Performance Crop Research

National Hemp Variety Testing Across the US in 2022

Trial ID: REGIONAL HEMP VARIETY TRIAL   Location: Great Bend, KS   Trial Year: 2022
Protocol ID: REGIONAL HEMP VARIETY TRIAL   Investigator (Creator): Melissa L. Nelson
Project ID: Study Director: Melissa L. Nelson
                                                            Sponsor Contact: Mandi Kerr

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General Trial Information
Study Director: Melissa L. Nelson   **Title:** Field Scientist
Investigator: Melissa L. Nelson   **Title:** Field Scientist

Discipline: S   varietal screening
Trial Status: E   established   **Trial Reliability:** 1 usable data
ARM Trial Created On: Mar-31-2022
Initiation Date: Apr-20-2022   **Planned Completion Date:** Aug-30-2022
Completion Date: Sep-25-2022

Trial Location
City: Great Bend   **Country:** USA United States
State/Prov.: Kansas
Postal Code: 67530   **Climate Zone:** USWARM US Warm Continental

Latitude of LL Corner °: 38.279762   N
Longitude of LL Corner °: -98.86544   W
GPS Accuracy of LL Corner: 16   FT
Altitude of LL Corner: 1909.00 FT
Angle y-axis to North °: 90

Directions:
From Great Bend, KS travel West out of town on 156/56 Hwy until you reach 50th Ave. Turn South. Farm entrance is located 1.25 miles from the turn. Field is the Southeast Circle.

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

Objectives:

1. Evaluate the performance of 10 major fiber hemp varieties across the US using different agronomic indicators (i.e. yield, biotic and abiotic stress at emergence, vegetative, and reproductive stages).

2. Assess agronomic yield per variety based upon overall tonnage of the plant.

Contacts
Role: STYDIR   study director
Study Director: Melissa L. Nelson   **Title:** Field Scientist
Organization: Performance Crop Research, LLC
Address 1: 95 SW 20 RD   **Mobile No.:** 785-851-0061
Country: USA   United States   **E-mail:** performancecropresearch@gmail.com
City: Great Bend   **State/Prov:** Kansas   **Postal Code:** 67530
Role: INVEST   investigator
Investigator: Melissa L. Nelson   **Title:** Field Scientist
Organization: Performance Crop Research, LLC
Address 1: 95 SW 20 RD   **Mobile No.:** 785-851-0061
Country: USA   United States   **E-mail:** performancecropresearch@gmail.com
City: Great Bend   **State/Prov:** Kansas   **Postal Code:** 67530
Role: SPONSR   sponsor
Sponsor: Mandi Kerr
Organization: Global Hemp Assocation
Country: USA   United States   **E-mail:** mandi@globalhempassociation.org
Role: COOPER   cooperator
Cooperator: Aaron Baldwin   **Title:** Farmer
Organization: Circle K Farming Partnership
Address 1: 95 SW 20 RD   **Mobile No.:** 620-617-6463
Country: USA   United States   **E-mail:** baldwin.pcr@gmail.com
City: Great Bend   **State/Prov:** Kansas   **Postal Code:** 67530

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Crop Description

Crop 1: C   CNISA Cannabis sativa   hemp
Entry Date: Apr-20-2022   **Stage Scale:** BBCH
Variety: Variety Trial
Seed Shape: SMALL
Planting Date: Apr-20-2022   **Planting Rate:** 900000   S/A
Depth: 0.5   IN
Rows per Plot: 9   **Planting Method:** DRILLE   drilled
Row Spacing: 7.5   IN   **Planting Equipment:** PD   plot drilling machine
Seed Bed: MEDIUM medium
Soil Temperature: 70   F   **Soil Moisture:** DRY   dry
Emergence Date: Apr-26-2022
Harvest Date: Sep-1-2022   **Harvest Equipment:** 9' Side Sickle
Harvested Width: 6   FT
Harvested Length: 40   FT

Site and Design

Treated Plot Width: 6   FT   **Site Type:** FIELD   field
Treated Plot Length: 40 FT   **Experimental Unit:** 1   PLOT   plot
Treated Plot Area: 240.0 FT2   **Treatments:** 10   **Tillage Type:** MINTIL   minimum-till
Replications: 4   **Study Design:** RACOBL Randomized Complete Block (RCB)
% Slope: 1

No.	Previous Crop	Year
1.	GLXMA	2021
2.	ZEAMX	2020

Maintenance

No.	Date	Type	Maintenance Product Name	Form Type	Description	Rate	Rate Unit	Tank Mix
1.	Apr-12-2022	FERT	Manure	XS		40	LB/A	no
2.	Apr-13-2022	CULT	Vertical Tillage		Worked in fertilizer at a depth of 4 inches			
3.	Jul-4-2022	FERT	32% Nitrogen	L		30	LB A/A	no
4.	Jul-23-2022	FERT	32% Nitrogen	L		30	LB A/A	no

