influence of Crop Conditions on Harvest-Aid Chemicals

Crop conditions that can impact harvest aid decisions and performance range from:

Fields with uniform and/or heavy boll load with abrupt cutout (conditions that generally make defoliation easier, with lower chemical rates and fewer total applications)

… and at the other extreme …

Late plantings and/or low boll retention, fields with rank growth in Upland and Pima varieties due to excess water and/or nitrogen combined with uneven, reduced fruit retention (in late fields, temperatures at harvest aid application timing are often lower, and the above conditions generally make defoliation more difficult, requiring multiple chemical treatments, sometimes at higher rates).

The following are guidelines based on information from multi-year field research trials:

The effectiveness of defoliation varies each season and often from field to field depending on nitrogen status of the crop, boll load, irrigation termination, temperatures, and soil types. Guidelines were developed to manage two basic scenarios: (SITUATION ONE) cotton fields with a high boll load for the size of plant and amount of leaf area, early vegetative cutout and more advanced and even boll maturation, irrigation termination and nitrogen depletion well-synchronized; and (SITUATION TWO) cotton fields with a later-maturing, more unevenly distributed boll load, large amount of leaf area for the boll load, and even some rank growth problems and more potential for regrowth. Obviously, fields can be somewhere in between these

two situations and that can require other adjustments and considerations based on current and upcoming weather conditions and past experiences with defoliation in the field.

SITUATION ONE – Factors to consider when selecting a defoliation strategy for 2013

1. Most fields we have seen have a heavy boll load, fairly abrupt vegetative cutout, and may be ready for the start of harvest aid applications while temperatures are still warm (highs >80º F).
2. Ginstar/Adios treatments usually give effective defoliation. Lower rates (4-6 oz should be effective for Acala's and 5-8 oz on Pima). Def and Folex in combination with ethephon (such as Prep, Cotton Quick, Finish or others) are effective and can be useful in helping with later-maturing bolls. It is better to start with the lowest rate of Ginstar/Adios to be effective and have to come back than to freeze the leaves due to a high rate which is more likely to occur with 90 F plus temperatures.
3. Standard rates of chlorate plus paraquat, ET, or Shark as secondary treatments are generally effective. ET or Shark should be included as part of the first and second applications for suppression of annual morning-glory.

SITUATION TWO - Factors to consider when selecting a defoliation strategy for 2013

This situation described in the prior page for "Situation Two" occurs when you have multiple crop and environmental factors that can make defoliation more difficult and harvest aid chemical performance more uneven, including low bottom boll retention, rank growth in Acala or Pima, cooler temperatures at first harvest aid application, often with vigorous, late-maturing fields with smaller boll loads. In these circumstances, it is often difficult to achieve many of the conditions identified below in the table "Best Conditions for Effective Defoliation", and as the season progresses more into cooler weather periods, becomes more important to consider factors such as "minimum temperatures for optimum performance" of harvest aid chemicals shown below.

Best Conditions for Effective Defoliation

- Moderate to high air temperatures (day time - > 80 F; night time - >60 F).
- Relatively low plant & soil nitrogen levels.
- Soil water levels moderate (plants can't be water stressed).
- Uniform crop development; crop at cutout.
- Weeds, insect & disease – under control.
- Complete defoliant coverage – good penetration within the canopy.

Minimum temperatures for optimum performance

*(Night temperatures above 60°F are best for defoliation, below 60°F slower defoliation)

With more vigorous plants with a high proportion of later-maturing bolls, it may be desirable to consider some different practices to improve chances for acceptable defoliation, desiccation, achieve better control of regrowth, and to improve chances of getting later-maturing bolls to open. Growers need to look at the calendar, judge the likelihood that good weather will continue, and decide which bolls they really can afford to wait for.

