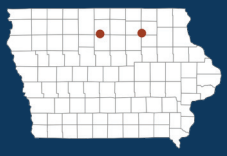
PRACTICAL FARMERS OF IOWA
COOPERATORS' PROGRAM Farmer-Led Research

EXPERIMENT



2025

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Oat Variety Trial 2025

In a Nutshell:

- 18 oat varieties were screened at two Iowa State University research farms.

Key Findings:

- Across varieties and sites, average oat yield was 125 bu/ac and average test weight was 32.5 lb/bu.
- Esker 2020 scored the highest grain yield, Antigo scored the highest test weight, both of these occurring at Nashua in notheast Iowa.

BACKGROUND

Oats have low input requirements and beneficial effects on succeeding crops in a rotation. They can be used for grain and straw production, as a companion crop to establish hay and pastures, or for early-season forage as hay or haylage. Because of their relatively short growing season, oat production enables numerous field management options for the remainder of the season.
Although oat production has increased in Iowa in recent years, in 2025, only 120,000 acres of oats were planted in Iowa, according to the USDA-National Agricultural Statistics Service's projections [1]. This is down from 210,000 acres in 2024 and is the lowest planted acreage production in five years. This decrease may be partially attributed to lower prices per bushel, which have slipped by half since the record-high prices of winter 2021-22.
Average oat yield in Iowa in 2025 was 80 bu/ac. This is very close to the average yield of the previous 3 years of 81 bu/ac [1].
Oat grain and straw yield and attributes, like lodging propensity, can vary by variety and growing conditions. This means that oat variety trials at sites across the state are important tools for farmers who grow oats. Since 2015, PFI has helped organize oat and other small grains variety trials at Iowa State research farms around the state. Four sites participated this year, but only two sites—Kanawha and Nashua—were able to gather data due to heavy rains and high rates of lodging and weeds at sites in Boone and Greenfield.

METHODS

Variety trials were conducted at two locations in 2025: ISU Northern Research Farm in Kanawha and ISU Northeast Research Farm in Nashua. These variety trials build on previous trials conducted at Kanawha, Charles City, Boone, Nashua and Greenfield from 2015–2024 [2 - 11]. Information about each of the varieties grown in these trials in 2025 can be found in **Table 1**.

Oat management information is provided with the results from each location. No herbicides or insecticides were applied at any location during the oat growing season. Statistical significance is determined at 90% confidence level and means separations are reported using Fisher's Least Significant Difference Test (LSD). Data were analyzed by location, and varieties are listed in alphabetical order at each location. Reported yields are corrected for 13.5% moisture. Rainfall and temperature data were modeled for the site location from NASA weather data by the NASA-power climatology R package [12], [13].

Heads of mature oats on July 9, 2025.

Cooperators

ISU Northern Research Farm—Kanawha (Matt Schnabel)

ISU Northeast Research Farm—Nahua (Ken Pecinovsky)

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Zabel Seeds

TABLE 1: Origin, PVP and disease ratings for oat varieties trialed in 2025.

VARIETY	ORIGIN[a]	YEAR RELEASED	PVP[b]	MATURITY	DISEASE RATINGS[c]			
					CROWN RUST	STEM RUST	BYDV[d]	SMUT
Antigo	WI	2017	PVP	Early	MR	S	MR	MR
Esker 2020	WI	2020	PVP	Medium	MR	MR	MR	R
Fred	SD	2025	PVP	Early	MR	--	MR	R
Goliath	SD	2013	PVP	Late	MS	R	MR	MR
Hayden	SD	2015	PVP	Med-Late	MS	MS	MR	R
Jerry	ND	1994	PVP	Medium	MS	MS	MS	MS
Mink	WI	2022	PVP	Late	MR	R	R	--
MN Pearl	MN	2018	PVP	Late	MR	MR	MS	R
Morton	ND	2001	PVP	Late	MR	MR	MS	R
ND Heart	ND	2020	Non-PVP	Med-Late	MR	R	MS	S
Reins	IL	2016	PVP	Early	MR	MR	R	R
Rushmore	SD	2019	PVP	Medium	MR	--	MR	MR
Shelby 427	SD	2011	PVP	Medium	MS	MS	MR	MR
SD Buffalo	SD	2022	PVP	Medium	R	MR	MR	--
SD Momentum	SD	2024	PVP	Med-Late	R	--	MR	R
SD Ranger	SD	2025	PVP	Medium	MR	--	MR	R
Sumo	SD	2017	PVP	Early	MR	R	MS	R
Warrior	SD	2019	PVP	Med-Late	R	--	MS	R