Soil Description

Description Name: 2022 N2 SE Circle K
% Sand: 58   **% OM:** 2.3   **Texture:** SIL   silt loam
% Silt: 24   **pH:** 7.5   **Soil Name:** Carwile fine sandy loam
% Clay: 18   **CEC:** 10.3   **Fert. Level:** E   excellent
Soil Drainage: G   good
Analyzed By:
Ward Laboratories on 12/10/2021

Additional Measured Elements

Date	Element	Quantity	Unit
Dec-10-2021	B	0.39	PPM
Dec-10-2021	Na	55	PPM
Dec-10-2021	Mg	184	PPM
Dec-10-2021	Ca	1582	PPM
Dec-10-2021	Cu	0.71	PPM
Dec-10-2021	Mn	8	PPM
Dec-10-2021	Fe	19.3	PPM
Dec-10-2021	Zn	2.82	PPM
Dec-10-2021	S	12.3	PPM
Dec-10-2021	K	224	PPM
Dec-10-2021	P	29	PPM
Dec-10-2021	N	16	LB/A

Weather Conditions

Overall Moisture Conditions: BELNOR below normal
Closest Weather Station: GMD #5, Station #7   **Distance:** 3 MI

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No.	Date	Moisture Total	Unit
1.	Apr-28-2022	0.5	IN
2.	May-1-2022	0.3	IN
3.	Jun-23-2022	0.75	IN
4.	Jul-1-2022	1	IN
5.	Jul-4-2022	0.3	IN
6.	Jul-14-2022	0.75	IN
7.	Jul-19-2022	1	IN
8.	Jul-23-2022	0.3	IN
9.	Jul-28-2022	1	IN
10.	Aug-3-2022	1	IN
11.	Aug-9-2022	1	IN
12.	Aug-17-2022	0.75	IN
13.	Aug-26-2022	1	IN
14.	Aug-29-2022	0.5	IN

Comment:
Central Pivot Irrigation System, see PDF for daily weather data.

Application Description

	A
Application Date	Apr-20-2022
Appl. Start Time	10:00 AM
Appl. Stop Time	11:00 AM
Application Method	SOWG
Application Timing	0
Application Placement	SEED
Applied By	M. Nelson
Appl. Entry Date	Sep-24-2022
Air Temperature Start, Stop	61, 61 F
% Relative Humidity Start, Stop	63, 63
Wind Velocity+Dir. Start	26 MPH, NW
Soil Temperature	62 F
Soil Moisture	DRY
Soil Surface Condition	MEDTRA
% Cloud Cover	0
Next Moisture Occurred On	Apr-23-2022
Time to Next Moisture	3.0 DAY
Moisture 6 Hours after Appl.	0 IN
Moisture 1 Week after Appl.	0.25 IN

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale	CNISA, BDIC
Days after Emergence	-6
Stage Majority, Percent	00, 100

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Application Equipment

	A
Appl. Equipment	KINCAID DRIL
Equipment Type	DRILL
Boom ID	PLOT DRILL
Boom Length	6 FT
Ground Speed	2 MPH
Propellant	GRAVIT

Notes

Context	Date	By	Notes
STATUS	Mar-31-2022	Melissa L. Nelson	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Apr-20-2022	Melissa L. Nelson	Automatically added by ARM: Trial Status updated to 'E' when Initiation Date entered.

Trial Comments

TITLE: National Hemp Variety Testing Across the US in 2022. (PCR 22-021)

OBJECTIVE:

1. Evaluate the performance of 10 major fiber hemp varieties across the US using different agronomic indicators (i.e. yield, biotic and abiotic stress at emergence, vegetative, and reproductive stages).

2. Assess agronomic yield per variety based upon overall tonnage of the plant.

Varieties and Seeds/Pound (for planting calculation purposes):

Variety No.	Variety	Seeds Per Pound
1	Bialobrzeski	34,626
2	Futura 83	23,502
3	Fibror 79	22,126
4	Yuma (Chinese Origin)	14,131
5	MS77	16,989
6	Puma	14,538
7	JinMa	13,787
8	CRS-2	28,350
9	Rajan	30,039
10	IH Williams (SS Beta)	33,057

Plot Map with Randomization:

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Ariel view on 08/26/2022 Prior to Harvest:

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MATERIALS & METHODS:

The irrigated center pivot field is located 3.5 miles Southwest of Great Bend, Kansas in Barton County. Legal description is SE ¼ 27S 20W 14. The soil type is Carwile fine sandy loam, 0 to 1 percent slopes. The experiment was conducted as a randomized complete block design with four replications. The field data were subjected to analysis of variance, and treatment means were separated at the 5% level of probability.

Latitude: 38.279762 N

On 04/12/2022, manure was spread across the field at a rate of 40 pounds/acre.

On 04/13/2022, manure (fertilizer) was worked into the soil with a vertical tillage machine at a depth of 4 inches.