Under these circumstances, pre-treatments of Ginstar/Adios or ethephon can be very helpful, and typically, sequential applications will be required. The first application of these materials is applied with the goal of opening up the canopy (removing a first wave of leaves). Higher rates are typically required on second applications to defoliate or desiccate remaining leaves (and also often because temperatures have gone down by the time of later applications). A couple of strategies to consider under these conditions include:

Strategy One: UCCE studies demonstrated benefits in defoliation and boll opening by applying a pre-treatment of 4-6 oz of Ginstar/Adios at about 40 percent open boll or 6 (NACB) followed by later treatments (at 4 NACB) of: (1) Ginstar at 6-8 oz; or (2) Ginstar/Adios in combination with a boll opener material (such as Prep, Cotton Quick, Finish or others); or (3) Def/Folex plus a boll opener. Ginstar/Adios rates should be adjusted if changes in air temperatures occur at application or are anticipated in the days following application. In many cases in both Acala and Pima, a final application of sodium chlorate and Paraquat or Shark or ET will also be useful in desiccating remaining leaves and improving opening of last-remaining bolls. Applying ethephon at 6 NACB slightly reduced yield and micronaire compared to 4 NACB but may be necessary to hasten harvest.

Strategy Two: Another approach for vigorous, late-maturing cotton fields, particularly when there are concerns that the fields are just not making progress in opening up bolls, involves use of glyphosate as a pre-treatment in non RR varieties. Results showed some advantages in earlier opening of later-developing bolls with the glyphosate pre-treatments. Glyphosate should not be applied before about 8 NACB for these pre-treatments in Acala varieties, since the research showed yield losses of 5 to 12% with earlier applications at 10 NACB. Ginstar/Adios has been effective on late maturing Pima if it does not appear to be changing in maturity. If and when cotton moves closer to the 6 NACB then start with the pretreatments of Ginstar or Ginstar plus ethephon.

In making decisions regarding approaches to consider and chemicals to use, some factors to think about can be summarized in the table below.

	Advantages	**Disadvantages**
Ginstar, Adios	Very effective, no odor, regrowth control	Crop rotation restrictions
Def/Folex+ ethephon	Very effective, warm & cool weather performance, whitefly control	Odor, spray restrictions
Sodium chlorate + paraquat **Shark, ET**	Less effective cheap, warm-cool weather performance Replacement for above and cheap, broadleaf control	Salts

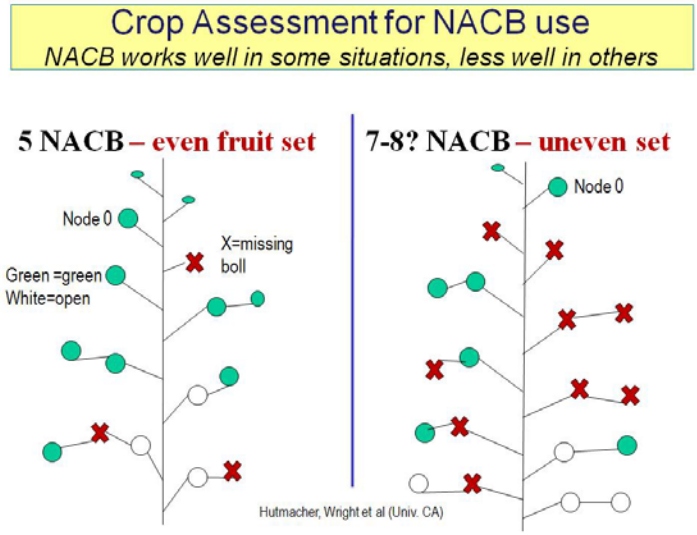
Pay attention to the calendar, the weather, and consider how much risk you want to take in choosing a final harvest date. Consider these steps:

1. Keep an eye on predicted trends in the weather.
2. Consider your own experience with how many days of harvest will likely be needed from harvest of your first field to the last field.
3. Decide what you think is the last harvest date you consider to be an acceptable risk.
4. Count back about 21-28 days from those desired harvest dates, and start with your defoliation program on those dates no matter what maturity stage (what NACB) the crop is in.

