National Hemp Variety Field Trial

Project duration: May 2021 – October 2021
Objectives: To evaluate industrial hemp varieties for the National Hemp Variety Field Trials coordinated by the Canadian Hemp Trade Alliance
Collaborators: Canadian Hemp Trade Alliance
Parkland Crop Diversification Foundation (PCDF)
PI, James Frey (Manitoba Agriculture and Resource Development)

Background

Established in 2003, the CHTA is a national organization that aims to develop the Canadian hemp industry. CHTA membership includes farmers, processors, equipment suppliers, consumer product suppliers, consultants, researchers, students, industry associations and government. In 2021, the National Hemp Variety Field Trials were implemented at 9 sites across Canada (NB, QC, MB, SK and AB). The 2021 CHTA report for all sites can be accessed here.

Results

The evaluations tested entries for grain yield (Table 1) and fibre yield (Table 2), cannabinoids (Table 3), and agronomic variables (Table 4). Fibre yield was not calculated for grain-only varieties. The results are adapted from a report compiled from data for all participating trial sites (9 in total).

Table 1: Grain yield by variety (lb/ac)

	Lb/ac	% Check*	Statistical difference**		
Grain entries					
CRS-1	744.3	100%	A		
Katani	423.0	57%	A		
Henola	821.0	110%	A	B	
LSD	154.9				
%CV	14.6				
Dual purpose (grain and fibre) entries					
CRS-1	468.7	100%	C		
CFX-2	455.6	97%	C		
Bialobrzeskie	542.5	116%	C	D	
Angie	562.5	120%	C	D	E
Judy	560.0	119%	C	D	E
Maureen	566.1	121%	C	D	E
Quida	638.2	136%		D	E
Vega	669.8	143%			E
LSD	115.8				
%CV	13.0				

* Check = CRS-1, repeated for both grain and dual purpose entries
** Columns with the same letters are not statistically different

Table 2: Fibre yield by variety (lb/ac)

	Lb/ac	% Check*	Statistical difference**			
CRS-1	2012.5	100%	A	B		
CFX-2	1590.0	79%		B		
Bialobrzeskie	3352.5	167%			C	
Angie	2885.0	143%			C	D
Judy	2337.5	116%	A			D
Maureen	2400.0	119%	A			D
Quida	2602.5	129%	A			D
Vega	2597.5	129%	A			D
LSD	608.2					
%CV	15.4					

* Check = CRS-1

** Columns with the same letters are not statistically different

Table 3: Cannabidiol (CBD) and Cannabigerol (CBG) content by variety (%)*

	CBD	**CBG**
CRS-1	0.97	0.03
Angie	1.22	0.02
Bialobrzeskie	0.86	0.02
CFX2	1.27	0.04
Henola	1.27	0.06
Judy	1.03	0.02
Katani	1.15	0.03
Maureen	1.27	0.04
Quida	0.73	0.01
Vega	0.80	0.02

* Derived from leaf and flower parts from upper 20 cm of plant

Table 4: Agronomic characteristics by variety

	Grain Entries			**Dual Purpose Entries**							
Cultivar	**CRS-1**	**Katani**	**Henola**	**CRS-1**	**CFX-2**	**Bialobrzeskie**	**Angie**	**Judy**	**Maureen**	**Quida**	**Vega**
Early vigour[1]	7.3	7.5	6.8	7.0	7.3	7.5	7.0	7.0	7.0	6.5	7.8
Plant height (cm)[2]	144	126	135	140	130	172	164	156	151	155	152
Disease incidence[3]	0.1	0.1	0.3	0.0	0.4	0.1	0.1	0.4	0.6	0.3	0.3

[1] At canopy closure, 1-10 (1=low).

[1] From ground to top of inflorescence, one week prior to harvest.

[1] Sclerotinia, 0-5 (1=20%, 2=40%, 3=60%, 4=80%, 5=100%).

Figure 1: a) hemp plant, b) hemp plant at flowering, c) hemp plant nearing grain maturity, d) hemp plant with trichomes forming on flower and leaf parts, e) close-up of trichomes on a hemp leaf, f) hemp flowers

Materials and methods

Experimental Design:	Random Complete Block Design
Entries:	3 grain entries and 8 dual purpose entries, 4 replications
Seeding:	May 28
Fibre Harvest:	Aug 27
CBD Harvest:	Aug 27
Grain Harvest:	Sep 29

Data collected	**Date collected**
Emergence:	Second week of June
Mortality plant counts:	Jun 22
Stem Elongation plant counts:	Beginning of July
Height:	End of August
Fibre Wet Yield:	Aug 28
Fibre Dry Yield:	Sep 15
Grain Yield:	Oct 28
Grain Moisture:	Oct 28
CBD levels	Aug 28

Agronomic info (Roblin)	
Previous year's crop:	Oat Silage
Soil Type:	Erickson Loam Clay
Landscape:	Rolling with trees to the east
Seedbed preparation:	Vertical Tilled

Table 7: Fertility Information (Roblin)

	Available	Added	Type
N	120 lb/ac	52 lb/ac	46-0-0
P	52 ppm	20 lb/ac	11-52-0-0
K	670 ppm		

Table 8: Herbicide Application (Roblin)

Crop stage	Date	Product	Rate
Pre-emerge	May 26	Liberty	540 ml/ac
No in-crop			