Cool Bean Advisor
UNIVERSITY OF WISCONSIN AGRONOMY, SOYBEAN RESEARCH, UNIVERSITY OF WISCONSIN-EXTENSION

Intensive Winter Wheat Management

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A research trial was initiated at the Arlington Agricultural Research Station to assess the impact of various management levels (Table 1) on the yield, grain quality, and disease incidence of 14 soft red winter wheat varieties. Management levels were stair-stepped with increasing intensity of inputs. Each management step increased yield, however growers should verify individual farm gate input prices to see if yield increases had a positive ROI.

Table 1. Management treatments at three levels.

	Management Treatments		
	Current	MidLevel	HighLevel
Base seed treatment	Same treatment at all levels. See Table 2.		
Base herbicide	Huskie 11 fl oz/a	Huskie 11 fl oz/a	Huskie 11 fl oz/a
Seeding rate (million seeds/a)	1.50	1.75	2.00
Nitrogen (lbs N/a) (5-Apr + 19-Apr)	55	55+17 split	55+17 split
Growth regulator @ F6 (29-Apr)			Palisade 12 fl oz/a
Micronutrients @ F9 (17-May)			TakeOff Phite MZ (3-20-7+Mn+Zn) 32 fl oz/a EB Mix (N,S,B,Mn, Fe,Zn) 64 fl oz/a
Fungicide @ F9 (17-May)			Priaxor 8 fl oz/a
Micronutrients @ F10.5.1 (31-May)			TakeOff Phite 32 fl oz/a
Fungicide @ F10.5.1 (31-May)		Prosaro 6.5 fl oz/a	Prosaro 6.5 fl oz/a

Table 2. Fungicidal, insecticidal, and biological seed treatments used in this study.

Brand	Variety	Seed treatment
Pro Seed Genetics	PRO 200	Bio-Forge, imidacloprid, metalaxyl, tebuconazole
Pro Seed Genetics	PRO 240	Bio-Forge, imidacloprid, metalaxyl, tebuconazole
Pro Seed Genetics	PRO 260	Bio-Forge, imidacloprid, metalaxyl, tebuconazole
Pro Seed Genetics	PRO 320A	Cruiser 5FS, Release, Vibrance Extreme
Pro Seed Genetics	PRO 410	Bio-Forge, imidacloprid, metalaxyl, tebuconazole
Pro Seed Genetics	PRO 420	Bio-Forge, imidacloprid, metalaxyl, tebuconazole
DuPont Pioneer	25R40	Gaucho, Vibrance Extreme
Public	Kaskaskia	Bio-Forge, imidacloprid, metalaxyl, tebuconazole
Public	Red Devil Brand	Bio-Forge, imidacloprid, metalaxyl, tebuconazole
Kratz Farms	KF 15241	Cruiser 5FS, Release, Vibrance Extreme
PiP	735	Charter, imidacloprid
PiP	776	Charter, imidacloprid
Syngenta	SY 547	CruiserMaxx, Vibrance Extreme, Maxim

Table 3. Materials and methods.

Year:	2015-2016	
Expt. No.	16085	
Title:	Intensive Wheat Management	
Personnel:	Dr. Shawn Conley and John Gaska	
Organization:	University of Wisconsin-Madison, Dept. of Agronomy	
Supported by:	Wisconsin Crop Improvement Association	
Location:	Arlington Agricultural Research Station, Arlington, WI	
FIELD INFORMATION		
Field:	248E	
Previous Crop:	Soybean	
Tillage:	No-tillage	
EXPERIMENTAL PROCEDURE		
Exp. Design:	RCB Split plot	
Replicates:	4	
Variables:	3 management levels	
	14 varieties	
Plot Size:	Planted:	8' x 25'
	Harvested:	5' x 21'
Row Spacing:	7.5"	
Cultivars:	14 varieties	
Planting:	Date:	23-Sep-15
	Equipment:	No till plot planter
	Rate:	variable with treatment
	Depth:	1"
Harvesting:	Date:	18-Jul-16
	Equipment:	2010 Almaco SPC-40 plot combine

