A1105-22

North Dakota Flax

Variety Trial Results for 2022 and Selection Guide

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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 LSD (least significant difference) numbers beneath the columns in tables are derived from the statistical analyses and only apply to the numbers in the column in which they appear.

If the difference between two varieties exceeds the LSD value, it means that with 95% or 90% probability (LSD 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 CV is a measure of variability in the trial. The CV stands for coefficient of variation and is expressed as a percentage. Large CVs mean a large amount of variation that could not be attributed to differences in the varieties. In the tables, the mean indicates the average of the observations in the column. 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.

In the table headings (Tables 4 to 6), the lead scientists are acknowledged. 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. Research specialists and technicians helped with the field work and data compilation.

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Fargo, North Dakota
November 2022

We acknowledge support from AmeriFlax for the statewide flax variety trials and compilation and printing of data in the annual flax variety selection guide. The assistance given by many secretaries in entering data in respective portions of the document is very much appreciated. A special thank you goes to Lisa Johnson, Extension Plant Sciences secretary, for assisting in the compilation of this publication.

Table 1. Flax Variety Descriptions Tested in 2022 in North Dakota.

Variety[1]	Origin[2]	Year Released	Days to Flower Avg.[3]	Seed Color	Plant Height inch Avg.[3]	Fusarium Wilt[4]
AAC Bright	Can.	2017	49	Yellow	27	MS/S[5]
AAC Marvelous	Can.	2019	47	Brown	26	MR
Carter	ND	2004	47	Yellow	27	MS/S[5]
CDC Buryu	Can.	2016	48	Brown	26	MR
CDC Dorado	Can.	2017	49	Yellow	27	MS[5]
CDC Glas	Can.	2012	48	Brown	27	MS[5]
CDC Kernen	Can.	2020	49	Brown	27	MR
CDC Neela	Can.	2013	48	Brown	27	MR
CDC Rowland	Can.	2018	47	Brown	27	MR
Gold ND	ND	2014	49	Yellow	28	MR/R
ND Hammond	ND	2018	47	Brown	28	MS
Omega	ND	1989	47	Yellow	26	MS[5]
Webster	SD	1998	49	Brown	28	MR
York	ND	2002	46	Brown	28	MR/R

[1]All varieties have resistance to prevalent races of rust; all have good oil yield and oil quality.

[2]Can. = Canada; ND = North Dakota State University; SD = South Dakota State University.

[3]Based on Carrington, Langdon, and Minot, 2022.

[4]R = resistant; MR = moderately resistant; MS = moderately susceptible: S = susceptible.

[5]This variety had fusarium wilt within the 2020 CREC flax variety trial, and rating has been adjusted accordingly.

Table 2. Yield of Flax Varieties at Three Locations in North Dakota, 2020-2022.

	Carrington		Langdon		Minot		Average N.D.	
Variety	2022	3 Yr. Avg.	2022	3 Yr. Avg.	2022	2 Yr. Avg.[1]	2022	Multi-Yr. Avg.
	------(bu/a)------		------(bu/a)------		------(bu/a)------		-------(bu/a)------	
AAC Bright[2]	23.3	26.9	62.4	44.9	17.1	20.0	34.3	30.6
AAC Marvelous	26.3	--	63.7	--	26.2	25.9	38.7	--
Carter[2]	18.7	23.8	56.6	40.3	32.6	27.6	36.0	30.6
CDC Buryu	19.7	19.3	--	--	31.4	24.9	--	--
CDC Dorado[2]	--	--	54.5	36.8	--	--	--	--
CDC Glas	20.3	25.6	64.7	45.1	28.2	25.8	37.7	32.2
CDC Kernen	22.6	--	57.2	--	29.1	--	36.3	--
CDC Neela	25.3	26.6	59.2	41.4	29.1	27.1	37.9	31.7
CDC Rowland	25.5	--	68.2	--	35.3	29.0	43.0	--
Gold ND[2]	24.1	21.5	55.6	41.3	33.3	28.5	37.7	30.4
Lion	22.7	--	--	--	--	--	--	--
ND Hammond	20.5	22.7	58.4	39.6	29.0	26.3	36.0	29.5
Omega[2]	17.8	16.5	50.1	37.1	27.0	23.6	31.6	25.7
Webster	23.8	23.0	58.7	42.4	29.9	25.0	37.5	30.1
York	20.7	23.3	63.4	43.9	34.9	27.0	39.7	31.4
Mean	22.2	22.9	59.4	41.3	29.5	25.9	37.2	30.3
CV %	11.2	--	5.0	6.9	17.8	--	10.7	8.4
LSD 0.05	4.1	--	4.7	4.9	8.3	--	6.7	4.4
LSD 0.10	3.5	--	4.0	4.0	6.9	--	5.6	3.6

[1]Average 2020 and 2022.

