Wheat Management Strategies.

02-Wheat-Strategy

OBJECTIVE: Evaluate the response of three wheat varieties to three management strategies.

SUMMARY: This study was conducted to determine the impact of three levels of wheat management on yield of three different wheat varieties. Wheat management levels ranged from low to high and varied in seeding rate, planting practices, nitrogen application, and pesticide use. A detailed description of each management level is provided in the trial comments. Within each variety wheat yield increased as the management level increased, however, the greatest response to increased management was observed with Pioneer 25R37. With all three varieties, increasing the management level from low to medium increased wheat yield by 5 to 8 bu/A. Pioneer 25R37 and FS539 grown under high management yielded 21 to 26 bu/A greater than the same varieties grown under low management. However, increasing the management system from low to high increased yield of the Patterson variety by only 15 bu/A. Within each variety, management system did not affect wheat test weight, damage percent, or percent of sprouts. Increasing the level of wheat management from low to high reduced the amount of weeds present at harvest in the Patterson and FS539 varieties. Double-crop soybean yield was significantly greater in plots where wheat was grown under high management compared to low. The reduced soybean yields observed in plots with low wheat management may be due to weed competition with double-crop soybean prior to herbicide application at 21 days after planting.

WHEAT VARIETIES/ MANAGEMENT LEVELS	**WEEDS**	**CROPS**
FS539	blackeyed-susan	wheat, winter
Patterson	chickweed, common	soybean
Pioneer 25R37	chickweed, mouseear	
Low Management	foxtail, giant	
Medium Management	nutsedge, yellow	
High Management	woodsorrel, yellow	

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PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Wheat Management Strategies.

Project Code: 02-Wheat-Strategy Location: Horticulture Research Center

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

City State Zip Country: Carbondale IL 62901 USA
Trial Status: Final **Updated:** 10-30-02

Objective:
Evaluate the response of three wheat varieties to three management stategies.

Weed	Code	Common Name	Scientific Name
1.	SETFA	foxtail, giant	Setaria faberi Herrm.
2.	DIGSA	crabgrass, large	Digitaria sanguinalis (L.) Scop.
3.	CYPES	nutsedge, yellow	Cyperus esculentus L.
4.	STEME	chickweed, common	Stellaria media (L.) Vill.
5.	CERVU	chickweed, mouseear	Cerastium vulgatum L.
6.	OXAST	woodsorrel, yellow	Oxalis stricta L.
7.	RUDHP	blackeyed-susan	Rudbeckia hirta var. pulcherrima Farw.

Crop 1: TRZAW wheat, winter **Variety:** See note
Planting Method: Seeded **Planting Date:** 10-22-01
Rate: See note **Depth:** See note
Row Spacing: 7.5 IN **Seed Bed:** Fine

Crop 2: GLXMA soybean **Variety:** FS 4495
Planting Method: Seeded **Planting Date:** 6-20-02
Rate: 75 lb/A **Depth:** 1.0 IN
Row Spacing: 15 IN **Seed Bed:** No-Till

Plot Width, Unit: 20 FT **Plot Length, Unit:** 40 FT **Reps:** 4
Tillage Type: Reduced-Till **Study Design:** Split-plot
Previous Crop, Year: GLXMA, 2001

Field Prep./Maintenance: See note

% OM: 2.0 **pH:** 5.9 **CEC:** 9
Texture: Silt loam **Fert. Level:** P1: 49 LB/A, K: 203 LB/A

APPLICATION DESCRIPTION

	A
Application Method:	See note

CROP STAGE AT EACH APPLICATION

	A
Crop 1 Code, Stage:	TRZAW
Height, Unit:	See Note
Crop 2 Code, Stage:	GLXMA
Height, Unit:	See Note