University Acala and Upland cotton defoliation trials in the 1980's and 1990's suggest that, on the average, defoliations initiated at 8 NACB could result in yield losses of about 5% when compared with initiation at 4 NACB, while those initiated at 6 NACB would reduce yields 2 to 3%. However, those same studies acknowledged that when a very large percentage of the total crop consists of bolls on the upper 6 to 9 fruiting branches, losses from early defoliant applications can be substantially more (over 10%). Particularly under circumstances of mostly a mid-canopy and top-crop, the closer you can get to 4 to 6 NACB prior to first defoliant application, the lower the yield loss.

NACB Technique Defoliation Timing

- When plants on average area at 3 Nodes Above Cracked Boll (Pima)
- When plants on average are at 4 Nodes Above Cracked Boll (Upland)



Harvest Aid Considerations for White Fly, Vigorous, Late-Maturing or Fields in SJV

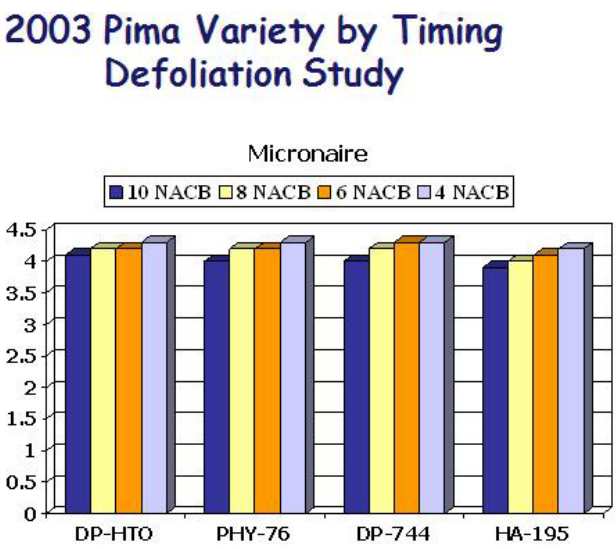
In a year like this one, with some repeated observations of persistent late season silverleaf whitefly in some areas, there may be advantages to stepping up the timing of harvest aid application timing to start the process of removing leaves that encourage continuing populations of whitefly and perhaps aphids. If you are not likely to gain a large amount of yield waiting for very late bolls on the plants, the advantages of limiting whitefly populations and sticky cotton potential likely outweighs the value of yield gains. Approaches to consider could include:

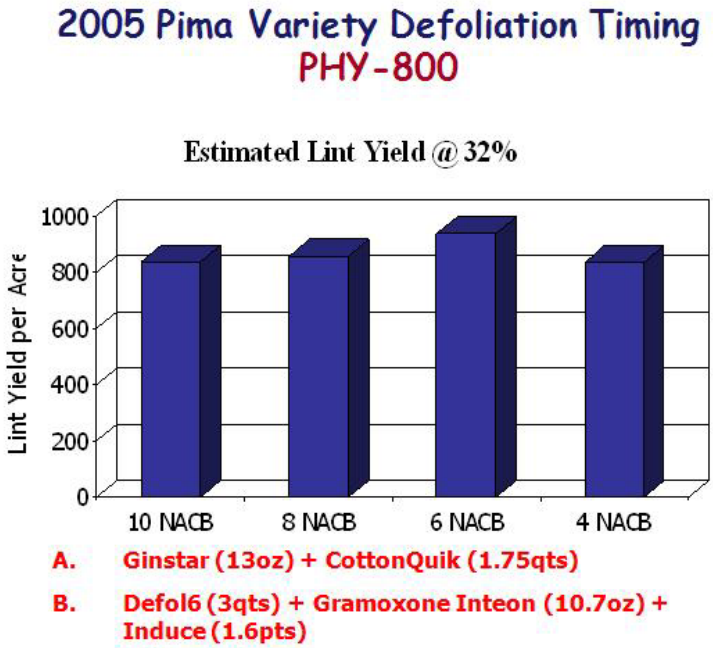
A. Treatments starting at 6 NACB (40% OB) as a pre-treatment of 3-6 oz of Ginstar/Adios treatments or 3-6 oz of Ginstar, Adios treatments plus a boll opener (more aggressive) Start even at 8 NACB in Pima. You may need to go even earlier on Pima if the crop is not maturing due to cold weather.

