

Fiber Content by Variety

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by

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Bast Fiber Content in Flax Stems

- Influenced by the interaction of several Agronomic and Non Agronomic factors
 - variety sown
 - growing season weather
 - soil type and texture
 - fertility
 - seed bed preparation
 - seeding method
 - seeding rate
 - seeding date

Fiber Contents of Varieties - Manual Method

- Original work started by Biolin with European fiber varieties; later also tested oilseed varieties



Manual Method to Determine Fiber Content ...

- Tests originally done by:
 1. weighing samples of straw
 2. water retting of samples
 3. removing samples from water when optimally retted
 4. rinsing samples
 5. drying samples

... Manual Method ...

6. decorticating samples (i.e., removing fiber)
7. hand cleaning fiber
8. weighing clean fiber
9. dividing clean fiber weight by weight of straw and multiplying by 100 to get % of fiber in straw

NIR Method to Determine Fiber Content ...

- I. Database of samples built up by:
 1. scanning straw sample
 2. carry out manual method of straw
 3. enter manual method results into software to find best correlation with a wavelength
 4. only data from samples with unique wavelength pattern entered into database (now > 1,200)

... NIR Method to Determine Fiber Content

■ II. Unknown Samples

1. 8” straw cut 4” above ground (if possible)
2. sample scanned
3. software estimates fiber content based on database information
4. “non-typical” samples analyzed with manual method to add to database
5. Some “typical” samples analyzed with manual method to check accuracy of NIR estimate





Oilseed Varieties ...

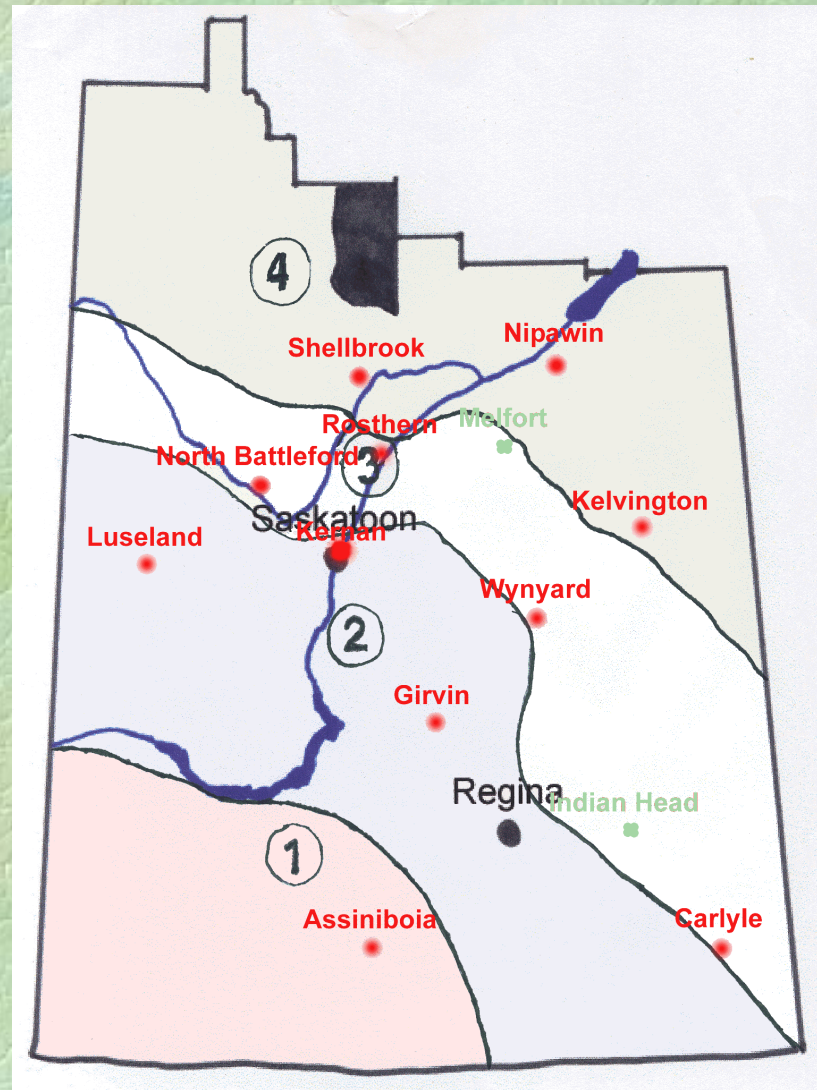
- Tested three consecutive years in Manitoba and Saskatchewan
- Also did several single year tests in Saskatchewan
- Straw collected from replicated plots in regional variety trials
- Shortage of funding to do on a continuing basis

... Oilseed Varieties

- Absolute levels of fiber may vary greatly with growing season
- Some varieties appear to have more stable fiber content than others
- In 2007, analyzed fiber contents in Co-op lines for breeders (i.e., potential new varieties)