WEED STAGE AT EACH APPLICATION

	A
Weed 1 Code:	NA

APPLICATION EQUIPMENT

	A
Appl. Equipment:	See note

NOTES:
Wheat varieties are listed in treatment list.
Planting, fertilization and pest control for each management level are listed in comments.
Harvested wheat Jun-17-02, 10 x 32 ft, soybean Oct-18-02, (2) 30 inch rows by 40 ft.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	TRZAW HEADS 1 SQFT 6-10-02	TTTTT ODW 1.0 m2 6-17-02	TRZAW Yield bu/A 6-17-02	TRZAW Test wt. lb/bu	TRZAW Dockage Percent	TRZAW Damage Percent	TRZAW Sprouts Percent	TRZAW Moisture Percent	TRZAW Protein Percent	TRZAW 1000 kwt Grams	GLXMA Test Wt. lb/bu 10-18-02	GLXMA Yield bu/A 10-18-02
1	Patterson									63	26.40	42	60.2	0.1	0.3	0.0	12.3	10.2	28.9	54.6	15
1	Low Management																				
2	Patterson									66	23.20	47	60.3	0.1	0.5	0.0	12.2	10.6	28.4	54.2	23
2	Medium Management																				
3	Patterson									58	5.90	57	59.9	0.1	0.6	0.0	12.3	10.6	29.6	52.5	36
3	High Management																				
4	FS539									62	25.12	49	60.8	0.0	0.9	0.0	12.5	9.6	34.2	52.2	24
4	Low Management																				
5	FS539									60	3.56	56	60.9	0.1	1.2	0.2	12.5	10.0	34.1	52.8	36
5	Medium Management																				
6	FS539									76	0.96	70	60.9	0.1	1.1	0.0	12.5	10.1	36.6	52.7	37
6	High Management																				
7	Pioneer 25R37									65	8.82	48	61.2	0.1	0.9	0.2	13.1	10.9	38.6	52.8	28
7	Low Management																				
8	Pioneer 25R37									57	2.08	56	61.1	0.1	1.6	0.0	14.0	11.2	38.9	52.7	37
8	Medium Management																				
9	Pioneer 25R37									63	0.20	74	61.5	0.1	1.2	0.0	13.5	10.9	39.4	52.5	41
9	High Management																				
LSD (P=.05)										12.4	10.462	5.1	0.52	0.07	0.87	0.25	0.38	0.34	.	1.81	9.0
Replicate F										1.799	3.707	6.735	0.558	1.628	1.379	0.542	0.658	3.737		1.520	6.367
Replicate Prob(F)										0.1743	0.0253	0.0019	0.6476	0.2092	0.2732	0.6579	0.5861	0.0246		0.2360	0.0025
Treatment F										1.856	9.416	37.299	8.789	1.186	1.857	1.107	24.366	20.452		1.782	7.949
Treatment Prob(F)										0.1153	0.0001	0.0001	0.0001	0.3477	0.1151	0.3932	0.0001	0.0001		0.1327	0.0001

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Trial Comments

1. Protocol: Wheat Tech Inc.
2. SQFT = square feet; m2 = square meter; ODW = oven dry weight; TTTTT = weeds generally, weed species included SETFA, CYPES, STEME, CERVU, OXAST, and RUDHP.
3. Management details:
   Low Management: Seeding rate = 100 lb of seed/A, using drill setting; planting depth = 0.5 inch;
   fall fertilization = 100 lb 18-46-0 and 100 lb 0-0-60 on 10-21-01;
   spring fertilization = 75 lb N as liquid 28% on 2-7-02.
   Medium Management: Seeding rate = 110 lb of seed/A, calibrated; planting depth = 1.5 inch;
   fall fertilization = 100 lb 18-46-0 and 100 lb 0-0-60 on 10-21-01;
   spring fertilization = 90 lb N as liquid 28% on 3-22-02;
   herbicides = Harmony Extra + 2,4-D (Gordon's LV4) at 0.5 + 6.0 oz/A, in 8 GPA water, on 4-9-02.
   High Management: Seeding rate = 110 lb of seed/A, calibrated; planting depth = 1.5 inch;
   fall fertilization = 100 lb 18-46-0 and 100 lb 0-0-60 on 10-21-01;
   spring fertilization = 50 lb N as liquid 28% on 2-6-02 and 65 lb N as liquid 28% on 4-2-02;
   herbicides = Harmony Extra + 2,4-D (Gordon's LV4) at 0.5 + 6.0 oz/A, in 8 GPA water, on 4-9-02;
   insecticides = Warrior 2.0 oz/A, in 8 GPA water, on 12-4-01;
   fungicides = Folicur + Activator 90 at 4.0 oz/A + 0.25% v/v, in 20 GPA water, on 5-16-02.
4. Additional evaluations of grain samples included; Lite Sour, Sour, Lite Musty, Musty, Garlicky, Smutty, and Insect Damaged Kernals, which were negative for all samples evaluated.
5. For grams/1000 kernals, plot (replication) samples were pooled for each treatment, thus statistical analysis was not possible.
6. Double-crop soybean received a blanket application of 2 pt/A Clearout 4L plus AMS 10 lb/100 gallon, 21 days after planting on 7-12-02.
   Soybean stage at application was V2-V3, 6-8 inches.
   Weeds present at application included SETFA, DIGSA, CYPES, and AMBEL.
   Weed control in the double-crop soybeans following the blanket application was complete for all weed species and the study remained weed-free through harvest.