

Oat Variety Trial 2022

In a Nutshell:

- 17 oat varieties were screened at four Iowa State University research farms.

Key Findings:

- Across varieties and sites, average oat yield was 117 bu/ac.
- Antigo was the only variety to score a test weight ≥ 38 lb/bu (food grade) at each location; Reins and Sumo scored test weights ≥ 38 lb/bu at three of four locations.



Oats at Boone on July 17, 2022.

BACKGROUND

In 2022, 120,000 acres of oats were planted in Iowa according to the USDA-National Agricultural Statistics Service; down from 180,000 acres in 2021. The state average yield for the year was 70 bu/ac; the five-year average yield is 69 bu/ac.^[1]

METHODS

Variety trials were conducted at four locations in 2022: ISU Northern Research Farm in Kanawha; ISU Ag Engineering and Agronomy Farm in Boone; ISU Northeast Research Farm in Nashua; ISU Southwest Research Farm in Greenfield. These

variety trials build on previous trials conducted at Kanawha, Charles City, Boone, Nashua and Greenfield from 2015–2021.^[2–8] Information about each of the varieties trialed in 2022 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. Statistical significance is determined at 90% confidence level and means separations are reported using Tukey's least significant difference (LSD).

Cooperators

ISU Northern Research Farm –
Kanawha (Matt Schnabel)
ISU Ag Engineering and
Agronomy Farm –
Boone (Matt Schnabel)
ISU Northeast Research Farm –
Nashua (Ken Pecinovsky)
ISU Southwest Research Farm –
Greenfield (Matt Schnabel)

Funding

USDA-NIFA, Walton Family
Foundation, Albert Lea Seed
House, Welter Seed and Honey
Co., Meridian Seeds, SDSU Seed
Foundation, Zabel Seeds

TABLE 1. Origin, PVP and disease ratings for oat varieties screened in 2022.

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
CS Camden	SW	2013	PVP	Medium	MS	S	--	MR
Deon	MN	2014	PVP	Late	MR	MS	MR	R
Esker 2020	WI	2020	PVP	Medium	MR	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
MN Pearl	MN	2018	PVP	Late	MS	--	MS	R
Morton	ND	2001	PVP	Late	MS	--	MS	R
Natty	SD	2015	PVP	Medium	MR	MS	MR	R
Reins	IL	2016	PVP	Early	MR	MR	R	R
Rushmore	SD	2019	Pending	Medium	MR	--	MR	MR
Saddle	SD	2018	Pending	Early	MR	S	MR	--
Shelby 427	SD	2011	PVP	Medium	MS	MS	MR	MR
SD Buffalo	SD	2022	PVP	Medium	--	--	--	--
Sumo	SD	2017	PVP	Early	MR	R	MS	R
Warrior	SD	2019	Pending	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; SW-Lantmannen Seed, Sweden; 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

Data were analyzed by location, and varieties are listed in alphabetical order at each location. Reported yields are corrected for 13% moisture. A “percentage of test average” calculation is included to aid in comparing varieties at each location. Rainfall and temperature data were accessed from the nearest weather station.^[9] Rainfall in 2022 was above historical averages at Kanawha and Nashua.

Ten varieties at Kanawha and three varieties at Boone and Greenfield made a test weight of 38 lb/bu – the standard minimum that many food companies require before dockage is applied. At Nashua, only Antigo made test weight \geq 38 lb/bu. A test weight of 36 lb/bu is a minimum processing facilities can use for food-grade milling and several varieties at each location made this test weight.