Soil Zones of Saskatchewan

Map



494 km

420 km

Flax								
Main characteristics of varieties								
		Seed Yield Index		Fiber Content Index				
	Years Tested	Area 1 and 2	Area 3 and 4	Area 1 and 2	Area 3 and 4	Maturity**	Seed Size	Resistance to Lodging
CDC Bethune	10*	100	100	100	100	L	M	G
CDC Arras	10*	94	91	92	100	M	L	F
AC Carnduff	9*	84	84	95	106	M	M	G
AC Emerson	8	89	89			M	L	F
Flanders	11	90	90			L	S	G
Hanley	7*	92	92	100	106	M	M	G
Lightning	8*	92	92	84	87	L	M	G
Macbeth	7*	91	91	89	89	L	M	G
AC McDuff	7	87	87			VL	M	VG
CDC Mons	6*	94	94	87	84	L	S	G
NorLin	16	88	88			M	M	G
CDC Normandy	9	93	93	92	97	M	M	F
Prairie Blue	6*	97	97	100	106	VL	S	VG
Somme	10	89	89			M	M	F
Taurus	8*	94	94	94	101	M	M	G
CDC Valour	7	93	93	96	98	E	M	G
Vimy	16	93	93	97	102	M	L	P
AC Watson	7	97	97	100	105	M	M	G
Solin								
CDC Gold	6*	81	81	110	109	E	L	G
2047	6*	88	88	94	98	M	M	G
2090	5*	94	94	99	106	M	L	G
2126	4*	92	92			M	M	F

*Data from Regional and Coop yield trials. Fiber contents from plots grown in 2003.

**Relative Maturity: The relative maturity of the check, Bethune, is L (on average 101 days from seeding to swathing ripeness).

Variety	Years Tested	Seed Yield Index		Fiber Content Index		Maturity**	Seed Size	Resistance to Lodging
		Area 1 and 2	Area 3 and 4	Area 1 and 2	Area 3 and 4			
CDC Bethune	10	100	100	100	100	L	M	G
CDC Arras	10	95	92	93	91	M	L	F
AC Carnduff	8	86	89	94	95	M	M	G
Flanders	10	90	87			L	S	G
Hanley	4	90	90	102	100	M	M	G
Lightning	6	92	92	90	94	L	M	G
Macbeth	4	91	93	94	95	L	M	G
CDC Mons	4	99	96	91	93	L	S	G
CDC Normandy	6	91	93	70		M	M	F
Prairie Blue	4	99	92	99	96	VL	S	VG
CDC Sorrel	4	102	106			M	M	F
Taurus	6	94	99	99	98	M	M	G
CDC Valour	6	91	86	73		E	M	G
Vimy	10	94	90	97	95	M	L	P
AC Watson	6	88	93	102	107	M	M	G
Solin								
CDC Gold	4	78	79	110	104	E	L	G
2047	4	86	89	101	101	M	M	G
2090	4	91	98	100	101	M	L	G
2126	4	88	97	95	91	M	M	F

*Data from Regional and Coop yield trials. Fiber contents from plots grown in 2004.

**Relative Maturity: The relative maturity of the check, CDC Bethune, is L (on average 101 days from seeding to swathing ripeness)

Additional Information

Index is using CDC Bethune = 100

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

	Years	Seed Yield Index		Fiber Content Index				
	Seed Yld.	Area	Area	Area	Area		Seed	Resistance
Variety	Tested	1 and 2	3 and 4	1 and 2	3 and 4	Maturity**	Size	to Lodging
CDC Bethune	10	100	100	100	100	L	M	G
CDC Arras	10	95	92			M	L	F
Hanley	4	90	90			M	M	G
Lightning	6	92	92			L	M	G
Macbeth	4	91	93	116	89	L	M	G
CDC Mons	4	99	96	95	100	L	S	G
CDC Normandy	6	91	93			M	M	F
Prairie Blue	4	99	92	104	106	L	S	VG
Prairie Thunder	5	96	97					
CDC Sorrel	5	100	109			L	L	G
Taurus	6	94	99			M	M	G
Vimy	10	94	90			M	L	P
AC Watson	6	88	93			M	M	G
Solin								
CDC Gold	4	78	79	128	118	E	L	G
2090	5	90	100	109	109	M	L	G
2149	5	86	100	108	86	M	M	F

*Data from Regional and Coop yield trials. Fiber contents from plots grown in 2005.

**Relative Maturity: The relative maturity of the check, CDC Bethune, is L (on average 101 days from seeding to swathing ripeness).

Additional Information

Index is using CDC Bethune = 100

In Summary

- Some varieties have relatively high fiber and seed yields
- Some varieties have relatively low fiber and seed yields
- Some varieties have relatively high fiber yield *but* low seed yield or vice versa
- Genetics can help us get more of what we want and less of what we don't want

Any Questions?

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