2025 Winter Small Grains Variety Testing Report

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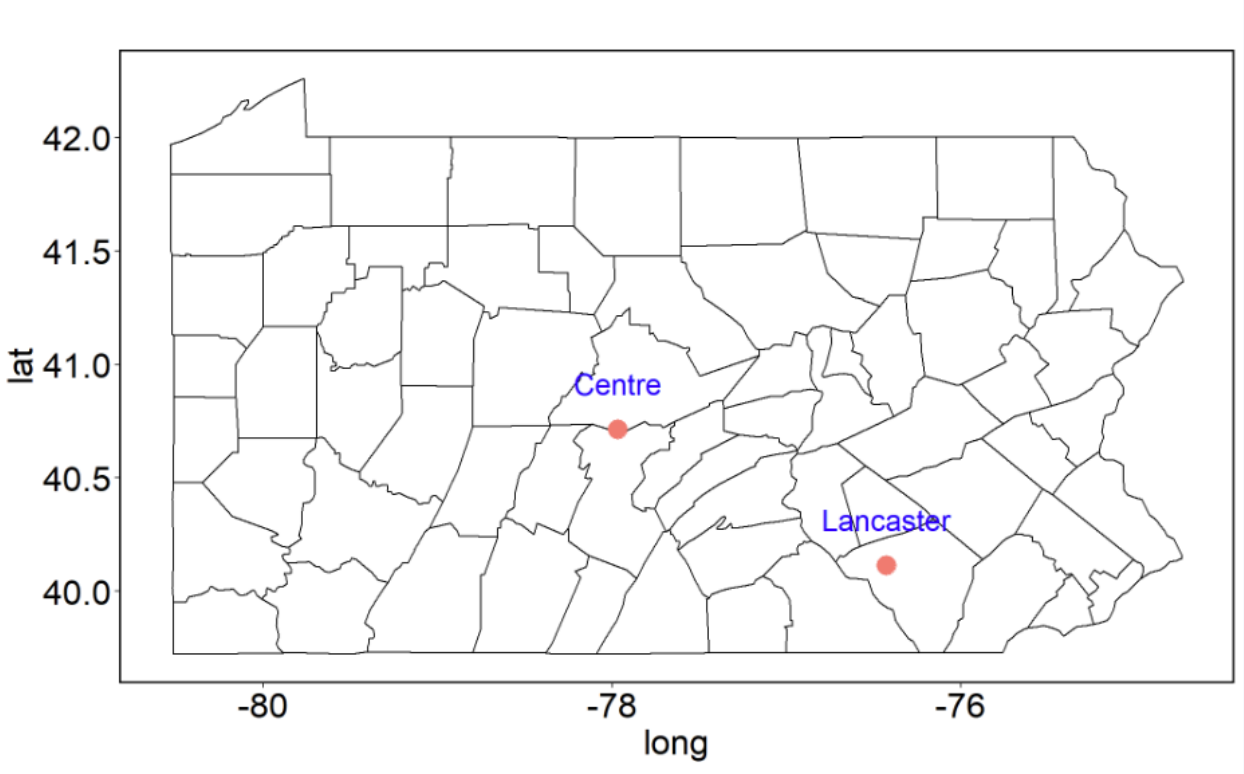

This report summarizes the variety performance of small winter grains in Pennsylvania. In the 2024-2025 season, we evaluated wheat and cereal rye. All crops were evaluated at two locations (Rock Springs, Centre County and Landisville, Lancaster County, see map above). All trials were seeded on tilled soil using a drill with 7.5" spacing between rows. Plots consisted of 7 rows trimmed to about 15 feet long prior to harvest. All trials were laid out in a randomized complete block design with four replications. Production details are described below for each trial. Plant height was measured at maturity from the soil surface to the top of the head, not including awns when present. Lodging was determined by visual rating (0=no lodging, 5=plot is completely lodged) immediately before harvest. Lodging ratings represent the combination of lodging and brackling (folding/breaking of stem occurring in the mid or top portion of the stem). The center five rows of each plot were harvested with a research combine for the determination of grain yield and bushel weight. The percentage of protein in the grain was determined by a laboratory

near-infrared spectroscopy system (FOSS Infratec Analyze r) based on frequent calibrations with wet chemistry data.