ISU NORTHERN RESEARCH FARM, KANAWHA

Previous crop: Soybeans
 Replications: 3
 Harvested plot size: 5 ft × 46 ft
 Fertilizer applied: 261 lb K/ac on Nov. 1, 2021;
 37 lb N/ac as urea on Apr. 11, 2022
 Planting date: Apr. 11, 2022
 Row spacing: 7.5 in.
 Seeding rate: 4 bu/ac
 Seeding depth: 1 in.
 Harvest date: July 28

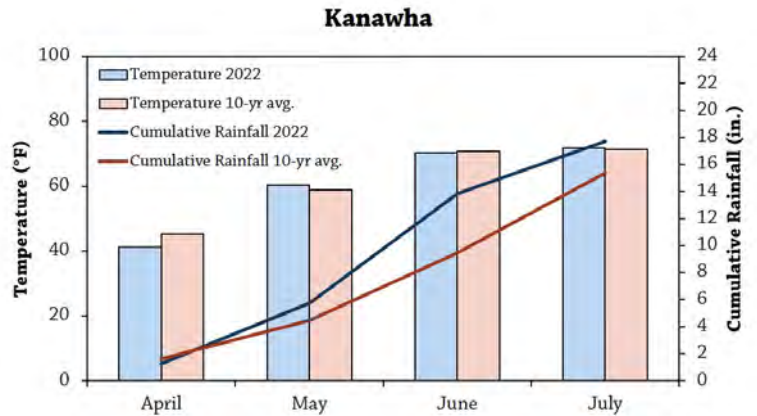


TABLE 2. 2022 Oat Variety Trial at Kanawha in north-central Iowa.
 Varieties with a test weight that meets food grade specification (≥ 38 lb/bu) are highlighted.

VARIETY	YIELD			TEST WEIGHT (lb/bu)	PLANT HT at HARVEST (in.)	LODGING (%)
	(bu/ac)	(% of site avg.)	8-yr avg. (bu/ac)			
Antigo	120	103	91	42.1	33	7
CS Camden	109	93	97	35.6	39	0
Deon	124	106	99	38.0	40	0
Esker 2020	114	98	111	35.4	40	2
Goliath	106	91	89	39.0	42	12
Hayden	130	111	100	38.8	39	0
Jerry	122	104	81	39.9	37	0
MN Pearl	121	103	113	37.1	39	0
Morton	94	80	102	37.2	46	0
Natty	120	103	101	39.2	39	0
Reins	130	112	97	39.0	33	0
Rushmore	126	108	132	38.7	38	0
Saddle	130	111	115	37.7	34	0
SD Buffalo	123	105	--	37.9	40	0
Shelby 427	108	93	91	39.2	36	0
Sumo	101	87	85	40.0	38	0
Warrior	107	92	114	37.2	38	0
MEAN	117	--	--	38.3	38	--
LSD(90%)	30	--	--	2.4	7	--

^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 8-yr. average yields are listed for varieties trialed at least twice in the past seven years at this location.

ISU AG ENGINEERING AND AGRONOMY FARM, BOONE

Previous crop: Soybeans
 Replications: 3
 Harvested plot size: 5 ft × 49 ft
 Fertilizer applied: 30 lb N/ac; 11 lb P/ac; 40 lb K/ac;
 25 lb S/ac on Apr. 11, 2022
 Planting date: Apr. 19, 2022
 Row spacing: 7.5 in.
 Seeding rate: 4 bu/ac
 Seeding depth: 1 in.
 Harvest date: July 29

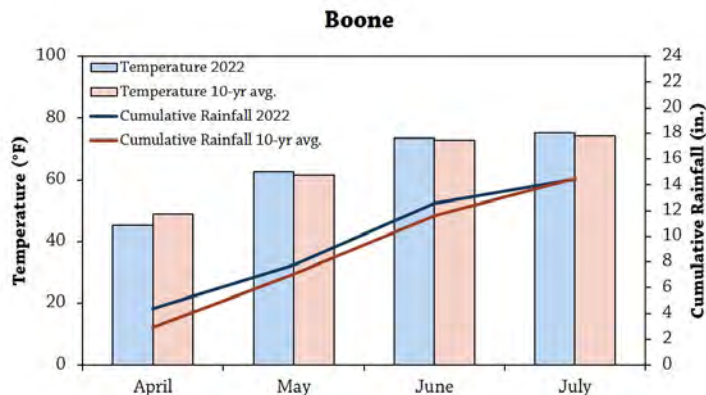


TABLE 3. 2022 Oat Variety Trial at Boone in central Iowa.
 Varieties with a test weight that meets food grade specification (≥ 38 lb/bu) are highlighted.

