

16. Linseed Flax variety evaluation

Project duration

- 2018-2021

Collaborators

- Dr. Helen Broker (flax breeder), U of Saskatchewan
- Crop diversification Centre, Saskatoon

Funding:

- Manitoba Flax Growers Association
- BASF

Objective

- to compare yield and other growth parameters of newly registered flax cultivars (SVPG entries) and experimental lines (FP entries) from University of Saskatchewan, Crop development Centre flax breeding program with check flax varieties.

Results

Significant yield differences were found in the flax varieties / entries tested at Arborg site in 2021. Entry FP2592 had the highest yield while lowest yield was recorded for CDC Dorado. All test entries had similar grain yield as of check variety, CDC Glas. Among the test entries, FP2600 was relatively low yielding line and FP2592 was relatively higher yielding line (Table 17.1). The entries also differed in plant height with the tallest plants recorded in FP2602 plots. In a dry year of 2021, AAC Bright matured earlier than all test entries tested, while FP2592 took 18 more days to mature than AAC Bright.

Project findings

The growing year 2021 was the fourth year of testing for these flax entries. The entries differed in their yield performance, days to maturity and plant height at harvest at Arborg site. A complete project report will be compiled by Dr. Helen Booker.

Background / References / Additional resources

The cultivation of linseed is attractive to growers for seed /oil and straw / fiber. The factors such as environmental variables, phenological traits, plant size and density significantly affected the productivity of linseed (Fila et al 2018). Rainfall is beneficial to seed yield both before and after flowering whereas higher post-flowering air temperature has a negative effect on seed yield. The current coop trial was conducted at diversification centre sites in Manitoba. Other trial sites are located in Alberta, Saskatchewan and Quebec that cover various soil zones and will not be discussed in this report. For more information on this project, flax breeder Dr. Helen Booker can be contacted at 1 -306 – 966 – 5878.

References

- Fila, G., Bagatta, M., Maestrini, C., Potenza, E., & Matteo, R. (2018). Linseed as a dual-purpose crop: evaluation of cultivar suitability and analysis of yield determinants. *The Journal of Agricultural Science*, 156(2), 162-176. <https://doi.org/10.1017/S0021859618000114>

Materials and methods

Experimental design – Randomized complete block design

Replications: 3

Plot size: 8.22m²;

Treatments: 14 flax entries (Table 16.1)

Data collected

Plant height, days to maturity, grain yield Data on lodging, stem dry down and determinate growth habit was reported to Dr. Helen Booker's team. Subsamples of grain were sent to CDC Saskatoon for fatty acid and protein analysis.

Agronomic information

Stubble, soil type; Wheat, heavy clay

Soil nutrient status (N-P lb /ac): 122-32

Fertilizer applied (N-P lb /ac): 30-20

Pesticides applied

- Curtail @ 0.81 L /ac applied on June 25, 2021 and July 5, 2021.

Seeding date: Jun 7, 2021

Harvesting date: Oct 26, 2021

Table 16.1. Performance of different linseed flax entries in terms of yield (bu /ac), plant height (inches) and days to maturity at PESAI Arborg during 2021 growing season. Values are the means of three replicates.

	Variety	Yield <i>bu /ac</i>	% of CDC Glas	Plant height <i>inches</i>	Days to maturity
Checks					
	CDC Bethune	13.1 bcd [†]	78	15.3 b	102.3 bc
	AAC Bright	12.0 cd	72	14.1 b	98.0 c
	CDC Glas (CHECK)	16.7 ab	100	15.0 b	103.0 bc
SVPG entries					
	AAC Marvelous	15.8 abc	95	14.9 b	105.7 b
	AAC Prairie Sunshine	15.6 abc	93	16.3 ab	114.0 a
	CDC Dorado	10.5 d	63	13.8 b	103.7 b
	CDC Rowland	16.4 ab	98	15.3 b	112.7 a
Test entries					
	FP2573	16.8 ab	101	16.7 ab	113.7 a
	FP2591	16.0 abc	96	14.4 b	114.0 a
	FP2592	17.9 a	107	16.7 ab	116.0 a
	FP2600	14.5 abcd	87	16.2 ab	112.7 a
	FP2602	15.7 abc	94	18.3 a	113.3 a
	FP2604	15.7 abc	94	14.8 b	105.3 b
	FP2606	15.5 abc	93	14.9 b	114.0 a
	p-values	<.0001		<.0001	<.0001
	CV (%)	9.5		6.4	1.7

[†] Means followed by similar letters within a column are not significantly different at p <0.005.