Southern Illinois University

Intensive Wheat Management Study - Carbondale.

Project Code: 05-ARC-N9-W225 Location: Agronomy Research Center
Investigator: Bryan Young

Investigator: Bryan Young, Associate Professor, Southern Illinois University

City State Zip Country: Carbondale IL 62901 USA
Trial Status: Final **Updated:** 12-02-05

Objective:
Evaluate the response of five wheat varieties to four pest programs by three fertilization levels.

Crop 1: TRZAW wheat, winter **Variety:** See treatment list
Planting Method: Seeded **Planting Date:** 10-25-04
Rate: 1.3 mil. S/A **Depth:** 1.5 IN
Row Spacing: 8.0 IN

Plot Width, Unit: 5 FT **Plot Length, Unit:** 30 FT **Reps:** 3
Tillage Type: Reduced-Till **Study Design:** Randomized complete block
Previous Crop, Year: ZEAMX, 2004

Field Prep./Maintenance: Fall fertilization: N 27 LB/A, P2O5 60 LB/A, K2O 120 LB/A; applied to all plots. Spring fertilization and pest control per treatment (see treatment list and comments).

Soil Name: Weir **% OM:** 1.7 **pH:** 6.3 **CEC:** 8
Texture: Silt loam **Fert. Level:** P1: 78 LB/A, K: 399 LB/A

APPLICATION DESCRIPTION

	A
Application Method:	See note

CROP STAGE AT EACH APPLICATION

	A
Crop 1 Code, Stage:	TRZAW
Height, Unit:	See note

APPLICATION EQUIPMENT

A

NOTES:
Wheat varieties, wheat stage at application, fertilization, application dates and pest control are listed in the treatment list and/or comments.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	TRZAW BYD % Incid 05-23-05 26 DAT	TRZAW BYD % Sever 05-23-05 26 DAT	TRZAW TanSpot % Incid 05-23-05 26 DAT	TRZAW TanSpot % Sever 05-23-05 26 DAT	TRZAW LeafBch % Incid 05-23-05 26 DAT	TRZAW LeafBch % Sever 05-23-05 26 DAT	TRZAW LeafRust Percent 05-23-05 26 DAT
1	No Insecticide - No Fungicide 90 lb N - single application P 25R47									22	37	1	2	2	2	0
2	No Insecticide - No Fungicide 90 lb N - single application P 25R37									25	23	2	2	1	2	0
3	No Insecticide - No Fungicide 90 lb N - single application P 25R78									23	33	5	5	0	0	0
4	No Insecticide - No Fungicide 90 lb N - single application Benton									30	20	0	0	2	5	0
5	No Insecticide - No Fungicide 90 lb N - single application FS 539									47	70	4	3	1	1	5
6	No Insecticide - No Fungicide 115 lb N - single application P 25R47									35	40	8	4	4	4	0
7	No Insecticide - No Fungicide 115 lb N - single application P 25R37									8	15	0	0	1	1	0
8	No Insecticide - No Fungicide 115 lb N - single application P 25R78									35	60	7	10	1	1	1
9	No Insecticide - No Fungicide 115 lb N - single application Benton									40	30	0	0	5	2	0
10	No Insecticide - No Fungicide 115 lb N - single application FS 539									43	60	2	2	0	0	5
11	No Insecticide - No Fungicide 115 lb N - split application P 25R47									27	33	7	6	1	1	0
12	No Insecticide - No Fungicide 115 lb N - split application P 25R37									6	15	1	3	2	2	0
13	No Insecticide - No Fungicide 115 lb N - split application P 25R78									25	33	8	5	1	1	1
14	No Insecticide - No Fungicide 115 lb N - split application Benton									10	10	0	0	1	5	0
15	No Insecticide - No Fungicide 115 lb N - split application FS 539									50	63	2	2	0	0	8
16	Fungicide - No Insecticide 90 lb N - single application P 25R47									60	50	6	8	0	0	0
17	Fungicide - No Insecticide 90 lb N - single application P 25R37									18	13	0	0	0	0	0
18	Fungicide - No Insecticide 90 lb N - single application P 25R78									30	43	1	2	0	0	0