Using the LSD value

The Least Significant Difference (L.S.D.) value is derived from a statistical test and can be used to compare varieties within a single trial. If the difference between any two varieties exceeds the L.S.D. value, they are considered "significantly different". In lay terms, this means that we are confident that the difference between the two varieties can truly be attributed to a variety effect and was not a result of random field variability. The L.S.D. value is expressed in the same units as the measurement in question. For example, if within a given trial, Variety #1 yielded 100 bushels/acre, Variety #2 yielded 80 bushels/acre, and the L.S.D. value is 10 bushels/acre, then Variety #1 yielded significantly higher than Variety #2 in that trial. The L.S.D. value can also be used to identify the “top yielding group” within a trial. For example, if the highest yielding variety produced 200 bushels/acre and the L.S.D. value was 50 bushels/acre, then all varieties that yielded more than 150 bushels/acre are not significantly different than the highest yielding variety and can be considered part of the “top yielding group” in the trial.

The L.S.D. values can be calculated at different levels of significance. Higher levels allow for better separation between varieties (lower L.S.D. values) at the cost of committing the error of separating varieties that are not truly different. Lower levels allow less separation between varieties (higher L.S.D. values) at the cost of overlooking true differences. In this report, L.S.D. values are given at the significance levels of 0.1 and 0.25. Based on the strong arguments of Carmer (1976)[1] specific to using L.S.D. values in variety performance tests, we generally recommend the 0.25 significance level when interpreting results in this report.

[1] Carmer, S.G. "Optimal Significance Levels for Application of the Least Significant Difference in Crop Performance Trials." Crop Science 16:95-99, 1976.

Wheat Entry List

Source	Entry	Head Type[1]	Seed Treatment[2]
AgriMAXX	505	Awned	PRIME ST
AgriMAXX	513	Awned	PRIME ST
AgriMAXX	516	Awned	PRIME ST
AgriMAXX	525	Awned	PRIME ST
AgriMAXX	543	Awnless	PRIME ST
AgriMAXX	545	Awned	PRIME ST
AgriMAXX	553	Awned	PRIME ST
Blue River	844	Smooth Awned	Cruiser Max Vibrance Cereals
Chemgro	Milton	awned	gro-Tek IM
Chemgro	Fairland	awned	gro-Tek IM
Chemgro	Wakefield	awned	gro-Tek IM
Chemgro	Felton	smooth	gro-Tek IM
Chemgro	Freeland	awned	cruisermax vibrance
FS INSPIRE	FS 743	AWNED	DIVIDEND EXTREME
FS INSPIRE	FS 745	AWNED	DIVIDEND EXTREME
FS INSPIRE	FS 747	SMOOTH	DIVIDEND EXTREME
FS INSPIRE	FS 748	AWNED	DIVIDEND EXTREME
FS INSPIRE	FS 749	AWNED	DIVIDEND EXTREME
Helena Agri	MBX 127	Awned	Helena Seed Shield
Helena Agri	MBX 360	Awned	Helena Seed Shield
Helena Agri	MBX 230	Awned	Helena Seed Shield
Helena Agri	GP 543	Smooth	Helena Seed Shield
Helena Agri	MBX413	Awned	Vibrance Ext
USG	3234	Smooth	Rancona, Imidicloprid
USG	3352	Awned	Rancona, Imidicloprid
USG	3363	Awned	Rancona, Imidicloprid
USG	3755	Smooth	Rancona, Imidicloprid
USG	3472	Awned	Rancona, Imidicloprid
USG	3661	Awnletted	Rancona, Imidicloprid
USG	3673	Smooth	Rancona, Imidicloprid
USG	3875	Awned	Rancona, Imidicloprid
Mid-Atlantic Seeds	MAS #205	Smooth	MAS Proshield
Mid-Atlantic Seeds	MAS #155	Awned	MAS Proshield

Mid-Atlantic Seeds	MAS #226	Awned	MAS Proshield
Mid-Atlantic Seeds	MAS #133	Awned	MAS Proshield
Mid-Atlantic Seeds	MAS #270	Smooth	MAS Proshield
Mid-Atlantic Seeds	MAS #225	Awned	MAS Proshield
Seedway	SW 541	Smooth	Obtayn
Seedway	SW 568	Smooth	Obtayn
Seedway	SW 648	Awned	Obtayn
Seedway	SW 695	Awned	Obtayn

[1] As reported by seed source.