[a] Origin: IL-University of Illinois; MN-University of Minnesota; ND-North Dakota State University; SD-South Dakota State University; WI-University of Wisconsin.
[b] PVP = Plant Variety Protection. The PVP Act provides a certificate to the developer of a variety granting exclusive rights for reproducing and marketing the seed.
[c] Disease Ratings: S = susceptible; MS = moderately susceptible; MR = moderately resistant; R = resistant.
[d] Disease: BYDV = Barley Yellow Dwarf Virus.

RESULTS AND DISCUSSION

Test strips in the oat variety trials generally overperform national and state averages for bushels per acre. The 2025 average yield in the US nationally was 76 bu/ac and Iowa was 80 bu/ac [1]. Nashua yielded 154% of the state average, with 123 bu/ac as a site average across varieties (**Table 3**). Nashua's yield was very similar to recent years, four bushels lower per acre than the average site average from the last three years (2022 through 2024). In 2025, Kanawha's yields were less than half those of recent years, with a site average of 55 bushels per acre (**Table 2**). This was due to very heavy rains (see weather figure below), and an assessed 100% lodging rate. Even with the losses from lodging, Kanawha's 55 bu/ac is 74% of the national average and 69% of the Iowa state average in 2025. Nashua was harvested 25 days earlier than Kanawha, leading to much lower rates of lodging and yield losses.

There were significant varietal differences in yield at each site. Mink and SD Ranger yielded relatively well at Kanawha, both producing over 70 bu/ac. At Nashua, Esker 2020, SD Ranger, and Buffalo all yielded above 140 bu/ac. ND Heart and SD Momentum produced less than 40 bu/ac at Kanawha. Morton and Jerry were the lowest producers at Nashua; at 101 and 95 bu/ac respectively, they were in the lowest LSD grouping.

Test weight for food-grade oats is 38 lb/bu. In 2025, none of the varieties reached test weight at either site. Last year (2024), five varieties reached test weight at Nashua and one reached test weight at Kanawha.

Nashua measured straw tons per acre: SD Momentum produced the most straw. At 2.8 tons per acre, it produced significantly more straw than any other variety.

SD Ranger, a new variety released by South Dakota State University in 2025, performed well at both sites. It was in the top LSD groups for yield at both sites. It had test weights of 33 and 34 lb/bu at Kanawha and Nashua, respectively. It yielded 2.0 tons of straw per acre at Nashua. SDSU suggests that it could replace Rushmore. In our tests, SD Ranger yielded more bushels per acre at both sites, a higher test weight at Kanawha but lower at Nashua, and more straw at Nashua, compared to Rushmore.

ISU NORTHERN RESEARCH FARM, KANAWHA

Previous crop: Soybeans
Replications: 3
Harvested plot size: 5 ft × 49.5 ft
Fertilizer applied: 360 lb K/ac as potash in fall 2024; 17 lb S/ac as gypsum on Apr. 8, 2025; 39 lb N/ac as UAN(28) on Apr. 9, 2025

Planting date: April 11, 2025
Row spacing: 7.5 in.
Seeding rate: 4 bu/ac
Seeding depth: 1 in.
Harvest date: August 11, 2025