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19	Fungicide - No Insecticide 90 lb N - single application Benton									20	12	1	3	1	4	0
20	Fungicide - No Insecticide 90 lb N - single application FS 539									45	70	0	0	0	0	0
21	Fungicide - No Insecticide 115 lb N - single application P 25R47									40	30	11	11	3	1	0
22	Fungicide - No Insecticide 115 lb N - single application P 25R37									8	15	3	3	0	0	0
23	Fungicide - No Insecticide 115 lb N - single application P 25R78									20	43	2	5	0	0	0
24	Fungicide - No Insecticide 115 lb N - single application Benton									28	23	2	3	0	0	0
25	Fungicide - No Insecticide 115 lb N - single application FS 539									33	60	0	0	0	0	2
26	Fungicide - No Insecticide 115 lb N - split application P 25R47									18	25	2	10	3	3	0
27	Fungicide - No Insecticide 115 lb N - split application P 25R37									10	10	1	1	1	1	0
28	Fungicide - No Insecticide 115 lb N - split application P 25R78									32	33	3	4	0	0	0
29	Fungicide - No Insecticide 115 lb N - split application Benton									15	13	1	1	2	3	0
30	Fungicide - No Insecticide 115 lb N - split application FS 539									35	60	0	0	0	0	0
31	Insecticide - No Fungicide 90 lb N - single application P 25R47									30	35	1	3	1	1	1
32	Insecticide - No Fungicide 90 lb N - single application P 25R37									17	23	0	0	1	1	0
33	Insecticide - No Fungicide 90 lb N - single application P 25R78									18	28	1	4	1	1	1
34	Insecticide - No Fungicide 90 lb N - single application Benton									13	15	4	6	0	0	0
35	Insecticide - No Fungicide 90 lb N - single application FS 539									47	67	1	1	0	0	9
36	Insecticide - No Fungicide 115 lb N - single application P 25R47									23	38	1	1	1	1	0

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37	Insecticide - No Fungicide 115 lb N - single application P 25R37									10	17	1	2	0	0	0
38	Insecticide - No Fungicide 115 lb N - single application P 25R78									20	38	11	3	1	1	2
39	Insecticide - No Fungicide 115 lb N - single application Benton									13	15	3	4	1	1	1
40	Insecticide - No Fungicide 115 lb N - single application FS 539									43	67	4	5	0	0	9
41	Insecticide - No Fungicide 115 lb N - split application P 25R47									30	45	5	3	3	1	0
42	Insecticide - No Fungicide 115 lb N - split application P 25R37									13	18	1	2	0	0	0
43	Insecticide - No Fungicide 115 lb N - split application P 25R78									18	25	4	5	0	0	0
44	Insecticide - No Fungicide 115 lb N - split application Benton									15	15	3	3	1	1	1
45	Insecticide - No Fungicide 115 lb N - split application FS 539									33	67	0	2	0	0	6
46	Insecticide - Fungicide 90 lb N - single application P 25R47									40	60	2	8	2	1	0
47	Insecticide - Fungicide 90 lb N - single application P 25R37									8	10	1	1	0	0	0
48	Insecticide - Fungicide 90 lb N - single application P 25R78									38	47	1	2	0	0	0
49	Insecticide - Fungicide 90 lb N - single application Benton									23	20	3	3	1	1	0
50	Insecticide - Fungicide 90 lb N - single application FS 539									57	70	2	2	1	1	0
51	Insecticide - Fungicide 115 lb N - single application P 25R47									45	40	2	5	1	3	0
52	Insecticide - Fungicide 115 lb N - single application P 25R37									13	13	0	0	1	1	0
53	Insecticide - Fungicide 115 lb N - single application P 25R78									20	42	1	2	1	1	0
54	Insecticide - Fungicide 115 lb N - single application Benton									20	15	1	5	1	3	0

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55	Insecticide - Fungicide 115 lb N - single application FS 539									40	47	1	3	1	1	0
56	Insecticide - Fungicide 115 lb N - split application P 25R47									40	60	5	10	1	1	0
57	Insecticide - Fungicide 115 lb N - split application P 25R37									13	10	1	1	1	1	0
58	Insecticide - Fungicide 115 lb N - split application P 25R78									23	22	1	4	1	2	0
59	Insecticide - Fungicide 115 lb N - split application Benton									8	15	1	3	4	3	0
60	Insecticide - Fungicide 115 lb N - split application FS 539									38	60	2	1	1	2	1
LSD (P=.05)										18.3	18.4	5.6	4.8	2.3	2.7	4.1
Replicate F										3.338	10.202	7.474	7.987	7.311	6.623	5.063
Replicate Prob(F)										0.0404	0.0001	0.0010	0.0007	0.0012	0.0022	0.0084
Treatment F										4.375	8.924	1.618	2.526	1.636	1.745	2.185
Treatment Prob(F)										0.0001	0.0001	0.0219	0.0001	0.0196	0.0098	0.0005