[2] As reported by seed source.

Wheat Lancaster County Results

Source	Entry	Yield, (bu/A)	Height (in.)	Lodging (0-5, 0=best)	Grain protein (%)[2]
Blue River	844	94.9	34	4	11.6
Mid-Atlantic Seeds	MAS #226	93.5	32	4	12.7
AgriMAXX	513	90.8	39	5	11.3
AgriMAXX	543	90.8	31	1	11.6
Mid-Atlantic Seeds	MAS #270	90.2	22	5	11.8
Seedway	SW 541	90.2	33	0	11.9
FS INSPIRE	FS 747	90.0	28	3	12.2
Chemgro	Fairland	89.2	35	2	11.5
Chemgro	Felton	89.0	35	0	12.2
Helena Agri	MBX413	89.0	37	4	12.6
USG	3673	88.9	27	5	11.7
USG	3234	88.3	30	1	11.9
Helena Agri	GP 543	88.2	37	5	11.4
FS INSPIRE	FS 743	88.1	32	5	12.2
FS INSPIRE	FS 748	88.0	33	2	11.0
Mid-Atlantic Seeds	MAS #133	88.0	33	4	11.7
AgriMAXX	505	87.9	30	4	11.3
USG	3755	87.7	31	5	11.6
USG	3352	86.1	30	5	11.7
USG	3363	86.1	22	5	11.5
Helena Agri	MBX 360	85.9	31	3	12.5
Chemgro	Freeland	85.8	35	3	12.6
Seedway	SW 568	85.6	33	2	11.5
Seedway	SW 648	85.4	30	2	12.0
AgriMAXX	525	85.3	30	5	10.9
AgriMAXX	516	84.4	34	4	12.0
AgriMAXX	553	84.3	30	5	11.2
Chemgro	Milton	84.2	28	2	10.8
Helena Agri	MBX 230	83.2	16	3	12.1
USG	3472	82.9	26	5	11.4
AgriMAXX	545	82.8	32	5	11.5
Chemgro	Wakefield	81.6	26	5	11.5
USG	3875	79.6	24	5	11.4
Helena Agri	MBX 127	78.0	29	5	11.3
Seedway	SW 695	77.4	34	5	11.9
FS INSPIRE	FS 745	76.8	26	5	11.6
FS INSPIRE	FS 749	73.8	30	5	12.2
Mid-Atlantic Seeds	MAS #205	72.4	31	4	12.2
Mid-Atlantic Seeds	MAS #155	72.4	34	5	11.2
Mid-Atlantic Seeds	MAS #225	72.0	29	2	11.5
USG	3661	69.7	32	4	11.7
Mean		84.6	31	4	11.7
LSD(0.05)		12.8			
CV%		10.8			

Wheat Lancaster County Production Information

Lancaster County wheat plots were put in later than desired due to a wet fall. The crop tillered well and appeared healthy coming out of spring dormancy. Due to the extended cool and wet spring green up was delayed. We were able to apply nitrogen in split applications approximately two weeks apart. The wheat responded very well. Overall weed control was excellent, but due to the delayed harvest from extensive rain, weeds began to emerge before harvest. I believe the abundance of heavy rain and high winds contributed to an increase in lodging scores. Overall yields were lower than expected. I believe this can be attributed to high disease pressure from the high rain fall.

Previous Crop	Soybeans
Planting Date	10/23/2024
Seeding Rate[1]	1.3 million seeds/ac
Fall Fertilizer	10/10/2024 100lbs of P and 200lbs of K broadcast application
Herbicides	.75 ounces of Harmony Extra SG on 3/27/2025
Spring N fertilizer	
N material	UAN
N rate	First application 50lbs on 3/13/2025 Second application on 3/27/2025
Harvest Date	7/16/2025
Weather data	http://climate.met.psu.edu/data/ida/index.php?t=3&x=pemn&id=LNCR01

[1]The same seeding rate was used for all plots. We assume that germination rates are high and not significantly different across varieties.