[2]Yellow seeded.

Table 3. Test Weight and Oil Content of Flax Varieties at Three Locations in North Dakota, 2022.

	Carrington		Langdon	Minot		Average N.D.	
Variety	Test Wt.	Oil	Test Wt.	Test Wt.	Oil	Test Wt.	Oil
	(lb/bu)	(%)	(lb/bu)	(lb/bu)	(%)	(lb/bu)	(%)
AAC Bright[2]	48.7	44.7	51.0	52.8	45.7	50.8	45.2
AAC Marvel	50.8	44.2	53.9	53.5	46.1	52.7	45.2
Carter[2]	50.1	41.9	53.7	53.5	43.3	52.4	42.6
CDC Buryu	50.3	42.6	--	55.2	45.0	--	43.8
CDC Dorado	--	--	53.9	--	--	--	--
CDC Glas	50.0	45.2	52.9	52.9	43.9	51.9	44.6
CDC Kernen	50.3	43.5	53.7	53.7	44.9	52.6	44.2
CDC Neela	50.2	42.4	53.7	54.0	44.8	52.6	43.6
CDC Rowlan	50.3	42.8	53.4	53.5	44.8	52.4	43.8
Gold ND[2]	50..7	43.0	52.6	54.7	44.8	53.7	43.9
Lion	49.9	44.3	--	--	--	--	--
ND Hammon	50.3	40.6	53.0	53.4	43.3	52.2	42.0
Omega[2]	50.5	43.0	53.8	53.8	43.4	52.7	43.2
Webster	50.3	42.6	54.0	54.3	44.1	52.9	43.4
York	50.5	42.6	53.6	54.4	44.2	52.8	43.4
Mean	50.2	43.1	53.3	53.8	44.5	52.5	43.7
CV %	0.6	2.3	0.7	1.3	1.0	0.7	1.7
LSD 0.05	0.5	1.6	0.6	1.1	0.8	0.6	1.6
LSD 0.10	0.4	1.3	0.5	0.9	0.6	0.5	1.3

[2]Yellow seeded.

Table 4. 2022 Flax - Carrington - Author, M. Ostlie and K. Simons.

Variety	Days to Flower	Days to Mature	Plant Height	Plant Lodge	Oil Content	Test Weight	Seed Yield		
							2022	2-yr. Avg.	3-yr. Avg.
	(DAP)[1]	(DAP)[1]	(inch)	(0-9)	(%)	(lb/bu)	----------(bu/a)----------		
AAC Bright[2]	50	89	23	1.0	44.7	48.7	23.3	24.2	26.9
AAC Marvelous	48	91	22	1.0	44.2	50.8	26.3	--	--
Carter[2]	50	91	23	0.7	41.9	50.1	18.7	19.3	23.8
CDC Buryu	50	87	24	1.0	42.6	50.3	19.7	18.8	19.3
CDC Glas	49	88	22	1.7	45.2	50.0	20.3	20.8	25.6
CDC Kernen	50	89	22	0.3	43.5	50.3	22.6	--	--
CDC Neela	49	89	22	0.3	42.4	50.2	25.3	24.0	26.6
CDC Rowland	48	91	24	0.0	42.8	50.3	25.5	26.0	--
Gold ND[2]	51	93	25	1.0	43.0	50.7	24.1	21.7	21.5
Lion	47	90	21	2.0	44.3	49.9	22.7	26.2	--
ND Hammond	48	88	24	1.0	40.6	50.3	20.5	19.8	22.7
Omega[2]	46	88	24	0.7	43.0	50.5	17.8	15.3	16.5
Webster	51	89	25	0.7	42.6	50.3	23.8	23.2	23.0
York	45	88	22	0.0	42.6	50.5	20.7	20.2	23.3
Mean	49	89	23	0.8	43.1	50.2	22.2	21.6	22.9
CV %	2.2	1.9	6.7	80.1	2.3	0.6	11.2	10.3	13.9
LSD 0.05	1.8	2.8	2.5	1.0	1.6	0.5	4.1	4.8	5.4
LSD 0.10	1.5	2.3	2.1	0.9	1.3	0.4	3.5	3.9	4.5

Planted: May 26. Harvested: Sept 12. Previous crop: spring wheat.