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1	No Insecticide - No Fungicide 90 lb N - single application P 25R47									3	4	84	1.45	12.5	57.5	61
2	No Insecticide - No Fungicide 90 lb N - single application P 25R37									4	5	80	1.67	12.0	55.2	45
3	No Insecticide - No Fungicide 90 lb N - single application P 25R78									5	6	81	1.89	11.7	55.4	50
4	No Insecticide - No Fungicide 90 lb N - single application Benton									2	3	77	2.13	12.2	58.0	47
5	No Insecticide - No Fungicide 90 lb N - single application FS 539									5	5	88	1.52	12.2	56.7	52
6	No Insecticide - No Fungicide 115 lb N - single application P 25R47									4	5	83	1.52	12.5	57.6	59
7	No Insecticide - No Fungicide 115 lb N - single application P 25R37									4	4	84	1.57	12.4	57.3	54
8	No Insecticide - No Fungicide 115 lb N - single application P 25R78									8	10	78	1.79	11.6	55.7	47
9	No Insecticide - No Fungicide 115 lb N - single application Benton									2	2	87	1.39	12.4	58.8	46
10	No Insecticide - No Fungicide 115 lb N - single application FS 539									3	3	93	1.54	12.7	55.2	54
11	No Insecticide - No Fungicide 115 lb N - split application P 25R47									4	4	88	1.51	12.4	57.6	58
12	No Insecticide - No Fungicide 115 lb N - split application P 25R37									4	4	84	1.63	12.1	57.1	44
13	No Insecticide - No Fungicide 115 lb N - split application P 25R78									11	9	86	1.92	12.1	57.4	53
14	No Insecticide - No Fungicide 115 lb N - split application Benton									3	4	88	1.87	12.4	59.2	52
15	No Insecticide - No Fungicide 115 lb N - split application FS 539									3	4	90	1.50	12.3	57.1	53
16	Fungicide - No Insecticide 90 lb N - single application P 25R47									1	1	80	1.72	12.6	57.7	58
17	Fungicide - No Insecticide 90 lb N - single application P 25R37									3	2	81	1.74	12.2	57.8	44
18	Fungicide - No Insecticide 90 lb N - single application P 25R78									2	3	82	1.73	12.2	56.6	58

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19	Fungicide - No Insecticide 90 lb N - single application Benton									2	2	83	1.79	12.1	58.3	55
20	Fungicide - No Insecticide 90 lb N - single application FS 539									2	1	93	1.81	12.6	58.7	48
21	Fungicide - No Insecticide 115 lb N - single application P 25R47									1	1	85	1.33	12.8	58.4	59
22	Fungicide - No Insecticide 115 lb N - single application P 25R37									3	2	83	2.03	11.7	56.3	49
23	Fungicide - No Insecticide 115 lb N - single application P 25R78									3	3	84	1.36	12.2	57.4	54
24	Fungicide - No Insecticide 115 lb N - single application Benton									2	2	81	1.97	12.1	57.4	55
25	Fungicide - No Insecticide 115 lb N - single application FS 539									2	2	95	1.52	13.0	59.0	50
26	Fungicide - No Insecticide 115 lb N - split application P 25R47									2	2	85	1.44	12.7	58.0	56
27	Fungicide - No Insecticide 115 lb N - split application P 25R37									2	2	86	1.81	11.9	55.5	50
28	Fungicide - No Insecticide 115 lb N - split application P 25R78									3	3	86	1.82	12.1	56.9	59
29	Fungicide - No Insecticide 115 lb N - split application Benton									2	2	85	1.80	12.1	58.1	60
30	Fungicide - No Insecticide 115 lb N - split application FS 539									2	3	94	1.52	12.5	57.5	55
31	Insecticide - No Fungicide 90 lb N - single application P 25R47									3	3	86	1.63	12.1	57.2	53
32	Insecticide - No Fungicide 90 lb N - single application P 25R37									4	6	81	1.77	11.6	56.0	61
33	Insecticide - No Fungicide 90 lb N - single application P 25R78									8	10	83	1.42	12.6	58.9	53
34	Insecticide - No Fungicide 90 lb N - single application Benton									3	5	85	1.50	12.0	57.2	49
35	Insecticide - No Fungicide 90 lb N - single application FS 539									4	6	91	1.48	12.2	56.5	53
36	Insecticide - No Fungicide 115 lb N - single application P 25R47									6	7	83	1.48	12.1	57.2	63