On 04/20/2022, **Application 'A'** seed varieties were drilled at a target rate of 900,000 seeds/acre into a vertical-till medium trashy seedbed using 2019 6-foot Kincaid Plot Drill. The first precipitation event occurred 3 days later on 04/23/2022 with 0.25 inches falling. No pre-emerge maintenance applications were used.

Industrial hemp varieties emerged on 04/26/2022.

On 04/28/2022, 0.50 inches of irrigation water was applied to the field.

On 05/01/2022, 0.30 inches of irrigation water was applied to the field.

On 05/04/2022 (8 Days after Emergence (DAE)) stand counts were completed with 3 feet of row counted. Statistical differences were noted between varieties with Varieties 1 – 4 with the highest emergence rates ranging from 31.3 plants per 3-foot (Variety 3) to 36.0 plants per 3-foot (Variety 1). This calculates to 650,022 plants per acre to 823,270 plants per acre, respectively. The next statistical grouping ranged from 21.0 plants per 3-foot (Variety 10) to 24.0 plants per 3-foot (Variety 5). This calculates to 460,228 plants per acre to 544,794 plants per acre, respectively. The slowest to emerge with 10.8 plants per 3-foot (Variety 7) and 18.8 plants per 3-foot (Variety 9).This calculates to 248,393 plants per acre to 435,180 plants per acre, respectively. See columne 1 & 2 in assessment data.

Vigor Scores were also completed for each variety using the following format:

Vigor Score System				
Crop is less than 10% emerged. Would be considered a failed crop by general farming practices.	Crop is noticeably behind in terms of emergence (approximately 25%), overall health, size, etc. is significantly less than ideal.	Crop 75% throughout the plot. Leaf and stem coloring is consistent.	Crop is healthy with +90% emergence throughout the plot. Leaf and stem coloring is consistent. No disease is present.	Crop is extremely advanced compared to other plots. A grower would immediately recognize differences.
1	2	3	4	5

On 05/04/2022 (8 DAE) vigor scores evaluated Variety 4 with the highest vigor rating at 4. Treatments 1 – 3 & 6

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received a score of 3. Treatments 5, 9 & 10 received a score of 2. Plants were slower shorter and showing signs of slight chlorosis. Treatments 7 & 8 received a score of 1.0. One rated plot were poor emergence and the plots that did come up with yellow and not vigorous in appearance (slightly stunted)

On 05/18/2022 (22 DAE) stand counts were completed with 3 feet of row counted. Final stand counts per acre and their germination rate are as follows: This can be referenced in Column 5 & 6 in Assessment Data.

Variety No.	Variety	Final Pop/A	% Germination
1	Bialobrzeski	728,712	77.1
2	Futura 83	595,439	69.1
3	Fibror 79	671,365	77.1
4	Yuma (Chinese Origin)	659,309	75.8
5	MS77	643,195	75.5
6	Puma	470,314	52.9
7	JinMa	329,205	36.8
8	CRS-2	467,674	52.3
9	Rajan	501,508	58.7
10	IH Williams (SS Beta)	491,837	56.8

Vigor Scores were completed using the same rubric as prior assessment. Variety 5 & 6 scored at 5 because of rapid growth (height), color and % plot fill. Varieties 1, 3 & 4 scored a 4 because of emergence scores and overall health of the plant was visuably less than Varieties 5 & 6.

Plant Heights were measured with 5 representative plants from each plot measured and recorded in inches. Heights ranged from 19.0 inches (Variety 8) to 55.5 inches (Variety 2).

On 06/23/2022, 0.75 inches of irrigation water was applied to the field.

On 07/01/2022, 1.00 inch of irrigation water was applied to the field.

On 07/04/2022, 0.30 inches of irrigation water was applied to the field. 35 pounds of 32% Nitrogen was applied via center pivot irrigation.

On 07/14/2022, 0.75 inches of irrigation water was applied to the field.

On 07/19/2022, 1.00 inch of irrigation water was applied to the field.

On 07/23/2022, 0.30 inches of irrigation water was applied to the field. 35 pounds of 32% Nitrogen was applied via center pivot irrigation.

On 07/27/2022 (92 DAE) plant heights were measured with 5 representative plants from each plot measured and recorded in inches. Heights ranged from 32.8 inches (Variety 9) to 72.7 inches (Variety 7).

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On 07/28/2022, 1.00 inch of irrigation water was applied to the field.

On 08/03/2022, 1.00 inch of irrigation water was applied to the field.

On 08/08/2022 (104 DAE) plant heights were measured with 5 representative plants from each plot measured and recorded in inches. Heights ranged from 32.8 inches (Variety 9) to 86.6 inches (Variety 7).

On 08/09/2022, 1.00 inch of irrigation water was applied to the field.

On 08/17/2022, 0.75 inches of irrigation water was applied to the field.