B. Treatments starting at 3-4 NACB (50-65% OB) with Ginstar, Adios at 5-10 oz; in combination with a boll opener material (such as Prep, Cotton Quick, Finish); or Def/Folex or ET, Shark, plus a boll opener or sodium chlorate plus paraquat. Some studies have shown whitefly populations reduced even more with use of Def/Folex instead of other materials.

C. In many cases in both Acala & Pima, a final app. of chlorate & paraquat, Shark, or ET will also be useful in desiccating remaining leaves & improving opening of last-remaining bolls. Shark or ET app. will also help dry remaining broadleaf weeds.

The following are UCCE studies conducted on Pima and Acala from 2003 to 2010 demonstrating yield and quality responses to different timings and varieties. Pima studies with Phytogen 800 in 2011 and 2012 demonstrated similar results with a slight yield and micronaire reduction with applications starting at 6-8 NACB however this may need to be done on some fields to get the crop off ahead of poor weather conditions.

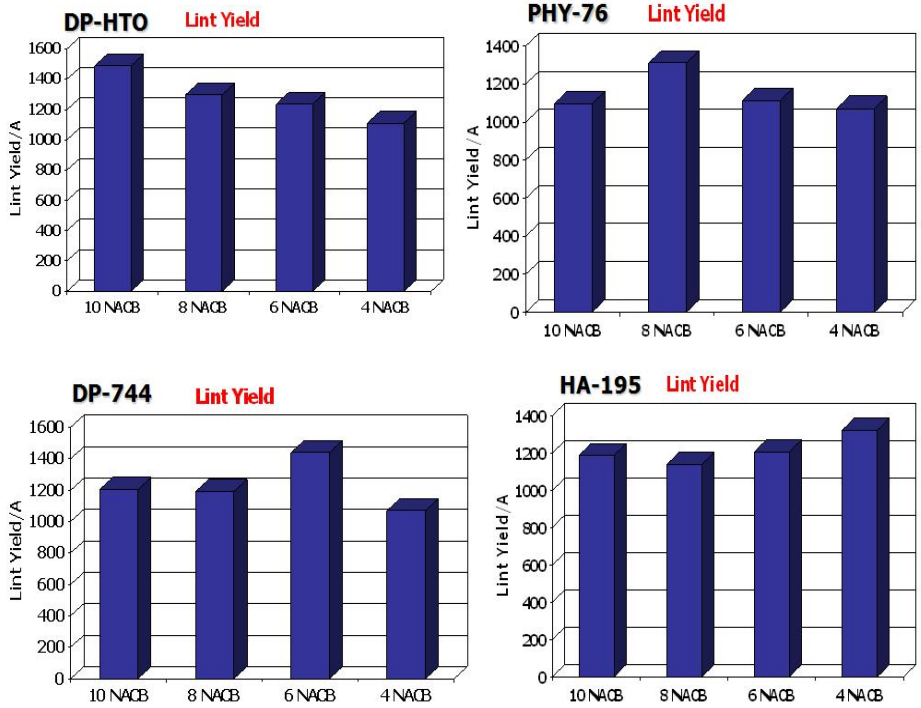




Varieties/Def. Pima Timing Studies-2003, 2004 2 locations

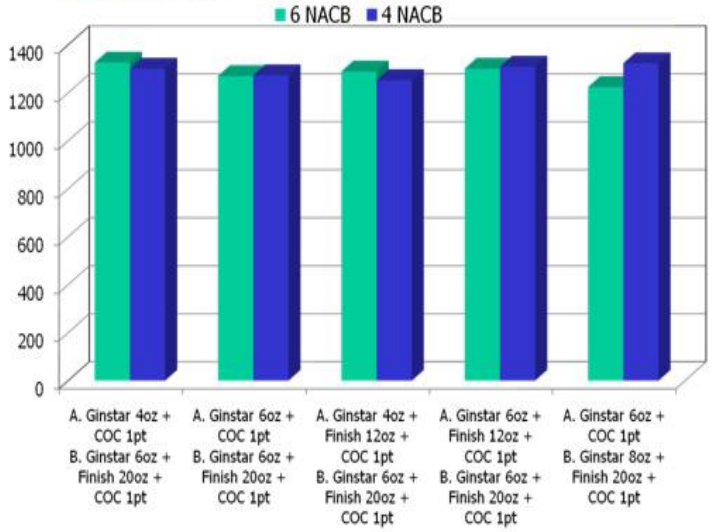
1 Def. Timing Study, PHY-76 2003, 2005

