



UNIVERSITY OF WISCONSIN AGRONOMY, SOYBEAN RESEARCH, UNIVERSITY OF WISCONSIN-EXTENSION

Intensive Winter Wheat Management - 2017

Shawn Conley, Professor and State Soybean and Small Grains Extension Specialist
 John Gaska, S. Outreach Specialist, and Adam Roth, Program Manager; Agronomy
 Damon Smith, Assistant Professor and Brian Mueller, Graduate Student; Plant Pathology

A research trial was initiated at the Arlington Agricultural Research Station to assess the impact of various management levels (Table 1) on the yield, test weight, and disease management 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 verify if yield increases had a positive ROI.

Table 1. Management treatments at three levels.

	Management Treatments		
	Current	Mid-Level	High-Level
Base seed treatment	Same variety/treatment at all levels. See Table 2.		
Base herbicide (25-Apr)	Huskie 15 fl oz/a	Huskie 15 fl oz/a	Huskie 15 fl oz/a
Seeding rate (million seeds/a)	1.50	1.75	2.00
Nitrogen (lbs N/a) (10-Apr + 19- Apr)	55	55+30 split	55+30 split
Growth regulator @ F5-6 (25-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)			Trivapro 13.7 fl oz/a
Micronutrients @ F10.5.1 (8-June)			TakeOff Phite 32 fl oz/a
Fungicide @ F10.5.1 (7-June)		A21573C 13.7 fl oz/a	A21573C 13.7 fl oz/a

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

Brand	Variety	Seed treatment
Pro Seed Genetics	PRO 200	CeresUS, Senator
Pro Seed Genetics	PRO 240	CeresUS, Senator
Pro Seed Genetics	PRO 260	CeresUS, Senator
Pro Seed Genetics	PRO 320A	Vibrance Extreme
Pro Seed Genetics	Pro 380	CeresUS, Senator
Pro Seed Genetics	PRO 410	CeresUS, Senator
Pro Seed Genetics	PRO 420	CeresUS, Senator
Public	Kaskaskia	CeresUS, Senator
Public	Red Devil Brand	Warden Cereals II
DuPont Pioneer	25R40	Gaucha, Vibrance Extreme
Kratz Farms	KF 15241	Cruiser 5FS, Vibrance Extreme
PIP	735	Charter, imidacloprid
PIP	776	Charter, imidacloprid
Syngenta	SY 547	Vibrance Extreme

Table 3. Materials and methods.

Year:	2016-2017		
Expt. No.	17085		
Title:	Intensive Wheat Management		
Personnel:	Dr. Shawn Conley, John Gaska, Adam Roth, and Brian Mueller		
Organization:	University of Wisconsin-Madison, Dept. of Agronomy		
Supported by:	WI Crop Improvement Association		
Location:	Arlington Agricultural Research Station, Arlington, WI		
FIELD INFORMATION			
Field:	248W		
Previous Crop:	Soybean		
Tillage:	No-tillage		
EXPERIMENTAL PROCEDURE			
Exp. Design:	RCB Split plot		
Replicates:	4		
Variables:	3 management levels - whole plot 14 varieties - split plot		
Plot Size:	Planted:	8' x 25'	
	Harvested:	5' x 21'	
Row Spacing:	7.5"		
Cultivars:	14 varieties		
Planting:	Date:	4-Oct-16	
	Equipment:	No-till plot planter	
	Rate:	variable with treatment	
	Depth:	1"	
Harvesting:	Date:	24-Jul-17	
	Equipment:	2010 Almaco SPC-40 plot combine	