On 08/22/2022 (118 DAE), THC samples were completed and sent to an accredited Lab #80585, ProVerde laboratory in Massachusetts. Sampling guidelines from the USDA were followed and a dried composite sample by variety were priority mailed to the lab. Variety 2, 5, and 10 showed non detectable levels of THC. The highest THC content was Variety 6 with 0.24 mg/g Total THC. Specific variety information can be found in Column 13.

On 08/26/2022, 1.00 inch of irrigation water was applied to the field.
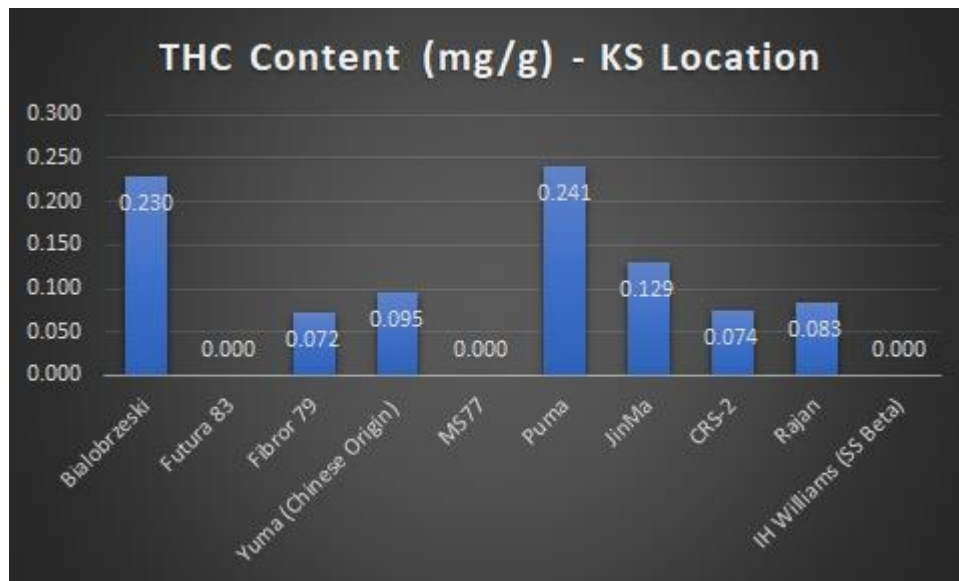
On 08/29/2022, 0.50 inches of irrigation water was applied to the field.

On 08/30/2022 (126 DAE) final plant heights were measured with 5 representative plants from each plot measured and recorded in inches. Heights ranged from 32.8 inches (Variety 9) to 98.5 inches (Variety 7).

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This graph shows the plant height changes over the course of the trial. I believe Bialobrzeski and Rajan show higher plant heights the first rating timing compared to the final three because the males were predominantly taller and after pollination was completed, they died and the females were remaining in the plot.

On 09/01/2022 (127 DAE), plots were harvested with a 9' side sickle pulled with a Puma 150 tractor. Cut height was 3.0 inches off the ground. Yields ranged from 60.7 pounds per plot (Variety 3) to 138.7 pounds per plot (Variety 5), which calculates to 11,011 pounds per acre (5.5 tons/A) to 25,168 pounds per acre (12.6 ton/A), respectively. This is a wet weight.

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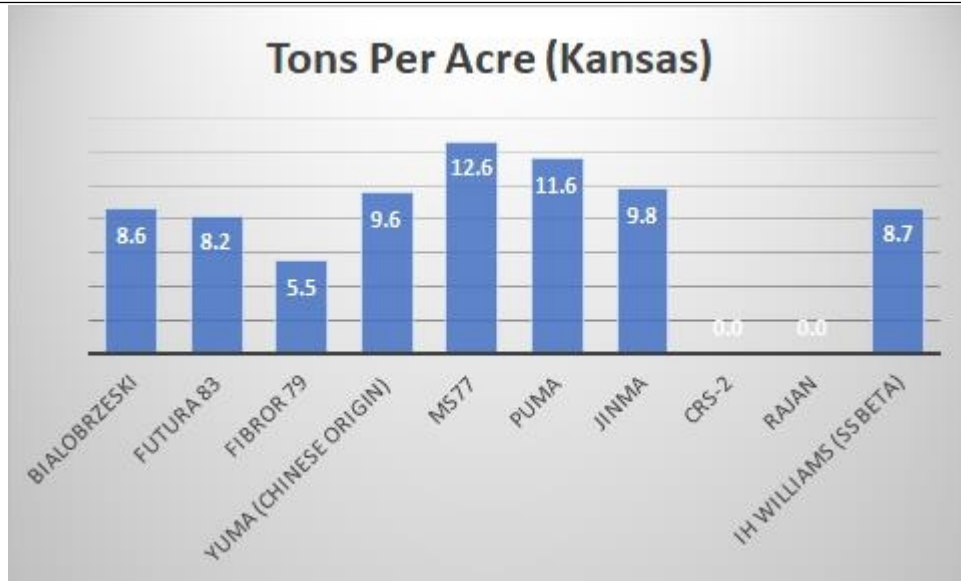
Images are showing yields in pounds and tons for each variety in Kansas.