2003 Pima Variety by Timing Defoliation Study

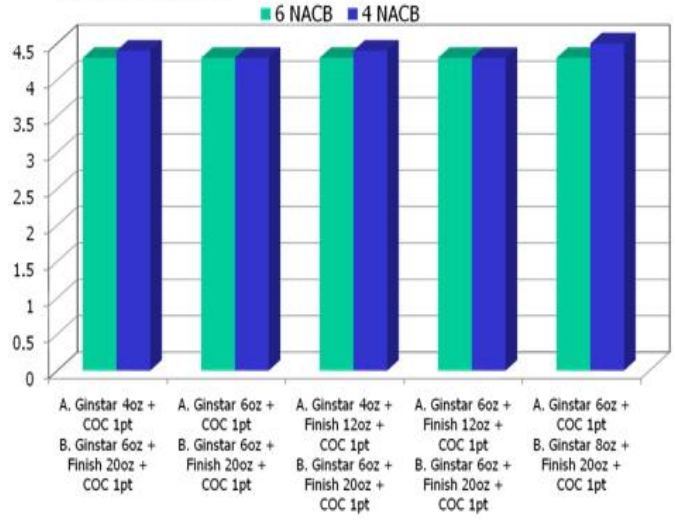


2008 Acala Defoliation – Ginstar Pretreatment Approach

Lint Yield

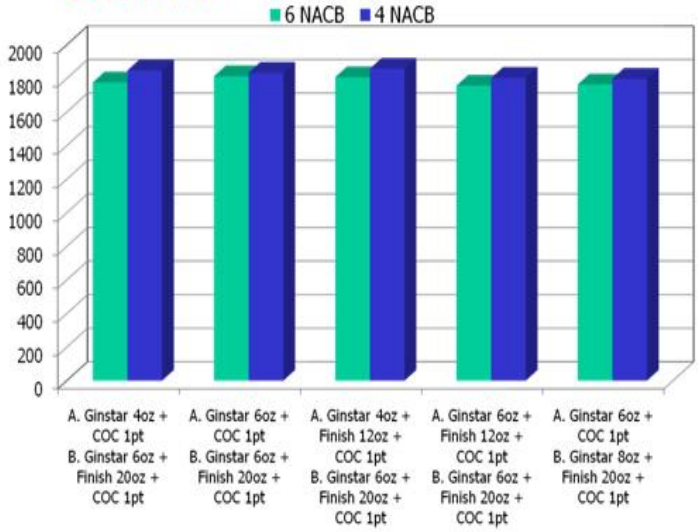


Micronaire

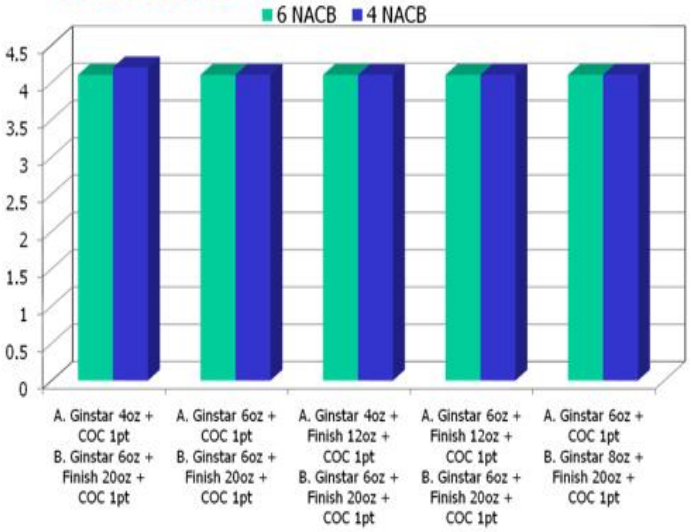


2009 Acala Defoliation – Ginstar Pretreatment Approach

Lint Yield



Micronaire

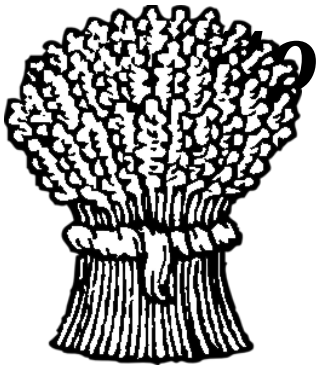


Ginstar (2 Step Approach) Pima Study
DP-340
UCCE – WSREC

Treatments	Rates/A	2009				2010			
		Lint Yield lbs/A		Micronaire		Lint Yield lbs/A		Micronaire	
		6 NACB	4 NACB	6 NACB	4 NACB	6 NACB	4 NACB	6 NACB	4 NACB
1. Ginstar + Finish + Agridex	6 oz + 12 oz + 1 pt	1635	1610	4.0	4.0	1177	1201	3.8	4.0
B. Ginstar + Finish + Agridex	8 oz + 20 oz + 1 pt								
2. Ginstar + Finish + Agridex	6 oz + 12 oz + 1 pt	1601	1633	4.0	3.9	1269	1274	3.8	4.2
B. Ginstar + Finish + Agridex	10 oz + 20 oz + 1 pt								
3. Ginstar + Agridex	6 oz + 1 pt	1616	1658	4.0	4.0	1224	1080	3.8	4.2
B. Ginstar + Finish + Agridex	8 oz + 20 oz + 1 pt								
4. Untreated		1610		4.1		891		4.3	

Ginstar (2 Step Approach) Pima Study
PHY-802RF
UCCE – WSREC

		2011				2012			
		Lint Yield (lbs/A)		Micronaire		Lint Yield (lbs/A)		Micronaire	
