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North Dakota Flax

Variety Trial Results for 2024 and Selection Guide

Ana Carcedo and Mukhlesur Rahman (North Dakota State University, Main Station); Michael Ostlie and Kristin Simons (Carrington Research Extension Center); Bryan Hanson, Lawrence Henry, Richard Duerr (Langdon Research Extension Center); Leandro Bortolon, Austin Kraklau, Jayden Hanson (North Central Research Extension Center); Glenn Martin (Dickinson Research Extension Center); John Rickertsen (Hettinger Research Extension Center).

In recent years, North Dakota’s flax production has seen a notable decline, particularly from the high production levels seen in the mid-2010s. In 2020, the state planted 200,000 acres of flax, producing 40.74 million pounds with a yield of 21 bushels per acre. However, acreage and production have dropped significantly in the following years. By 2023, the acreage planted had decreased to 110,000 acres and production fell to 21.63 million pounds, with the yield holding steady at 21 bushels per acre. This marks a sharp contrast to the peak production years of 2005 when flax was planted on 890,000 acres and produced over 181 million pounds. For 2024, acreage declined to 95,000 acres, highlighting a continued reduction in flax production in the state. Despite these changes, flax remains an important crop in North Dakota’s agricultural landscape.

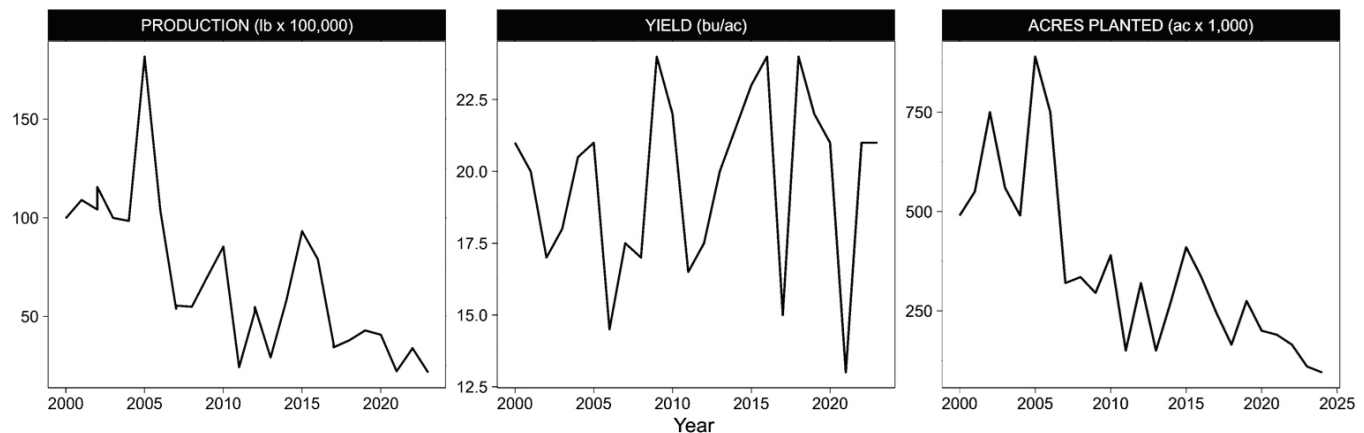


Figure 1. Flax Production, Yield and Acres Planted North Dakota 2000-2024. Data from USDA-NASS.

This selection guide summarizes flax variety performance at the various North Dakota State University Research Extension Centers. Give special attention to flax yield results of those trials nearest to your production area when evaluating varieties in these trials. Also, attempt to view yield averages of several years rather than using only one year's data as a determining factor. In addition, consider other agronomic characteristics — such as maturity, disease tolerance, lodging score and oil percentages — if available.