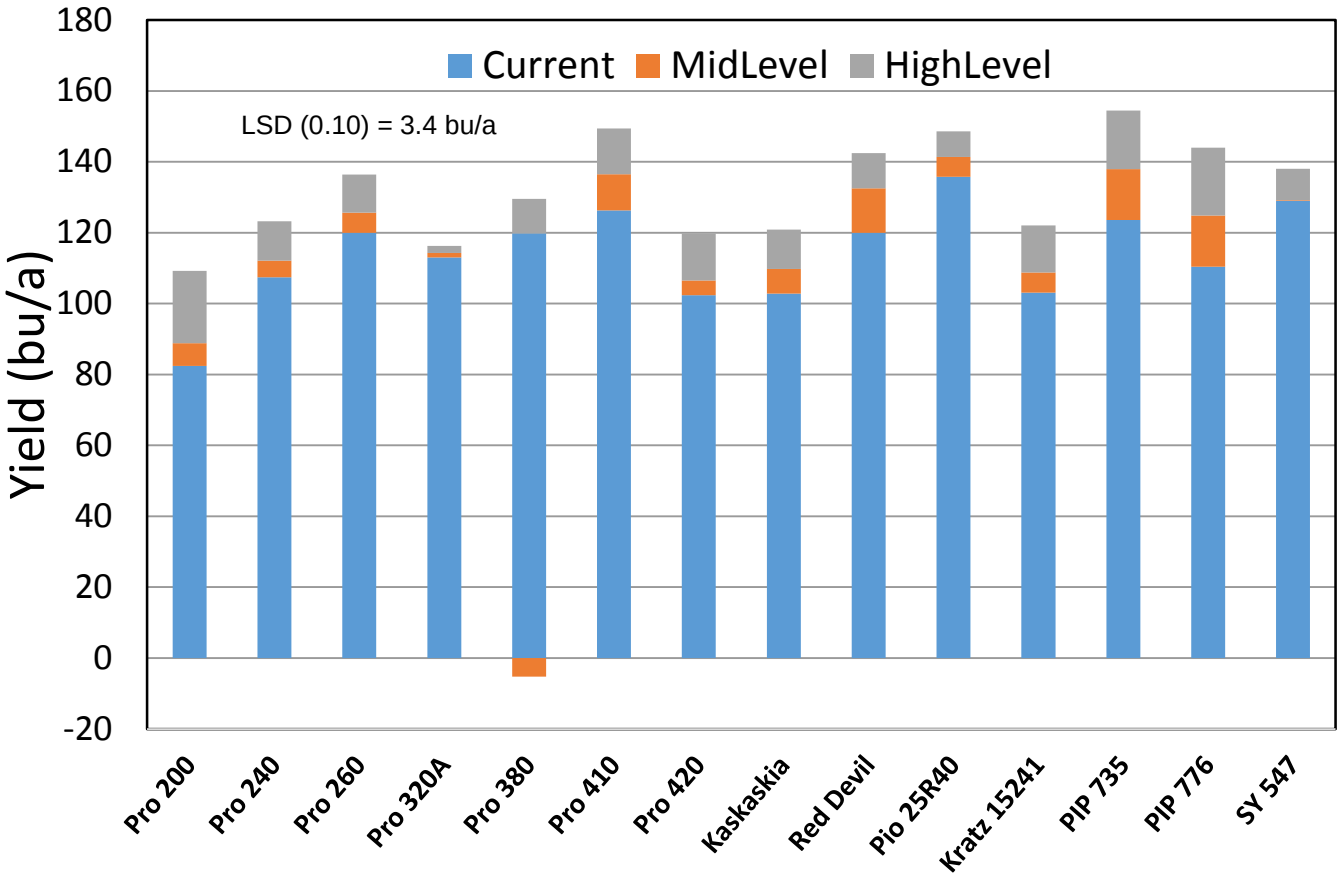

Figure 1. Winter wheat yield among 14 varieties and three management levels. Values below zero indicate a yield loss for that management level in 2016.

Table 4. Main effects and interactions of management level and variety on yield, plant characteristics, and disease.

Management	Variety	Grain yield	Height	Lodg	Test weight	TKW	Foliar Disease Assessment	
							2-Jun	23-Jun
		bu/ac	inches	1-5	lbs/bu	grams	0-10 Lipps-Madden scale	
	Pro 200	93.5	39.4	1.8	57.7	30.1	6.5	7.9
	Pro 240	114.2	40.8	1.8	57.0	33.5	4.5	6.5
	Pro 260	127.4	39.5	1.3	57.6	38.9	3.9	5.5
	Pro 320A	114.5	41.3	2.1	56.2	34.6	5.3	7.4
	Pro 380	119.5	39.4	1.5	60.7	29.7	3.8	5.7
	Pro 410	137.4	40.7	1.8	58.6	42.1	4.0	6.5
	Pro 420	109.6	39.9	1.4	58.8	34.6	5.9	7.8
	Kaskaskia	111.2	40.1	2.2	59.5	33.5	4.8	6.8
	Red Devil Brand	131.7	39.8	1.3	58.3	30.3	3.7	6.1
	Pio 25R40	141.9	39.1	1.3	58.7	39.9	5.0	6.3
	Kratz 15241	111.3	39.7	1.8	58.0	30.9	5.9	7.2
	PIP 735	138.7	38.9	1.3	57.3	32.5	2.8	6.3
	PIP 776	126.4	40.8	1.6	56.4	32.0	6.0	7.9
	SY 547	132.1	40.1	1.8	58.1	37.3	5.1	6.8
Current		114.0	40.2	1.7	57.3	32.8	4.9	6.3
MidLevel		120.2	39.5	1.5	58.4	34.5	5.4	7.4
HighLevel		132.1	40.1	1.7	58.6	35.5	4.1	6.6
Current	Pro 200	82.4	39.3	1.5	55.6	28.0	8.5	9.5
Current	Pro 240	107.4	40.0	1.0	56.2	31.4	2.5	5.5
Current	Pro 260	120.0	37.3	1.3	57.5	37.6	1.5	3.0
Current	Pro 320A	113.0	43.0	2.5	56.1	35.8	8.0	8.3
Current	Pro 380	119.8	42.0	1.8	60.2	28.8	5.0	7.0
Current	Pro 410	126.3	42.0	2.0	57.6	39.6	2.0	5.3
Current	Pro 420	102.4	39.3	1.8	58.2	30.3	6.5	7.5
Current	Kaskaskia	102.8	41.0	2.3	58.8	33.2	5.0	6.3
Current	Red Devil Brand	120.0	39.8	1.3	57.1	28.5	1.5	4.0
Current	Pio 25R40	135.8	38.8	1.3	58.4	39.7	5.0	4.8
Current	Kratz 15241	103.1	41.0	2.5	57.1	30.0	8.0	8.3
Current	PIP 735	123.6	38.8	2.0	56.8	31.4	1.5	4.3
Current	PIP 776	110.4	41.3	1.3	54.5	28.1	6.5	6.8
Current	SY 547	129.0	39.8	1.8	57.8	36.5	6.8	8.3