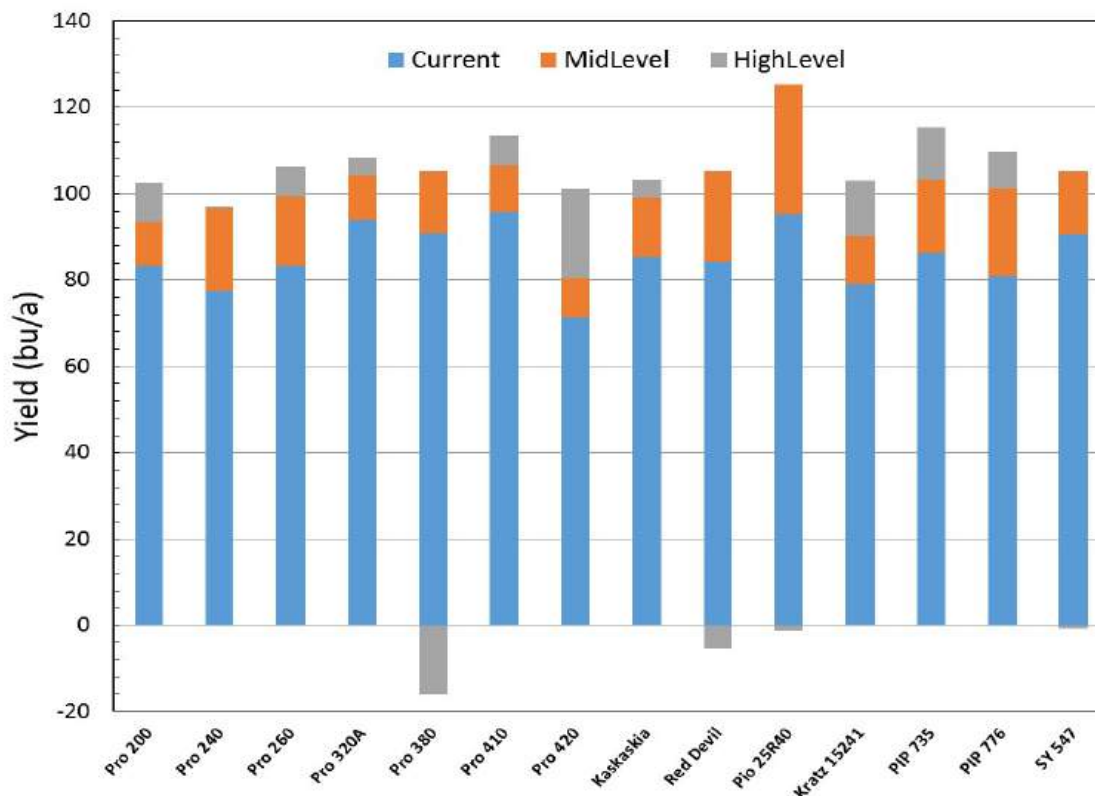


Figure 1. Winter wheat yield among 14 varieties and three management levels. Values below zero indicate a yield loss from a specific management level in 2017. Mean separation are shown in Table 4.

Table 4. Main effects and interactions of management level and variety on yield, test weight, and disease.

Management	Brand	Variety	Grain yield bu/ac	Test weight lbs/bu	Stripe Rust		Means separation for yield ¹
					Incidence %	Severity %	
	Pro Seed Genetics	PRO 200	93.1	56.5	28.0	10.6	C D
	Pro Seed Genetics	PRO 240	90.5	55.2	51.5	13.6	D E
	Pro Seed Genetics	PRO 260	96.3	54.2	34.1	10.6	C D
	Pro Seed Genetics	PRO 320A	102.3	55.2	1.8	2.5	C
	Pro Seed Genetics	Pro 380	95.1	58.0	6.1	3.4	C D
	Pro Seed Genetics	PRO 410	105.3	56.6	1.8	1.9	A B
	Pro Seed Genetics	PRO 420	84.3	54.2	46.1	17.5	E
	Public	Kaskaskia	95.9	56.6	21.2	12.1	B C D
	Public	Red Devil Brand	96.5	56.0	6.1	5.7	B C D
	DuPont Pioneer	25R40	115.0	54.6	3.1	3.6	A
	Kratz Farms	KF 15241	90.7	55.8	25.6	9.2	D E
	PiP	735	101.7	54.0	24.2	6.3	B C
	PiP	776	97.3	54.1	38.1	16.8	B C D
	Syngenta	SY 547	100.1	55.7	23.3	8.0	B C D
Current			86.0	53.7	39.0	14.0	C
MidLevel			101.0	56.1	40.0	16.0	B
HighLevel			106.0	56.6	1.0	1.0	A
Current	Pro Seed Genetics	PRO 200	83.4	55.7	72.3	17.5	I J K L M
Current	Pro Seed Genetics	PRO 240	77.6	52.1	100.0	23.9	L M
Current	Pro Seed Genetics	PRO 260	83.3	52.1	65.2	14.6	I J K L M
Current	Pro Seed Genetics	PRO 320A	93.9	55.1	3.3	4.4	D E F G H I J K L
Current	Pro Seed Genetics	Pro 380	90.9	57.0	19.1	6.1	E F G H I J K L M
Current	Pro Seed Genetics	PRO 410	95.7	53.6	1.9	1.9	C D E F G H I J K L
Current	Pro Seed Genetics	PRO 420	71.4	53.7	83.0	28.5	M
Current	Public	Kaskaskia	85.3	55.3	66.4	39.5	G H I J K L M
Current	Public	Red Devil Brand	84.4	54.7	19.1	12.5	H I J K L M
Current	DuPont Pioneer	25R40	95.3	52.0	6.2	5.4	C D E F G H I J K L
Current	Kratz Farms	KF 15241	79.0	53.6	97.5	24.1	K L M
Current	PiP	735	86.2	50.6	100.0	20.8	F G H I J K L M
Current	PiP	776	80.9	52.5	100.0	38.7	J K L M
Current	Syngenta	SY 547	90.5	54.3	59.2	9.5	E F G H I J K L