The agronomic data presented are from replicated research plots using experimental designs that enable the use of statistical analysis. The least significant difference numbers beneath the columns in tables are derived from the statistical analyses. If the difference between two varieties exceeds the LSD value, it means that with 95% or 90% probability (LSD of 0.05 or 0.10), the higher-yielding variety has a significant yield advantage. If the difference between two varieties is less than the LSD value, then the variety yields are considered similar.

The coefficient of variation is a measure of variability in the trial and is expressed as a percentage. Large CVs mean a large amount of variation that could not be attributed to differences in the varieties. Only compare values within the table and look for trends for the desired trait among different experimental sites and years.

Oil content and harvested seed yield were adjusted to 9% moisture. The oil content data are not intended to be compared between locations.

Variety trial data from all NDSU Research Extension Centers for all crops can be found at www.ag.ndsu.edu/varietytrials and the variety selection tool at <https://vt.ag.ndsu.edu/>.

Research specialists and technicians contributed to the fieldwork and data compilation. Secretaries contributed in entering data into the respective sections of this document. We greatly appreciate the assistance provided by everyone involved.

Presentation of data for the varieties tested does not imply approval or endorsement by the authors or agencies conducting the tests. NDSU approves the reproduction of any table in this publication only if no portion is deleted, appropriate footnotes are given, the order of the data is not rearranged and NDSU is credited for the data.

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Table 1. Flax variety trial results from Minot, ND (North Central REC).

Flax							Minot
Variety	Days to Flower (days)*	Plant Height (inch)	Lodging (1-9) ¹	Test Weight (lb/bu)	Oil (%)	Yield (bu/a)	
AAC Bright ²	55	23	1	54.3	46.9	30.1	
AAC Marvelous	56	24	1	56.4	47.8	38.1	
CDC Dorado ²	52	21	1	55.3	45.4	29.9	
CDC Glas	57	25	1	56.1	46.2	33.4	
CDC Kernen	56	25	1	56.9	46.4	38.6	
CDC Neela	57	26	1	56.8	44.9	39.4	
CDC Rowland	56	23	1	56.4	44.9	34.7	
Carter ²	56	25	1	56.2	46.6	36.4	
Gold ND ²	57	26	1	56.6	46.4	35.5	
ND Hammond	54	24	1	56.4	45.6	35.0	
Omega ²	57	23	1	56.7	46.3	29.9	
Webster	57	24	1	57.1	44.9	36.9	
York	53	24	1	56.8	45.1	36.9	
Trial Mean	55	24	--	56.4	45.9	34.2	
C.V. %	2.3	7.4	--	1.6	2.1	11.8	
LSD 10%	1	2	--	1.2	1.3	5.5	

* Days after planting.

¹ Lodging: 1 = none, 9 = lying flat on the ground.

² Yellow seed color

Planting date: May 12, 2024

Harvest date: September 9, 2024

Seeding rate: 3 million live seeds/acre

Previous crop: soybeans

Tillage system: no-till

Soil type: Williams loam

Table 2. Flax variety trial results from Carrington REC.

Flax							Carrington	
Variety	Color	Days to Flower (days)*	Plant Height (inch)	Oil Content (%)	Test Weight (lb/bu)	Yield 2024	Average Yield	
							2-Year ¹	3-Year ²
AAC Bright ³	Yellow	52	23	47.7	49.1	21.0	26.0	25.1
AAC Marvelous	Brown	52	23	47.6	52.0	29.7	30.4	29.1
Carter ³	Yellow	52	22	45.8	51.7	27.8	29.0	25.5
CDC Dorado ³	Yellow	49	20	45.2	50.2	17.0	--	--
CDC Glas	Brown	53	25	45.7	49.8	25.4	28.2	25.5
CDC Kernen	Brown	50	21	47.2	50.4	27.6	28.6	26.6
CDC Melyn	Yellow	54	22	47.8	49.9	20.9	--	--
CDC Neela	Brown	52	25	46.6	51.6	33.3	31.7	29.6
CDC Rowland	Brown	51	23	45.5	50.6	31.1	28.6	27.6
Gold ND ³	Yellow	54	25	46.4	52.3	30.1	29.0	27.4
ND Hammond	Brown	51	23	44.3	51.3	26.4	27.2	25.0
Omega ³	Yellow	51	22	45.3	51.2	20.6	24.6	22.3
Webster	Brown	53	26	46.2	52.0	29.9	28.8	27.1
York	Brown	51	23	45.6	51.4	30.6	31.3	27.7
Trial Mean		52	24	46.3	51.3	28.6	--	--
C.V. %		1	8	2.4	1.4	13.1	--	--
LSD 10%		1	3	1.5	1.0	5.1	--	--

