

INDUSTRIAL HEMP PERFORMANCE IN ILLINOIS TRIALS - 2020

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The first industrial hemp trials were conducted in 2020 at the University of Illinois Research and Education Center located in Urbana, IL. The trials were conducted to evaluate commercial varieties for fiber and grain yields.

Materials and Methods

Each variety had a 1000 seed weights measured (Table 1) in order to fill packets with the proper quantity of seed. The fiber trial had a target seeding rates of 26, 35, and 44 PLS per ft². The grain trials had a target seeding rate of 18 PLS per ft². Trials were fertilized with urea prior to planting at 50 lbs of nitrogen per acre for fiber and 100 lbs of nitrogen per acre for grain. Our industrial hemp variety trials consisted of six, 7.5-inch rows planted to a depth range of .5-.75 inches and trimmed to about 19 feet in length before harvest. Stand counts were taken two weeks after emergence to sure adequate plant populations for trial evaluations (Table 2 and Table 3). Flowering started in mid-July and ran through the middle of August (Table 1). After flowering, samples were taken to evaluate THC content along with uniformity ratings. Uniformity ratings are a subjective note taken for variety homogeneity (Table 1). All varieties fell below the legal limit of .3%. A period of hot, dry weather accelerated the industrial hemp crop. The fiber trial was harvested on August 31st with a Wintersteiger Cibus S and grain trial was harvested with an Almaco SPC 20 on September 17th. A subsample was collected for the fiber trials and allowed to remain in a drying oven for seven days at 140°F till no moisture was present. Whole plots were collected for grain trials. Each plot sample was placed in dryer for 18 hours at 90°F. The whole sample was passed through an aspirator to remove foreign material and reweighed to determine grain yields. Additional subsamples were collected immediately after cleaning, weighed, and placed back in the dryer for five days till 0% moisture was achieved. Yields were corrected to 0% moisture for both grain and fiber. AGROBASE Generation II by Agronomix Software, Inc statistical software was used to create each randomized complete block trial for grain and fiber and perform statistical analysis. No seed treatments were used during this trial.

Results and Discussion

The 2020 industrial hemp growing season in Illinois had a slow start. Early spring rains prevented a May planting and a flooding event on June 3rd resulted in both trials being replanted on June 15th. After replanting weather conditions improved and were favorable the rest of the growing season. Hemp was able to outcompete the majority of weeds observed and relatively low abundance in the plots used for compiling yield data. Pest pressure and no major diseases were observed throughout the growing season.

Jin Ma was dropped from the fiber trial due to poor germination results and not enough seed as available for replanting. Notes were taken from an observational plot (Table 1) for Jin Ma. No entry achieved the target population two weeks after planting for grain and fiber. No final stand counts were taken to identify if dormant seeds emerged later in the season. Fiber and grain yields, grain moisture and dry matter content, and stand counts (Tables 2 and 3) are provided with CV, LSD, and Test means.

Location	Cooperator	Soil type	Planting date	N fertilizer	Harvest date
Urbana	Tim	Flanagan	June 3	50 Fiber	Fiber Aug 31
	Mies	silt loam 0-2 percent slope	Replant June 15	100 Grain	Grain Sept 17

Participating companies are listed on Page 2, variety data Table 1, fiber data in Tables 2, grain data in Table 3

Participating Companies

We thank these companies for their support of this program in 2020.

Fiber Trials

Revolution Global
1200 N. North Branch St., Second Floor
Chicago, IL 60642
(312) 881-4250
Revolutionenterprises.org

Grain Trials

New West Genetics
320 East Vine Drive Suite 225
Fort Collins, CO 80524
(800) 970-1615
newwestgenetics.com

Legacy Hemp, LLC
W12335 694th Ave
Prescott, WI 54021
(612) 790-6574
Legacyhemp.com

Table 1. Plant Characteristics

Variety	KWT (g)/1000	Seeds per lb	Plant Height (in)	Flowering Date range (10%-90%)	Uniformity	Standard Germination Test Results
Jin Ma*	18.32	24759	75.3*	July 20 – July 28*	4.7*	23%
Tygra	13.05	34769	56.7	July 19 – July 28	4.5	78%
Elatta Campana	18.87	24039	81.8	July 31 – Aug 8	4.0	69%
Fibranova	17.20	26367	77.7	July 28 – Aug 7	4.4	67%
Carmagnola	18.21	24913	85.0	July 30 – Aug 8	3.8	75%
Futura 75	17.19	26482	55.9	July 25 – Aug 5	3.1	79%
Bija	13.06	34737	58.3	Aug 4 – Aug 9	4.2	80%
NWG 331	12.86	35266	61.2	July 21 – July 29	3.8	88%
NWG 452	12.85	35291	55.2	July 20 – July 29	3.2	91%
NWG 2730	12.82	35390	61.4	July 24 – Aug 4	3.2	95%
X-59	18.70	24260	32.4	July 18 – July 27	4.0	88%

* Notes taken from observational plot where some seed was available to be planted but not enough was available for replant.

Uniformity rating 1-9 scale. 1 most uniform and consistent plant height, 9 least uniform, plant heights vary greater than two feet for a consistent sample of plants

Table 2. Fiber Trial Results

Variety	Plants ft ⁻²	% Dry Matter	Biomass Yield (tons/A) at 0% Moisture
Bija .75X	1.1	35%	1.57
Bija 1X	2.4	34%	1.77
Bija 1.25X	0.6	33%	1.83
Carmagnola .75X	3.8	35%	2.68
Carmagnola 1X	4.3	35%	2.55
Carmagnola 1.25X	6.5	35%	2.59
Elatta Campana .75X	4.1	34%	2.49
Elatta Campana 1X	7.0	34%	3.08
Elatta Campana 1.25X	4.2	34%	3.13
Fibranova .75X	6.2	35%	2.40
Fibranova 1X	6.9	36%	2.66
Fibranova 1.25X	6.1	35%	2.80
Futura 75 .75X	8.8	37%	2.07
Futura 75 1X	8.3	37%	1.87
Futura 75 1.25X	18.8	38%	2.04
Tygra .75X	3.2	34%	1.68
Tygra 1X	5.9	38%	1.48
Tygra 1.25X	6.9	38%	1.51
Trial Mean	5.1	35%	2.23
LSD, 10%	3.8	3.8%	.44
CV, %		7.9	14.5

.75x=26 seeds/ft²

1x= 35 seeds/ft²

1.25= 44 seeds/ft²

Table 3. Grain Trial Results

Variety	Plants ft ⁻²	% Moisture	Grain Yield (lbs/A) at 0% moisture
X-59	3.5	14%	1159.6
NWG 452	6.3	14%	981.2
NWG 331	4.3	18%	743.7
NWG 2730	4	21%	1082.6
Trial Mean	4.5	16.5%	991.8
LSD, 10%	1.7	1.3%	108.7
CV, %		7.1	9.7