VARIETY	YIELD			TEST WEIGHT (lb/bu)	PLANT HT at HARVEST (in.)	LODGING (%)
	(bu/ac)	(% of site avg.)	5-yr avg. (bu/ac)			
Antigo	100	107	85	40.3	29	25
CS Camden	82	87	87	33.8	29	13
Deon	87	93	90	35.7	33	15
Esker 2020	92	99	101	34.5	32	15
Goliath	101	108	92	36.3	37	18
Hayden	83	88	86	37.3	32	0
Jerry	101	107	82	37.3	31	0
MN Pearl	88	94	95	37.1	31	0
Morton	87	93	95	35.3	35	0
Natty	97	103	88	35.9	34	2
Reins	110	117	98	38.8	27	0
Rushmore	98	105	113	37.8	31	0
Saddle	95	101	99	36.3	29	0
SD Buffalo	105	112	--	35.5	33	0
Shelby 427	87	93	82	37.4	34	0
Sumo	80	85	82	39.2	33	0
Warrior	98	105	103	35.4	29	0
MEAN	94	--	--	37.0	32	--
LSD(90%)	38	--	--	3.7	5	--

^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 5-yr. average yields are listed for varieties trialed at least twice in the past seven years at this location.

ISU NORTHEAST RESEARCH FARM, NASHUA

Previous crop: Soybeans
 Replications: 3
 Harvested plot size: 8 ft × 85 ft
 Fertilizer applied: 35 lb N/ac, 58 lb P/ac; 135 lb K/ac
 Nov. 15, 2021
 Tillage: Field cultivator on March 29; Mulch finish
 cultivator on Apr. 10
 Planting date: Apr. 11 followed by cultipacker
 Row spacing: 7.5 in.
 Seeding rate: 4 bu/ac
 Seeding depth: 1 in.
 Harvest date: July 25 (grain); July 26 (straw)

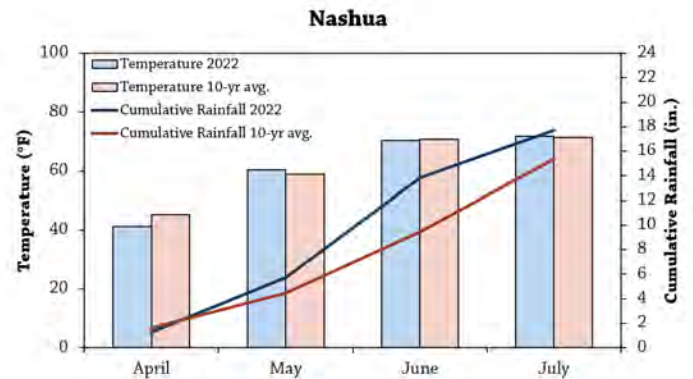


TABLE 4. 2022 Oat Variety Trial at Nashua in northeast Iowa.
 Varieties with a test weight that meets food grade specification (≥ 38 lb/bu) are highlighted.