Variety 8 and Variety 9 were not harvested due to poor stands and high weed pressure. While Variety 8 showed promise at the beginning of the season with the height at 32.8 inches and poor stand palmer amaranth overtook the plot and choaked Variety 8 out.

Varieties 1 – 3 could not sustain the heat and dry weather of Kansas. Flowered very prematurely for a fiber crop to be considered successful. Once variety entered the flowering state, vegetative growth ceased.

No maintenance herbicide applications were applied on this trial. Crop destruct will be completed and crop will not enter commercial commerce.

Rainfall and temperature data were obtained from GMD#5 Station #7 – Great Bend. The minimum temperatures and the maximum temperatures were comparable to the 30-year Great Bend weather (1991 and 2021) between April's application through August's final evaluation. A total of 11.67 inches of rain was received during the growing season, which was 7.74 inches less than the historical average rainfall amount. The industrial hemp field received 10.55 inches of overhead irrigation throughout the trial to supplement for rainfall.
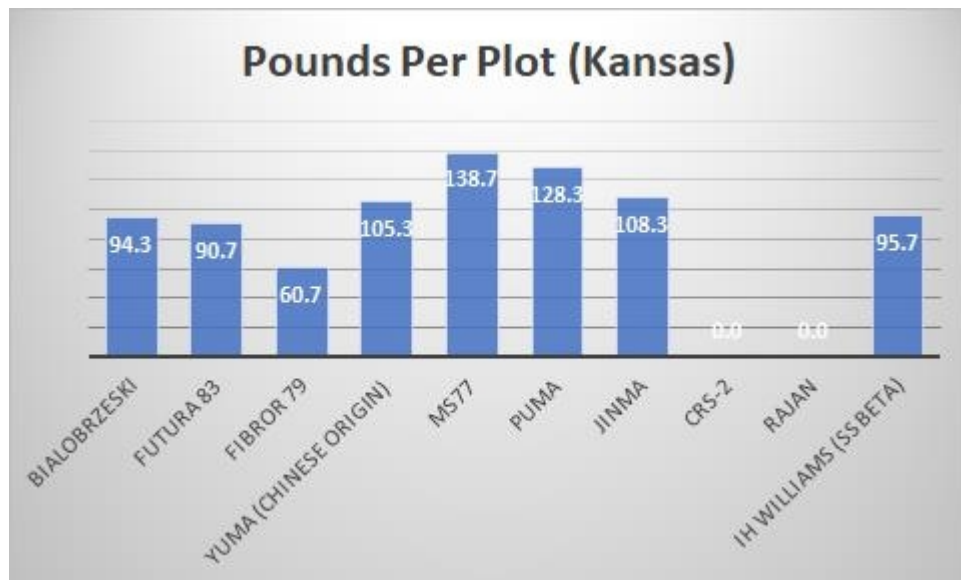
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		C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS
Crop Type, Code		Hemp	Hemp	Hemp	Hemp	Hemp	Hemp
Crop Name		Stand Counts	Stand Counts	Vigor Scores	Stand Counts	Stand Counts	Germination Rate
Description		May-4-2022	May-4-2022	May-4-2022	May-18-2022	May-18-2022	May-18-2022
Rating Date							
Part Rated		PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C
Rating Type		COUPLA	COUPLA	VIGOR	COUPLA	COUPLA	GERRAT
Rating Unit/Min/Max		NUMBER, -, -	NUMBER, -, -	1-5, 1, 5	NUMBER, -, -	NUMBER, -, -	%, 0, 100
Sample Size		1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Collection Basis		3 ROWFT	1 A	1 PLOT	3 ROWFT	1 A	1 PLOT
Number of Subsamples		1	1	1	1	1	1
Assessed By		PCR Team	PCR Team	PCR Team	PCR Team	PCR Team	PCR Team
Data Entry Date		May-4-2022	Sep-25-2022	Sep-25-2022	May-25-2022	Sep-25-2022	
Rating Timing		A2	A2	A2		A2	A2
Days After First/Last Applic.		14, 14	14, 14	14, 14	28, 28	28, 28	28, 28
Trt-Eval Interval		14 DA-A	14 DA-A	14 DA-A	28 DA-A	28 DA-A	28 DA-A
Days After Emergence		8 DE-1	8 DE-1	8 DE-1	22 DE-1	22 DE-1	22 DE-1
ARM Action Codes		ET9	AL T3		AL	AL	T4
Number of Decimals				0		0	1