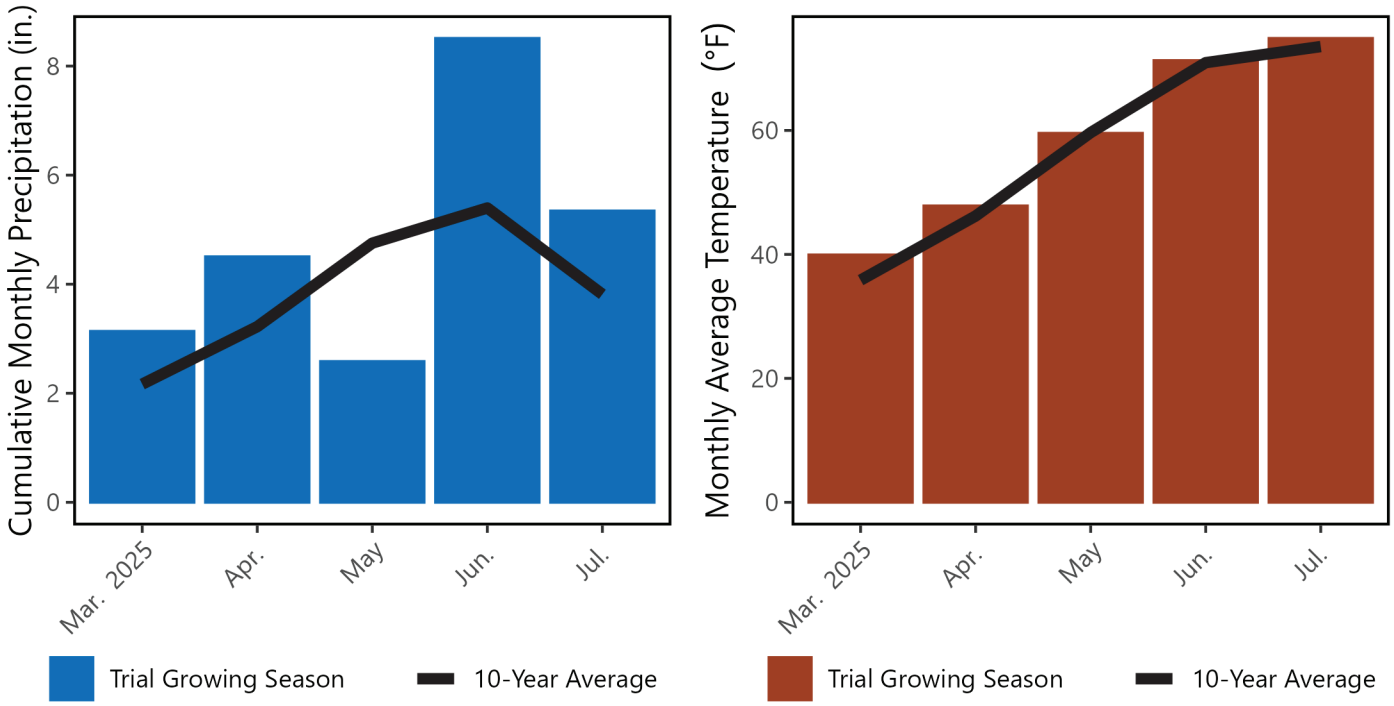

TABLE 2. 2025 Oat Variety Trial at Kanawha in north-central Iowa.

VARIETY	YIELD			TEST WEIGHT (lb/bu)	PLANT HT at HARVEST (in.)	LODGING (%)
	2025 (bu/ac)	% of 2025 site avg.	3-yr avg.[b] (bu/ac)			
Antigo	47	85%	124	31	36	100
Esker 2020	53	96%	141	27	43	100
Fred	49	89%	--	31	39	100
Mink	74	134%	162	32	28	100
MN Pearl	55	99%	150	28	38	100
ND Heart	38	69%	--	33	42	100
Reins	63	114%	151	33	33	100
Rushmore	54	99%	154	31	42	100
Shelby 427	60	109%	132	30	38	100
SD Buffalo	56	102%	146	32	42	100
SD Momentum	38	68%	--	33	42	100
SD Ranger	73	133%	--	33	41	100
Sumo	43	77%	120	34	39	100
Warrior	69	125%	139	30	37	100
Mean	55	--	142	31	39	100
LSD (90%)[a]	22	--	--	2	3.6	--

[a] By response variable, if the difference between any two entries is greater than the least significant difference (LSD) the entries are considered statistically different with 90% confidence. Sumo lost a replication and has therefore been excluded from LSD calculations.
[b] Average yield of each variety from the past three years at Kanawha, 2022 through 2024. '--' indicates a variety with less than a three-year history.

ISU NORTHEAST RESEARCH FARM, NASHUA

Previous crop: Soybeans
Replications: 3
Harvested plot size: 8.125 ft x 125 ft
Fertilizer applied: 30 lb N/ac as urea on March 27, 2025
Tillage: Field cultivator to incorporate urea on March 27, 2025

Planting date: March 28, 2025, followed by cultipacking
Row spacing: 7.5 in.
Seeding rate: 4 bu/ac
Seeding depth: 1.5 in.
Harvest date: July 17, 2025
Straw Harvest date: July 18, 2025