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Table 4 continued.

Management	Variety	Grain yield	Height	Lodg	Test weight	TKW	Foliar Disease Assessment 2-Jun	Foliar Disease Assessment 23-Jun
		bu/ac	inches	1-5	lbs/bu	grams	0-10 Lipps-Madden scale	
MidLevel	Pro 200	88.8	37.5	1.0	59.2	31.0	6.5	8.5
MidLevel	Pro 240	112.1	42.3	2.8	57.4	34.5	6.5	7.0
MidLevel	Pro 260	125.6	40.5	1.3	58.0	39.7	6.8	8.3
MidLevel	Pro 320A	114.3	40.8	1.5	55.9	33.0	5.0	7.8
MidLevel	Pro 380	114.5	37.8	1.5	60.8	29.5	3.5	6.5
MidLevel	Pro 410	136.5	39.3	1.3	59.2	43.5	5.0	6.8
MidLevel	Pro 420	106.5	39.0	1.0	59.0	35.3	6.8	8.3
MidLevel	Kaskaskia	109.8	39.3	2.5	59.2	33.7	5.0	7.0
MidLevel	Red Devil Brand	132.6	42.0	1.0	58.8	31.2	4.5	6.0
MidLevel	Pio 25R40	141.4	39.5	1.0	58.9	39.7	5.0	7.0
MidLevel	Kratz 15241	108.7	37.5	1.5	58.2	30.3	5.3	6.8
MidLevel	PIP 735	137.9	36.8	1.0	57.5	32.3	3.5	5.8
MidLevel	PIP 776	124.8	40.8	1.5	57.2	32.4	8.0	10.0
MidLevel	SY 547	129.2	40.8	2.3	58.2	37.5	5.0	7.5
HighLevel	Pro 200	109.2	41.5	3.0	58.3	31.4	4.5	5.8
HighLevel	Pro 240	123.2	40.0	1.5	57.5	34.7	4.5	7.0
HighLevel	Pro 260	136.4	40.8	1.3	57.2	39.3	3.5	5.3
HighLevel	Pro 320A	116.3	40.0	2.3	56.7	35.0	3.0	6.3
HighLevel	Pro 380	124.3	38.5	1.3	61.3	30.7	3.0	3.5
HighLevel	Pro 410	149.4	40.8	2.0	59.0	43.2	5.0	7.5
HighLevel	Pro 420	119.8	41.5	1.5	59.4	38.2	4.5	7.8
HighLevel	Kaskaskia	120.9	40.0	1.8	60.6	33.6	4.5	7.0
HighLevel	Red Devil Brand	142.5	37.8	1.5	59.0	31.1	5.0	8.3
HighLevel	Pio 25R40	148.6	39.0	1.5	58.9	40.2	5.0	7.3
HighLevel	Kratz 15241	122.1	40.5	1.5	58.7	32.3	4.5	6.5
HighLevel	PIP 735	154.5	41.3	1.0	57.7	33.7	3.5	8.8
HighLevel	PIP 776	144.0	40.3	2.0	57.5	35.4	3.5	7.0
HighLevel	SY 547	138.0	39.8	1.3	58.2	37.8	3.5	4.8
Means		126.1	39.8	1.6	58.5	35.0	4.8	7.0
Probability Pr>F								
Management		0.0001	0.5144	0.6736	0.0004	0.0001	0.0707	0.1908
Variety		0.0001	0.8761	0.2119	0.0001	0.0001	0.1984	0.4298
Mgt x Variety		0.0006	0.4403	0.1380	0.0406	0.0059	0.3364	0.1308
LSD 10%								
Management		4.1	NS	NS	0.3	0.3	0.9	NS
Variety		7.6	NS	NS	0.6	1.3	NS	NS
Mgt x Variety		3.4	NS	NS	1.1	2.2	NS	NS
C.V. %		5	8	2	2	6	66	40