* Days after planting.

¹ Two-year average is for 2023 and 2024.

² Three-year average is for 2022, 2023 and 2024.

³ Yellow seed color

Planting Date = May 13; Harvest Date = September 12; Previous Crop = Spring Wheat

No significant lodging was observed.

Data includes only released varieties. Experimental lines are not included. Statistics reflect the entire trial.

Table 3. Flax variety trial results from Langdon REC.

Flax										Langdon
Variety	Days to	Plant	Test	Yield			Average Yield			
	Flower (days)*	Height (inch)	Weight (lb/bu)	Oil (%)	2022	2023	2024	2-Year ¹	3-Year ²	
AAC Bright ³	53	25	49.2	49.3	62.4	31.9	36.0	33.9	43.4	
AAC Marvelous	54	26	51.7	48.3	63.7	30.1	39.2	34.7	44.3	
Carter ³	53	26	51.9	45.9	56.6	34.5	35.1	34.8	42.1	
CDC Dorado ³	51	23	50.4	47.0	54.5	30.2	32.1	31.2	38.9	
CDC Glas	54	26	50.4	47.5	64.7	28.1	39.2	33.7	44.0	
CDC Kernen	55	27	51.4	46.2	57.2	22.9	35.3	29.1	38.5	
CDC Neela	54	27	52.0	46.2	59.2	34.7	37.7	36.2	43.9	
CDC Rowland	53	26	51.3	46.9	68.2	35.2	42.3	38.8	48.6	
Gold ND ³	54	27	52.0	46.1	55.6	31.6	38.8	35.2	42.0	
ND Hammond	53	27	51.4	44.2	58.4	31.4	35.7	33.5	41.8	
Omega ³	54	25	52.2	45.6	50.1	31.0	33.7	32.4	38.3	
Webster	53	27	52.0	46.3	58.7	30.6	38.7	34.6	42.7	
York	53	28	51.9	46.3	63.4	34.7	39.8	37.3	46.0	
Trial Mean	54.1	26.5	51.8	46.5	57.9	32.1	37.4	--	--	
C.V. %	2.1	3.9	0.5	1.9	5.0	8.3	8.5	--	--	
LSD 10%	1.3	1.2	0.3	1.1	4.0	4.9	3.7	--	--	

* Days after planting.

¹ Two-year average is for 2023 and 2024.

² Three-year average is for 2022, 2023 and 2024.

³ Yellow seed color

Planting Date: May 22

Harvest Date: October 7

Soil Type: Svea-Barnes Loam

Previous Crop: Barley

Data includes only released varieties. Experimental lines are not included. Statistics reflect the entire trial.

Table 4. Flax variety trial results from Hettinger REC.