[1]DAP = Days after planting.

[2]Yellow seeded.

Table 5. 2022 Flax - Langdon - Authors, B. Hanson, L. Henry and R. Duerr.

Variety	Days to Flower	Plant Height	Test Weight	Seed Yield				
				2020	2021	2022	2-yr. Avg.	3-yr. Avg.
	(DAP)1	(inch)	(lb/bu)	----------(bu/a)----------				
AAC Bright[2]	51	29	51.0	51.4	21.0	62.4	41.7	44.9
AAC Marvelous	49	28	53.9	--	21.7	63.7	42.7	--
Carter[2]	48	28	53.7	43.4	21.0	56.6	38.8	40.3
CDC Dorado[2]	49	29	53.9	37.6	18.3	54.5	36.4	36.8
CDC Glas	50	29	52.9	49.6	21.1	64.7	42.9	45.1
CDC Kernen	51	29	53.7	--	--	57.2	--	--
CDC Neela	50	29	53.7	43.4	21.7	59.2	40.5	41.4
CDC Rowland	49	29	53.4	--	20.7	68.2	44.5	--
Gold ND[2]	51	31	52.6	47.7	20.5	55.6	38.1	41.3
ND Hammond	48	32	53.0	39.5	21.0	58.4	39.7	39.6
Omega[2]	50	27	53.8	40.2	20.9	50.1	35.5	37.1
Webster	51	30	54.0	45.5	23.1	58.7	40.9	42.4
York	48	31	53.6	47.9	20.4	63.4	41.9	43.9
Mean	50	29	53.3	44.6	21.0	59.4	40.3	41.3
CV %	1.5	3.3	0.7	5.2	5.0	5.0	8.7	6.9
LSD 0.05	1.2	1.6	0.6	3.9	1.4	4.7	7.7	4.9
LSD 0.10	1.0	1.3	0.5	3.3	1.2	4.0	6.3	4.0

Planted: May 27. Harvested: Oct. 10. Previous crop: wheat.

[1]DAP = Days after planting.

[2]Yellow seeded.

Table 6. 2022 Flax - Minot - Authors, E. Eriksmoen, J. Hansen and A. Kraklau.

Variety	Days to Flower	Plant Height	Oil Content	Test Weight	Seed Yield	
					2022	2-yr. Avg.[2]
	(DAP)[3]	(inch)	(%)	(lb/bu)	----------(bu/a)----------	
AAC Bright[4]	45	28	45.7	52.8	17.1	20.0
AAC Marvelous	44	28	46.1	53.5	26.2	25.9
Carter[4]	43	30	43.3	53.5	32.6	27.6
CDC Buryu	46	28	45.0	55.2	31.4	24.9
CDC Glas	46	30	43.9	52.9	28.2	25.8
CDC Kernen	45	30	44.9	53.7	29.1	--
CDC Neela	44	29	44.8	54.0	29.1	27.1
CDC Rowland	45	29	44.8	53.5	35.3	29.0
Gold ND[4]	46	28	44.8	54.7	33.3	28.5
ND Hammond	45	29	43.3	53.4	29.0	26.3
Omega[4]	43	28	43.4	53.8	27.0	23.6
Webster	44	30	44.1	54.3	29.9	25.0
York	45	28	44.2	54.4	34.9	27.0
Mean	45	29	44.5	53.8	29.5	25.9
CV %	1.7	5.2	1.0	1.3	17.8	--
LSD 0.05	1.0	2.0	0.8	1.1	8.3	--
LSD 0.10	1.0	2.0	0.6	0.9	6.9	--

Planted: June 3. Harvested: Sept. 21. Previous crop: spring wheat.

[2]Average 2020 and 2022.

[3]DAP = Days after planting.

[4]Yellow seeded.

For more information on this and other topics, see www.ag.ndsu.edu

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