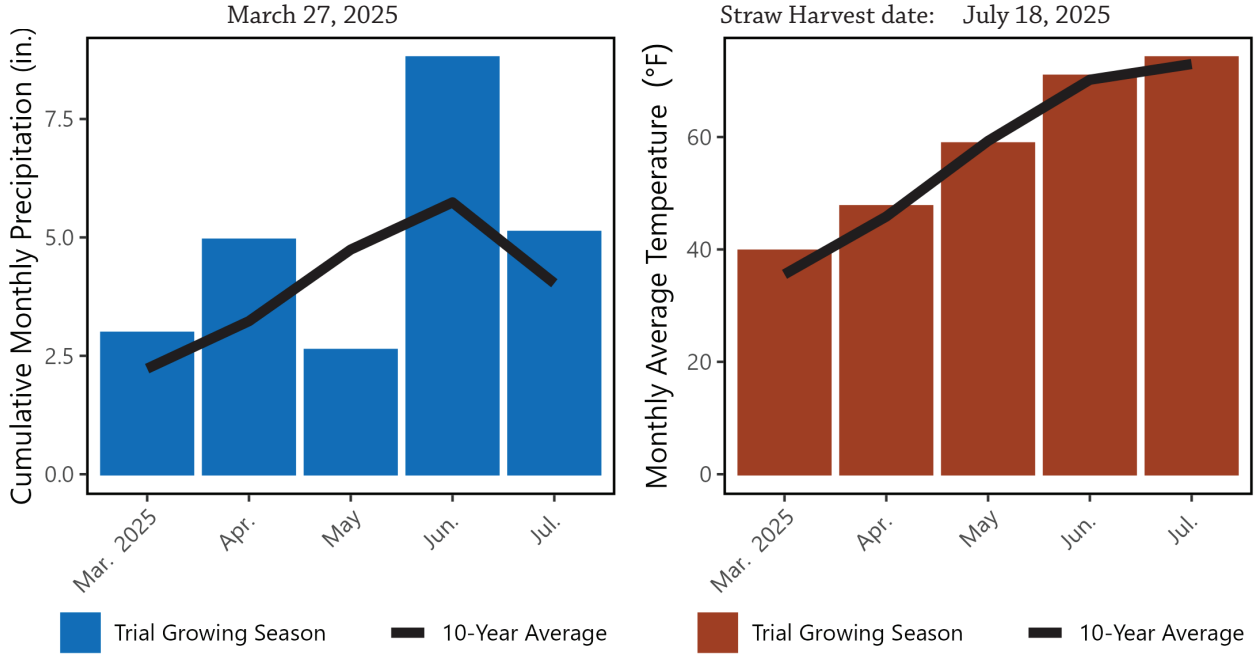

TABLE 3. 2025 Oat Variety Trial at Nashua in northeast Iowa.

VARIETY	YIELD			TEST WEIGHT (lb/bu)	PLANT HT at HARVEST (in.)	LODGING (%)	STRAW YIELD (ton/ac)
	2025 (bu/ac)	% of 2025 site avg.	3-yr avg.[b] (bu/ac)				
Antigo	126	103%	121	36	39	1.3	1.65
Esker 2020	145	119%	144	32	41	0.0	2.27
Fred	120	98%	--	33	42	0.7	2.61
Goliath	117	95%	131	34	46	5.0	1.67
Hayden	119	97%	130	34	40	0.7	1.92
Jerry	95	78%	109	33	42	0.0	1.41
Mink	109	89%	111	35	33	0.0	1.77
MN Pearl	120	98%	128	32	40	0.0	1.42
Morton	101	83%	117	31	42	0.0	1.86
ND Heart	120	98%	--	33	43	0.0	2.09
Reins	138	113%	133	35	31	0.0	1.71
Rushmore	133	109%	142	35	41	0.0	1.65
Shelby 427	123	100%	127	34	39	0.0	1.55
SD Buffalo	142	116%	131	34	43	0.0	2.38
SD Momentum	120	98%	--	32	48	0.0	2.77
SD Ranger	142	116%	--	34	41	0.0	1.98
Sumo	117	96%	119	36	42	0.0	1.65
Warrior	117	95%	129	33	37	0.0	1.28
Mean	123	--	127	34	40	0.4	1.90
LSD (90%)[a]	7.5	--	--	0.3	2.7	0.6	0.13

[a] By response variable, if the difference between any two entries is greater than the least significant difference (LSD) the entries are considered statistically different with 90% confidence.
[b] Average yield of each variety from the past three years at Nashua, 2022-2024. '--' indicates a variety with less than a three-year history.

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