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37	Insecticide - No Fungicide 115 lb N - single application P 25R37									4	4	84	1.48	11.5	53.9	61
38	Insecticide - No Fungicide 115 lb N - single application P 25R78									7	8	89	1.83	12.7	58.8	55
39	Insecticide - No Fungicide 115 lb N - single application Benton									2	5	88	1.89	11.9	57.4	63
40	Insecticide - No Fungicide 115 lb N - single application FS 539									4	3	92	1.63	12.0	56.4	53
41	Insecticide - No Fungicide 115 lb N - split application P 25R47									2	3	85	1.72	12.1	57.7	58
42	Insecticide - No Fungicide 115 lb N - split application P 25R37									2	3	84	1.55	11.5	56.1	58
43	Insecticide - No Fungicide 115 lb N - split application P 25R78									7	7	83	1.59	11.9	56.4	55
44	Insecticide - No Fungicide 115 lb N - split application Benton									5	6	84	1.79	11.9	57.3	62
45	Insecticide - No Fungicide 115 lb N - split application FS 539									5	6	94	1.39	11.9	56.5	53
46	Insecticide - Fungicide 90 lb N - single application P 25R47									1	1	84	1.81	11.6	53.4	47
47	Insecticide - Fungicide 90 lb N - single application P 25R37									2	3	83	1.26	12.0	56.6	48
48	Insecticide - Fungicide 90 lb N - single application P 25R78									5	6	84	1.83	11.8	57.1	51
49	Insecticide - Fungicide 90 lb N - single application Benton									2	3	86	1.89	13.0	59.2	53
50	Insecticide - Fungicide 90 lb N - single application FS 539									1	1	95	1.51	12.6	58.2	57
51	Insecticide - Fungicide 115 lb N - single application P 25R47									1	1	86	1.55	11.5	55.0	57
52	Insecticide - Fungicide 115 lb N - single application P 25R37									5	4	82	1.63	11.8	55.5	51
53	Insecticide - Fungicide 115 lb N - single application P 25R78									3	3	85	1.87	12.4	58.6	50
54	Insecticide - Fungicide 115 lb N - single application Benton									3	5	85	1.57	13.1	58.4	61

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55	Insecticide - Fungicide 115 lb N - single application FS 539									1	1	95	1.82	12.5	57.8	57
56	Insecticide - Fungicide 115 lb N - split application P 25R47									2	2	83	1.92	11.9	55.8	55
57	Insecticide - Fungicide 115 lb N - split application P 25R37									3	3	87	1.72	11.9	54.9	60
58	Insecticide - Fungicide 115 lb N - split application P 25R78									2	3	86	1.90	12.3	58.1	56
59	Insecticide - Fungicide 115 lb N - split application Benton									2	2	84	1.66	12.7	58.5	54
60	Insecticide - Fungicide 115 lb N - split application FS 539									2	2	95	1.74	12.3	57.0	58
LSD (P=.05)										2.7	3.3	5.2	0.429	0.93	3.44	11.4
Replicate F										5.103	2.288	0.609	0.124	3.055	0.794	2.001
Replicate Prob(F)										0.0082	0.1079	0.5465	0.8835	0.0535	0.4561	0.1429
Treatment F										4.204	3.385	5.684	1.590	1.419	1.126	1.462
Treatment Prob(F)										0.0001	0.0001	0.0001	0.0260	0.0807	0.3160	0.0646

Trial Comments

1. Protocol: SIU (BGY).
2. Ratings: Insect and disease incidence and severity, weed biomass; wheat head counts; percent lodging at harvest; grain yield, moisture, and test weight; save grain sample (5 lb/plot) for additional evaluations.
3. Herbicide applications as needed, apply to all plots.
4. Fall fertilization: N 27 lb/A, P2O5 69 lb/A, K2O 120 lb/A; applied to all plots.
5. Spring fertilization: 28% UAN applied per treatment:
   90 lb N - single application = 90 lb/A at growth stage 5.
   115 lb N - single application = 115 lb/A at growth stage 5.
   115 lb N - split application = 48 and 67 lb/A at growth stage 3 and 5, respectively.
   Spring N fertilizer application for the single application was on 3-10-05.
   Spring N fertilizer application for split applications at growth stage 3 and 5 were on 2-17-05 and 4-1-05, respectively.
6. Pest control (per treatment list):
   Herbicde = Harmony Extra + 2, 4-D + Activator 90 at 0.5 oz/A + 6.0 oz/A + 0.125 %v/v.
   Insecticide = Warrior + Activator 90 at 2.0 oz/A + 0.125 %v/v.
   Fungicide = Headline + Activator 90 at 9.0 oz/A + 0.125 %v/v.
7. Herbicides were applied on 3-31-05.
   Insecticides were applied 4-4-05.
   Fungicides were applied 4-27-05, at 8am, 55 F, 60% RH, 3-7 MPH, clear sky, 52 F soil temperature.
   Wheat stage at fungicide application was: P25R47 = FK9; P25R78 = FK9; FS 539 = FK9; Benton = FK9; and P25R37 = FK9.
8. BYD = Barley yellow dwarf. DAT = Days after fungicide application. % Incid = Percent incidence. % Sever = Percent severity. GlumeBch = Glume blotch. TanSpot = Tan spot. LeafRust = Leaf rust. EOS = End of season. Mil/A = million/A. Tan spot and leaf blotch were rated on flag leaf and next leaf down only.
9. There was no head scab apparent in any plots. Lodging was not apparent in any plots at harvest. Grain samples were not collected due to the general lack of head scab.
10. Harvested 6-22-05, (6) 8 inch rows by 25 ft.