Treatments	**Rates/A**	**6 NACB**	**4 NACB**	**6 NACB**	**4 NACB**	**6 NACB**	**4 NACB**	**6 NACB**	**4 NACB**
1. Ginstar + Finish + Agridex	4 fl oz + 12 fl oz + 1 pt	1694	1720	4.0	4.2	1959	1983	3.6	3.6
B. Ginstar + Finish + Agridex	8 fl oz + 20 fl oz + 1 pt								
2. Ginstar + Finish + Agridex	4 fl oz + 12 fl oz + 1 pt	1723	1651	4.1	4.2	1857	1949	3.7	3.7
B. Ginstar + Finish + Agridex	10 fl oz + 20 fl oz + 1 pt								
3. Ginstar + Finish + Agridex	6 fl oz + 12 fl oz + 1 pt	1653	1691	3.9	4.1	1861	1910	3.7	3.7
B. Ginstar + Finish + Agridex	8 fl oz + 20 fl oz + 1 pt								
4. Ginstar + Finish + Agridex	6 fl oz + 12 fl oz + 1 pt	1680	1721	4.0	4.0	1922	1882	3.6	3.7
B. Ginstar + Finish + Agridex	10 fl oz + 20 fl oz + 1 pt								
5. Ginstar + Agridex	6 fl oz + 1 pt	1594	1708	3.9	4.0	1874	1914	3.6	3.7
B. Ginstar + Finish + Agridex	8 fl oz + 20 fl oz + 1 pt								
6. Untreated		1633		4.3		1866		3.7	



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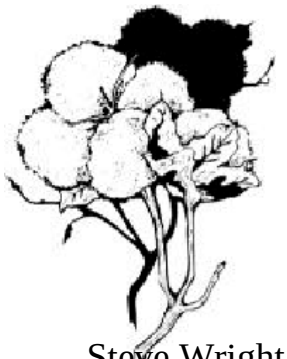
September 2013

Tulare/Kings Counties

Fresno County Small Grain
Variety Performance Trials
Field Check: Preparing the Cotton Crop for Harvest: Strategies in 2013



Steve Wright
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