VARIETY	YIELD			TEST WEIGHT (lb/bu)	PLANT HT at HARVEST (in.)	STRAW YIELD (ton/ac)
	(bu/ac)	(% of site avg.)	8-yr avg. (bu/ac)			
Antigo	129	96	112	39.3	33	1.53
CS Camden	116	87	111	32.6	34	1.60
Deon	136	102	126	34.7	38	2.47
Esker 2020	152	113	136	34.3	35	1.97
Goliath	140	105	129	35.9	43	2.00
Hayden	130	98	129	36.1	37	2.17
Jerry	116	87	110	36.5	36	1.43
MN Pearl	132	99	132	34.0	37	1.93
Morton	119	89	115	33.8	40	2.27
Natty	147	110	127	36.5	38	2.20
Reins	141	106	121	37.3	29	1.30
Rushmore	151	113	138	37.6	36	2.17
Saddle	138	103	129	36.5	32	2.20
SD Buffalo	141	105	--	36.0	38	2.60
Shelby 427	130	97	117	37.1	37	1.97
Sumo	124	93	112	36.8	33	2.23
Warrior	131	98	125	36.0	33	2.53
MEAN	134	--	--	35.9	36	2.03
LSD(90%)	13	--	--	0.3	2	0.69

^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 8-yr. average yields are listed for varieties trialed at least twice in the past seven years at this location.

ISU SOUTHWEST RESEARCH FARM, GREENFIELD

Previous crop: Soybeans
 Replications: 3
 Harvested plot size: 5 ft × 50 ft
 Fertilizer applied: 30 lb N/ac as urea on March 28
 Tillage: Disked on March 28
 Planting date: Apr. 6 followed by cultipacker
 Row spacing: 7.5 in.
 Seeding rate: 4 bu/ac
 Seeding depth: 1 in.
 Harvest date: July 22

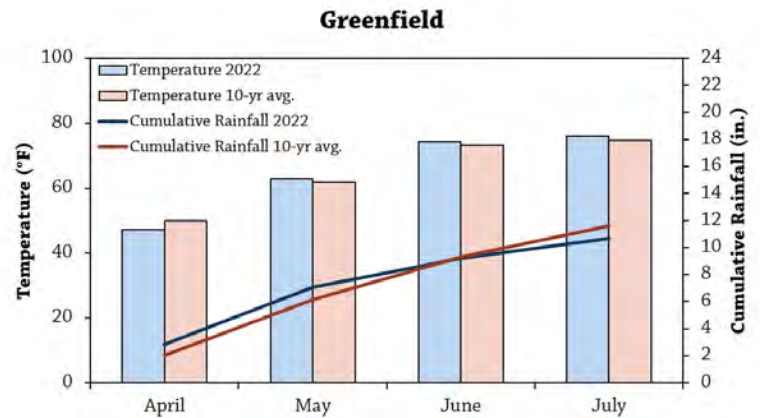


TABLE 5. 2022 Oat Variety Trial at Greenfield in southwest Iowa.
 Varieties with a test weight that meets food grade specification (≥ 38 lb/bu) are highlighted.

VARIETY	YIELD		3-yr avg. (bu/ac)	TEST WEIGHT (lb/bu)	PLANT HT at HARVEST (in.)	LODGING (%)
	(bu/ac)	(% of site avg.)				
Antigo	120	97	112	39.8	38	12
CS Camden	116	93	106	33.6	38	2
Deon	118	95	115	36.0	39	0
Esker 2020	114	92	124	33.6	40	7
Goliath	107	86	91	37.9	43	5
Hayden	136	109	125	37.6	41	0
Jerry	117	94	92	37.3	40	0
MN Pearl	119	96	130	36.5	38	2
Morton	104	84	101	35.5	45	0
Natty	132	106	125	37.8	37	3
Reins	149	120	144	38.5	34	0
Rushmore	129	103	134	37.6	39	0
Saddle	133	107	136	36.8	36	0
SD Buffalo	136	110	--	36.4	41	0
Shelby 427	134	108	128	37.7	39	0
Sumo	105	85	113	38.7	37	0
Warrior	144	116	124	36.8	40	0
MEAN	124	--	--	34.7	39	--
LSD(90%)	31	--	--	2.1	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.

^b 3-yr. average yields are listed for varieties trialed at least twice in the past seven years at this location.

FUNDING ACKNOWLEDGEMENT

This work is supported by the Agriculture and Food Research Initiative, grant number F9000315202081 from the USDA National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the U.S. Department of Agriculture.

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