Flax										Hettinger
Variety	Days to Flower	Plant Height	Plant Lodge	Oil (%)	Yield			Average Yield		
	(days)*	(inch)	(1-9) ¹		2021	2023	2024	2-Year ²	3-Year ³	
					----- (bu/a) -----					
AAC Bright ⁴	53	21	1	43.6	18.3	31.9	16.8	24.4	22.3	
AAC Marvelous	53	22	1	41.9	17.9	29.9	18.8	24.4	22.2	
Carter ⁴	52	22	1	41.4	18.5	27.9	15.1	21.5	20.5	
CDC Dorado ⁴	47	21	1	42.8	18.2	30.9	14.2	22.5	21.1	
CDC Glas	55	22	1	40.6	17.1	31.1	16.9	24.0	21.7	
CDC Kernan	52	23	1	40.3		31.9	18.4	25.2	--	
CDC Neela	54	23	1	41.2	17.5	35.8	18.9	27.4	24.1	
CDC Rowland	53	21	1	40.2	17.5	34.3	15.8	25.1	22.5	
Gold ND ⁴	54	25	1	42.7	17.3	30.0	17.6	23.8	21.6	
ND Hammond	53	22	1	41.1	18.3	28.5	16.2	22.4	21.0	
Omega ⁴	53	21	1	41.1	18.1	29.3	14.7	22.0	20.7	
Webster	54	23	1	41.3	18.4	30.1	16.7	23.4	21.7	
York	51	23	1	40.9	17.5	32.2	17.2	24.7	22.3	
Trial Mean	53	22	1	41.6	18.0	30.3	16.7	24.2	21.9	
C.V. %	1.3	6.6	--	2.5	5.6	10.4	12.0	--	--	
LSD 10%	0.7	1.4	--	1.0	0.9	2.9	1.8	--	--	

* Days after planting.

¹ 1 = no lodging, 9 = 100% lodged.

² Two-year average is for 2023 and 2024.

³ Three-year average is for 2022, 2023 and 2024.

⁴ Yellow seed type.

Planting Date: May 10

Harvest Date: September 3

Previous Crop: Peas

Table 5. Flax variety trial results from Dickinson REC.

Flax - Recrop						Dickinson				
Variety	Days to	Days to	Plant	Test	Oil	Yield			Average Yield	
	Flower	Mature	Height	Weight		2021	2023	2024	2-Year ¹	3-Year ²
	(days)*	(days)*	(inch)	(lb/bu)	(%)	----- (bu/a) -----			----- (bu/a) -----	
AAC Bright ³	51	89	22	53.4	46.6	13.4	24.2	22.1	23.2	19.9
AAC Marvelous	52	85	22	55.1	45.6	10.9	28.4	22.7	25.6	20.7
Carter ³	50	87	21	55.3	44.6	10.4	27.6	20.2	23.9	19.4
CDC Dorado ³	48	85	18	54.2	45.8	9.2	25.8	20.6	23.2	18.5
CDC Glass	53	85	21	53.8	45.3	8.6	28.4	21.8	25.1	19.6
CDC Kernen	50	85	22	55.2	44.1	--	31.5	20.7	26.1	--
CDC Neela	50	89	20	54.7	44.2	12.2	29.0	21.3	25.1	20.8
CDC Rowland	49	89	20	54.7	45.2	10.8	28.5	21.5	25.0	20.3
Gold ND ³	52	87	22	55.9	46.4	13.4	29.1	19.7	24.4	20.7
ND Hammond	52	91	22	54.5	43.7	11.3	27.2	19.1	23.2	19.2
Omega ³	52	89	21	55.1	45.3	12.2	25.2	20.5	22.9	19.3
Webster	51	85	23	55.1	44.8	11.4	27.1	19.9	23.5	19.5
York	53	85	21	54.4	43.8	11.0	26.6	18.7	22.7	18.8
Trial Mean	52	88	21	54.9	44.9	11.3	28.1	20.6	--	--
C.V. %	3.3	2.8	5.2	0.6	1.7	24.4	12.3	10.6	--	--
LSD 10%	2	3	1	0.3	0.8	NS	3.7	2.3	--	--

* Days after planting.

¹ Two-year average is for 2023 and 2024.

² Three-year average is for 2021, 2023 and 2024 (2022 crop hailed out so previous year was used in averages).

³ Yellow seed type.

Planting Date: May 2, 2024

Harvest Date: August 19, 2024

Previous Crop: Wheat

No Lodging observed

Oil content reported on 9% moisture basis

NS = no statistical difference between varieties.

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