Trt No.	Treatment Name	Appl Code	1*	2* dAL	3*	4* dAL	5* dAL	6*
1	BIALOBRZESKI	A	36.0 a	823270 a	3.0 b	31.4 -	728712 -	77.1 -
2	FUTURA 75	A	32.5 a	733332 abc	3.0 b	25.7 -	595439 -	69.1 -
3	FIBRUO 79	A	31.3 a	650022 abc	3.0 b	29.0 -	671365 -	77.1 -
4	YUMA (CHINESE ORIGIN)	A	34.8 a	785422 ab	4.0 a	28.4 -	659309 -	75.8 -
5	MS77	A	24.0 ab	544794 abc	2.0 c	27.8 -	643195 -	75.5 -
6	PUMA	A	21.5 ab	443826 c	3.0 b	20.3 -	470314 -	52.9 -
7	JINMA	A	10.8 b	248393 d	1.0 d	14.2 -	329205 -	36.8 -
8	CRS-2	A	23.3 ab	488149 abc	1.0 d	20.1 -	467674 -	52.3 -
9	RAJAN	A	18.8	435180 c	2.0 c	21.7 -	501508 -	58.7 -
10	IH WILLIAMS (SS BETA)	A	21.0 ab	460228 bc	2.0 c	21.2 -	491837 -	56.8 -
LSD P=.05			15.11	178038.8 - 343721.5	.	9.94 - 12.84	227659.5 - 297914.4	30.82
Standard Deviation			10.35	0.2t	0.00	0.15t	0.2t	21.24
CV			39.65	2.83t	0.0	10.87t	2.74t	33.61
Levene's F^			1.268	1.703	.	1.237	1.193	1.869
Levene's Prob(F)			0.30	0.132	.	0.31	0.335	0.096
Skewness^			0.3703	0.1226	.	-0.3888	-0.4002	-0.3094
Kurtosis^			-0.8634	-0.5919	.	-0.8772	-0.8715	-0.7841
Replicate F			0.388	0.447	0.000	0.536	0.535	0.448
Replicate Prob(F)			0.7623	0.7216	1.0000	0.6619	0.6624	0.7208
Treatment F			2.499	3.741	0.000	1.746	1.747	1.690
Treatment Prob(F)			0.0394	0.0037	1.0000	0.1267	0.1264	0.1404

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Crop Type, Code		C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS
Crop Name		Hemp	Hemp	Hemp	Hemp	Hemp	Hemp	Hemp
Description		Vigor Scores	Date of Floweri>	Plant Height	Plant Height	Plant Height	Plant Height	Delta 9-THC Con>
Rating Date		May-18-2022		May-18-2022	Jul-27-2022	Aug-8-2022	Aug-30-2022	Aug-22-2022
Part Rated		PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C
Rating Type		VIGOR	FLOW50	HEIGHT	HEIGHT	HEIGHT	HEIGHT	CONC-THC
Rating Unit/Min/Max		1-5, 1, 5	DATE, -, -	IN, -, -	IN, -, -	IN, -, -	IN, -, -	mg/g, -, -
Sample Size		1 PLOT	1 PLOT	10 PLANTS	10 PLANTS	10 PLANTS	10 PLANTS	1 TREATM
Collection Basis		1 PLOT	1 PLOT	10 PLATOP	10 PLATOP	10 PLATOP	10 PLATOP	1 PLOT
Number of Subsamples		1	1	10	10	10	10	1
Assessed By		PCR Team	PCR Team	PCR Team	PCR Team	PCR Team	PCR Team	ProVerde Labora>
Data Entry Date		Sep-25-2022	Sep-25-2022	Jul-18-2022	Jul-27-2022	Aug-9-2022	Aug-31-2022	Aug-29-2022
Rating Timing		A2						
Days After First/Last Applic.		28, 28		28, 28	98, 98	110, 110	132, 132	124, 124
Trt-Eval Interval		28 DA-A		28 DA-A	98 DA-A	110 DA-A	132 DA-A	124 DA-A
Days After Emergence		22 DE-1		22 DE-1	92 DE-1	104 DE-1	126 DE-1	118 DE-1
ARM Action Codes					ET4			
Number of Decimals								4
Trt Treatment	Appl	7*	8*	9*	10*	11*	12*	13
No. Name	Code							
1 BIALOBRZESKI	A	4.0 b	Jun-6-2022 d	37.8 b	33.6 d	33.6 d	33.6 d	0.2300
2 FUTURA 75	A	2.0 d	Jul-11-2022 c	55.5 a	60.4 bc	60.4 bc	60.4 c	0.0000
3 FIBRUO 79	A	4.0 b	Jul-13-2022 b	50.2 a	54.1 c	54.1 c	54.1 cd	0.0720
4 YUMA (CHINESE ORIGIN)	A	4.0 b		54.0 a	49.5	62.2 bc	72.9 bc	0.0950
5 MS77	A	5.0 a		52.4 a	61.9 abc	76.7 ab	88.2 ab	0.0000
6 PUMA	A	5.0 a		54.5 a	64.6 abc	76.5 ab	91.4 ab	0.2410
7 JINMA	A	2.0 d		57.3 a	72.7 a	86.6 a	98.5 a	0.1290
8 CRS-2	A	1.0 e	Jun-1-2022 e	19.0 c	33.4 d	33.4 d	33.4 d	0.0740
9 RAJAN	A	2.0 d	Jun-6-2022 d	38.0 b	32.8 d	32.8 d	32.8 d	0.0831
10 IH WILLIAMS (SS BETA)	A	3.0 c	Aug-19-2022 a	54.4 a	65.1 ab	73.9 ab	84.3 ab	0.0000
LSD P=.05		.	1.00	8.03	11.04	19.22	22.77	.
Standard Deviation		0.00	0.67	5.54	7.56	13.25	15.69	.
CV		0.0	0.0	11.71	14.22	22.45	24.16	.
Levene's F^		.	12.80	0.241	2.329	0.996	1.052	.
Levene's Prob(F)		.	0.00*	0.985	0.048*	0.464	0.424	.
Skewness^		.	0.0	-0.1419	1.0502*	-1.5767*	-1.9922*	0.7377
Kurtosis^		.	-0.1494	-0.8622	8.1944*	9.7517*	10.6194*	-0.3572
Replicate F		0.000	1.000	7.395	3.607	0.356	0.134	
Replicate Prob(F)		1.0000	0.4198	0.0009	0.0279	0.7852	0.9390	
Treatment F		0.000	8606.803	19.210	17.217	9.177	10.747	
Treatment Prob(F)		1.0000	0.0001	0.0001	0.0001	0.0001	0.0001	