Continued next page

Table 4 continued.

Management	Brand	Variety	Grain yield bu/ac	Test weight lbs/bu	Stripe Rust		Means separation for Yield
					Incidence %	Severity %	
MidLevel	Pro Seed Genetics	PRO 200	93.5	56.2	100.0	26.2	D E F G H I J K L
MidLevel	Pro Seed Genetics	PRO 240	96.8	57.3	98.8	20.9	C D E F G H I J K L
MidLevel	Pro Seed Genetics	PRO 260	99.4	55.7	92.5	18.8	C D E F G H I J K
MidLevel	Pro Seed Genetics	PRO 320A	104.4	55.0	3.5	4.5	B C D E F G H
MidLevel	Pro Seed Genetics	Pro 380	105.3	59.2	9.7	6.7	A B C D E F G H
MidLevel	Pro Seed Genetics	PRO 410	106.7	57.1	4.4	4.5	A B C D E F
MidLevel	Pro Seed Genetics	PRO 420	80.4	53.5	100.0	35.8	J K L M
MidLevel	Public	Kaskaskia	99.3	57.6	94.8	33.5	C D E F I J K
MidLevel	Public	Red Devil Brand	105.3	56.4	13.4	14.8	A B C D E F G H
MidLevel	DuPont Pioneer	25R40	125.4	56.0	3.9	6.1	A
MidLevel	Kratz Farms	KF 15241	90.1	56.0	100.0	29.8	E F G H I J K L M
MidLevel	PiP	735	103.2	55.2	85.7	14.3	D E F G H I
MidLevel	PiP	776	101.3	53.4	92.1	27.2	C D E F G H I J
MidLevel	Syngenta	SY 547	105.2	57.3	45.2	15.7	A B C D E F G H
HighLevel	Pro Seed Genetics	PRO 200	102.5	57.6	0.9	1.5	E F G H I
HighLevel	Pro Seed Genetics	PRO 240	97.1	56.3	9.9	4.0	C D E F G H I J K L
HighLevel	Pro Seed Genetics	PRO 260	106.3	54.7	3.7	3.6	A B C D E F G
HighLevel	Pro Seed Genetics	PRO 320A	108.5	55.6	0.4	0.6	A B C D E
HighLevel	Pro Seed Genetics	Pro 380	89.2	59.2	0.7	0.7	E F G H I J K L M
HighLevel	Pro Seed Genetics	PRO 410	113.4	57.7	0.5	0.6	A B C D
HighLevel	Pro Seed Genetics	PRO 420	101.1	55.2	8.1	3.7	C D E F G H I j
HighLevel	Public	Kaskaskia	103.1	56.8	0.2	0.2	C D E F G H I
HighLevel	Public	Red Devil Brand	99.8	57.0	0.4	0.4	C D E F G H I J K
HighLevel	DuPont Pioneer	25R40	124.3	55.9	1.1	1.1	A B
HighLevel	Kratz Farms	KF 15241	103.0	57.9	0.2	0.2	C D E F G H I
HighLevel	PiP	735	115.6	56.1	0.2	0.2	A B C
HighLevel	PiP	776	109.7	56.4	2.8	2.8	A B C D E
HighLevel	Syngenta	SY 547	104.5	55.6	2.8	2.8	A B C D E F G
Means			103.4	56.4	31.3	10.0	
Probability (Pr>F)							
Management			<.0001	<.0001	<.0001	0.0003	
Variety			<.0001	<.0001	<.0001	<.0001	
Mgt x Variety			0.0017	0.0264	<.0001	<.0001	

¹Main effects and interactions followed by the same letters are statistically the same.