Wheat Centre County Results

Source	Entry	Yield, (bu/A)	Height (in.)	Lodging (0-5, 0=best)	Grain protein (%)[2]
Helena Agri	GP 543	72.6	37	2	13.84
Seedway	SW 541	71.4	34	4	13.28
Chemgro	Fairland	68.9	35	3	12.98
Mid-Atlantic Seeds	MAS #226	68.4	31	3	12.64
Seedway	SW 648	68.2	33	3	12.54
FS INSPIRE	FS 747	67.5	30	1	11.54
USG	3755	67.1	30	4	12.75
USG	3363	65.9	30	4	11.85
FS INSPIRE	FS 748	64.9	29	1	12.7
USG	3234	63.4	35	0	12.33
FS INSPIRE	FS 743	63.2	33	4	12.59
AgriMAXX	545	62.2	30	2	12.15
Helena Agri	MBX 230	62.1	33	0	11.67
Blue River	844	60.9	32	0	12.27

USG	3673	60.8	28	0	13.09
Mid-Atlantic Seeds	MAS #155	60.8	31	4	12.33
USG	3661	60.2	30	4	12.12
AgriMAXX	513	59.8	25	4	12.62
Helena Agri	MBX 360	59.8	31	0	13.69
Chemgro	Freeland	59.3	32	2	12.66
USG	3352	59.0	34	3	13.04
USG	3875	56.8	29	0	11.94
Mid-Atlantic Seeds	MAS #205	56.6	33	1	12.26
Mid-Atlantic Seeds	MAS #270	55.9	30	3	11.73
AgriMAXX	543	55.3	32	0	12.02
Helena Agri	MBX413	55.3	33	2	12.63
Seedway	SW 695	55.0	32	0	11.53
AgriMAXX	525	54.8	26	1	13.46
Chemgro	Milton	54.8	35	0	12.07
Mid-Atlantic Seeds	MAS #133	53.4	34	0	12.04
AgriMAXX	505	53.1	34	0	11.55
Chemgro	Felton	52.5	33	3	11.36
AgriMAXX	553	52.4	33	0	12.01
Chemgro	Wakefield	52.2	30	1	11.46
Seedway	SW 568	51.1	34	2	12.35
Mid-Atlantic Seeds	MAS #225	50.5	35	3	11.79
Helena Agri	MBX 127	49.8	32	0	13.07
FS INSPIRE	FS 749	49.6	32	0	11.89
AgriMAXX	516	45.2	28	2	12.21
FS INSPIRE	FS 745	44.4	32	0	12.02
USG	3472	39.4	31	3	12.08
Mean		58.2	32	2	12.35
LSD(0.05)		7.9			
CV%		9.7			

Wheat Centre County Production Information

Centre County wheat plots were put in later than desired due to a wet fall. The crop tillered well and appeared healthy coming out of spring dormancy. Due to the extended cool and wet spring green up was delayed. We were able to apply nitrogen in split applications approximately two weeks apart. The wheat responded very well. Overall weed control was excellent, but due to the delayed harvest from extensive rain, weeds began to emerge before harvest. There was minimal lodging within the plot. Overall yields were lower than expected. I believe this can be attributed to high disease pressure from the high rain fall.

Previous Crop	Corn Silage
Planting Date	10/22/2024
Seeding Rate[1]	1.3 million seeds/ac
Fall Fertilizer	10/17/2024 100lbs of P and 200lbs of K broadcast application
Herbicides	.75 ounces of Harmony Extra SG applied on 4/14/25
Spring N fertilizer	
N material	UAN
N rate	50lbs of N on 3/18/2025 and on 4/1/2025
Harvest Date	7/24/2025
Weather data	http://climate.met.psu.edu/data/ida/index.php?t=3&x=pemn&id=LNCR01

[1]The same seeding rate was used for all plots. We assume that germination rates are high and not significantly different across varieties.

Rye Entry List

Source	Entry
KWS	KWS RECEPTOR
KWS	KWS SERAFINO
KWS	KWS TAYO
KWS	HAZLET
KWS	KWS EXP H247
KWS	KWS EXP H249

[1] As reported by seed source.