Performance Crop Research

National Hemp Variety Testing Across the US in 2022

Trial ID: REGIONAL HEMP VARIETY TRIAL	Location: Great Bend, KS	Trial Year: 2022
Protocol ID: REGIONAL HEMP VARIETY TRIAL	Investigator (Creator): Melissa L. Nelson	
Project ID:	Study Director: Melissa L. Nelson	
	Sponsor Contact: Mandi Kerr	

			C, CNISS	C, CNISS	C, CNISS
Crop Type, Code			C, CNISS	C, CNISS	C, CNISS
Crop Name			Hemp	Hemp	Hemp
Description			Pounds Per Plot	Pounds Per Acre	Tons Per Acre (>
Rating Date			Sep-1-2022	Sep-1-2022	Sep-1-2022
Part Rated			PLANT, C	PLANT, C	PLANT, C
Rating Type			WEIGHT	YIELD	YIELD
Rating Unit/Min/Max			lb/plot, -, -	lb/ac, -, -	T-US, -, -
Sample Size			1 PLOT	1 PLOT	1 PLOT
Collection Basis			1 PLOT		
Number of Subsamples			1	1	1
Assessed By			PCR Team	PCR Team	PCR Team
Data Entry Date			Sep-1-2022		
Rating Timing			H1	H1	H1
Days After First/Last Applic.			134, 134	134, 134	134, 134
Trt-Eval Interval			134 DA-A	134 DA-A	134 DA-A
Days After Emergence			128 DE-1	128 DE-1	128 DE-1
ARM Action Codes			ER2	ER2 T1	ER2 T2
Number of Decimals				1	1
Trt No.	Treatment Name	Appl Code	14*	15*	16*
1	BIALOBRZESKI	A	94.3 c	17121.5 c	8.6 c
2	FUTURA 75	A	90.7 c	16456.0 c	8.2 c
3	FIBRUO 79	A	60.7 d	11011.0 d	5.5 d
4	YUMA (CHINESE ORIGIN)	A	105.3 bc	19118.0 bc	9.6 bc
5	MS77	A	138.7 a	25168.0 a	12.6 a
6	PUMA	A	128.3 ab	23292.5 ab	11.6 ab
7	JINMA	A	108.3 bc	19662.5 bc	9.8 bc
8	CRS-2	A	0.0 e	0.0 e	0.0 e
9	RAJAN	A	0.0 e	0.0 e	0.0 e
10	IH WILLIAMS (SS BETA)	A	95.7 c	17363.5 c	8.7 c
LSD P=.05			24.07	4368.65	2.18
Standard Deviation			14.03	2546.73	1.27
CV			17.07	17.07	17.07
Levene's F^			1.982	1.982	1.982
Levene's Prob(F)			0.077	0.077	0.077
Skewness^			0.2242	0.2242	0.2242
Kurtosis^			0.4988	0.4988	0.4988
Replicate F			0.303	0.303	0.303
Replicate Prob(F)			0.7421	0.7421	0.7421
Treatment F			35.406	35.406	35.406
Treatment Prob(F)			0.0001	0.0001	0.0001

Performance Crop Research

National Hemp Variety Testing Across the US in 2022

Trial ID: REGIONAL HEMP VARIETY TRIAL	Location: Great Bend, KS	Trial Year: 2022
Protocol ID: REGIONAL HEMP VARIETY TRIAL	Investigator (Creator): Melissa L. Nelson	
Project ID:	Study Director: Melissa L. Nelson	
	Sponsor Contact: Mandi Kerr	