[2] As reported by seed source.

Rye Lancaster County Results

Source	Entry	Yield (bu/A)	Height (in.)	Lodging (0-5, 0=best)	Grain protein (%)[2]
KWS	KWS RECEPTOR	95.8	42	0	11.16
KWS	KWS SERAFINO	95.7	42	0	11.24
KWS	KWS TAYO	93.5	45	0	11.49
KWS	HAZLET	35.5	39	3	12.96
KWS	KWS EXP H247	95.4	41	0	11.11
KWS	KWS EXP H249	91.3	42	0	11.50
Mean		84.5	41	0	11.58
LSD(0.05)		11.3			
CV%		8.9			

Rye Lancaster County Production Information

Lancaster County rye plots were put in later than desired due to a wet fall. The crop tillered well and appeared healthy coming out of spring dormancy. Due to the extended cool and wet spring green up was delayed. We were able to apply nitrogen in split applications approximately two weeks apart. The wheat responded very well. Weed control overall was excellent. Overall yields were average. There was little to no lodging throughout the plots.

Previous Crop	Soybeans
Planting Date	10/23/2024
Seeding Rate[1]	800,000 seeds/ac
Fall Fertilizer	10/10/2024 100lbs of P and 200lbs of K broadcast application
Herbicides	.75 ounces of Harmony Extra SG on 3/27/2025
Spring N fertilizer	
N material	30% UAN
N rate	50lbs N on 3/7/2025
Harvest Date	7/16/2025
Weather data	http://climate.met.psu.edu/data/ida/index.php?t=3&x=pemn&id=LNCR01

[1]Within each crop type, the same seeding rate was used across all varieties. We assume that germination rates are high and not significantly different across varieties.

Rye Centre County Results

Source	Entry	Yield (bu/A)	Height (in.)	Lodging (0-5, 0=best)	Grain protein (%)[2]
KWS	KWS RECEPTOR	67.5	40	0	10.69
KWS	KWS SERAFINO	68.7	39	0	10.57
KWS	KWS TAYO	64.9	47	0	10.73
KWS	HAZLET	32.5	40	0	12.09
KWS	KWS EXP H247	75.1	42	0	10.67
KWS	KWS EXP H249	64	44	0	11.21
Mean		62.1	42	0	10.99
LSD(0.05)		14.3			
CV%		15.3			

Rye Centre County Production Information

Centre County rye plots were put in later than desired due to a wet fall. The crop tillered well and appeared healthy coming out of spring dormancy. Due to the extended cool and wet spring green up was delayed. We were able to apply nitrogen in split applications approximately two weeks apart. The wheat responded very well. Weed control overall was excellent. Overall yields were average. There was little to no lodging throughout the plots.

Previous Crop	Corn Silage
Planting Date	10/22/2024
Seeding Rate[1]	800,000 seeds/ac
Fall Fertilizer	10/17/2024 100lbs of P and 200lbs of K broadcast application
Herbicides	.75 ounces of Harmony Extra SG applied on 4/14/25
Spring N fertilizer	
N material	32% UAN
N rate	50lbs N on 3/18/2025
Harvest Date	7/24/2025
Weather data	http://climate.met.psu.edu/data/ida/index.php?t=3&x=pemn&id=LNCR01

[1]Within each crop type, the same seeding rate was used across all varieties. We assume that germination rates are high and not significantly different across varieties.

We sincerely thank these companies, breeders, and retailers who provided seed and supported the Winter Small Grains Variety Testing Program this year:

AgriMaxx Wheat **https://agrimaxxwheat.com/**
Blue River **https://alseed.com/**
Chemgro **http://www.chemgro.com/**
Growmark FS **https://www.growmarkfs.com/**
Helena Ag **daleamorris20@gmail.com**
KWS Cereals **https://www.kws.com/corp/en/products/cereals/**
Mid Atlantic Seeds **http://midatlanticseeds.com/**
Ohio Seed Improvement Association **https://www.ohioseed.org/**
Seedway, LLC **https://www.seedway.com/**
Unisouth Genetics **https://www.usgseed.com/**