Crop Type, Code
 C = EPPO species (Bayer) codes
 CNISS, BDIC, Cannabis sp., Hemp = US
Part Rated
 PLANT = plant
 C = Crop is Part Rated
Rating Type
 COUPLA = count - plant / emergence - objective
 VIGOR = vigor
 GERRAT = germination rate
 FLOW50 = flowering - 50 % flowers open
 HEIGHT = height
 WEIGHT = weight
 YIELD = yield
Rating Unit/Min/Max
 NUMBER, , = number
 1-5, 1, 5 = 1-5 index/scale
 %, 0, 100 = percent
 DATE, , = calendar date
 IN, , = inch
 lb/plot, , = pounds per plot
 lb/ac, , = pounds per acre
 T-US, , = ton (short=2000 lb)

 PLOT = total plot
 TREATM = treatment

 ROWFT = row-foot
 A = acre
 PLOT = total plot
 PLATOP = plant top
Rating Timing
 A2 = 2nd Assessment According to trial Schedule
 H1 = 1st Harvest
ARM Action Codes
 ET9 = Excluded treatment 9
 AL = Automatic log transformation of X+1
 ET4 = Excluded treatment 4
 ER2 = Excluded replicate 2
 T3 = (43560/(7.5/12))*([C1]/3)
 T4 = ([C5]/900000)*100
 T1 = ([C14]*43560)/240
 T2 = [C15]/2000

Crop Type, Code			C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS
Crop Name			Hemp	Hemp	Hemp	Hemp	Hemp	Hemp
Description			Stand Counts	Stand Counts	Vigor Scores	Stand Counts	Stand Counts	Germination Rate
Rating Date			May-4-2022	May-4-2022	May-4-2022	May-18-2022	May-18-2022	May-18-2022
Part Rated			PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C
Rating Type			COUPLA	COUPLA	VIGOR	COUPLA	COUPLA	GERRAT
Rating Unit/Min/Max			NUMBER, -, -	NUMBER, -, -	1-5, 1, 5	NUMBER, -, -	NUMBER, -, -	%, 0, 100
Sample Size			1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Collection Basis			3 ROWFT	1 A	1 PLOT	3 ROWFT	1 A	1 PLOT
Number of Subsamples			1	1	1	1	1	1
Assessed By			PCR Team	PCR Team	PCR Team	PCR Team	PCR Team	PCR Team
Data Entry Date			May-4-2022	Sep-25-2022	Sep-25-2022	May-25-2022	Sep-25-2022	
Rating Timing			A2	A2	A2	A2	A2	A2
Days After First/Last Applic.			14, 14	14, 14	14, 14	28, 28	28, 28	28, 28
Trt-Eval Interval			14 DA-A	14 DA-A	14 DA-A	28 DA-A	28 DA-A	28 DA-A
Days After Emergence			8 DE-1	8 DE-1	8 DE-1	22 DE-1	22 DE-1	22 DE-1
ARM Action Codes			ET9	AL T3		AL	AL	T4
Number of Decimals				0			0	1
Trt Treatment	Appl							
No. Name	Code	Plot	1	2	3	4	5	6
1 BIALOBRZESKI	A	101	32.0	743424	3.0	50.0	1161600	100.0
		204	40.0	929280	3.0	22.0	511104	56.8
		303	28.0	650496	3.0	44.0	1022208	100.0
		404	44.0	1022208	3.0	20.0	464640	51.6
		Mean =	36.0	823270d	3.0	31.4d	728712d	77.1
2 FUTURA 75	A	102	43.0	998976	3.0	31.0	720192	80.0
		206	24.0	557568	3.0	15.0	348480	38.7
		307	37.0	859584	3.0	32.0	743424	82.6
		401	26.0	604032	3.0	29.0	673728	74.9
		Mean =	32.5	733332d	3.0	25.7d	595439d	69.1

Performance Crop Research

National Hemp Variety Testing Across the US in 2022

Trial ID: REGIONAL HEMP VARIETY TRIAL	Location: Great Bend, KS Trial Year: 2022
Protocol ID: REGIONAL HEMP VARIETY TRIAL	Investigator (Creator): Melissa L. Nelson
Project ID:	Study Director: Melissa L. Nelson
	Sponsor Contact: Mandi Kerr

Crop Type, Code	C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS
Crop Name	Hemp	Hemp	Hemp	Hemp	Hemp	Hemp
Description	Stand Counts	Stand Counts	Vigor Scores	Stand Counts	Stand Counts	Germination Rate
Rating Date	May-4-2022	May-4-2022	May-4-2022	May-18-2022	May-18-2022	May-18-2022
Part Rated	PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C
Rating Type	COUPLA	COUPLA	VIGOR	COUPLA	COUPLA	GERRAT
Rating Unit/Min/Max	NUMBER, -, -	NUMBER, -, -	1-5, 1, 5	NUMBER, -, -	NUMBER, -, -	%, 0, 100
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Collection Basis	3 ROWFT	1 A	1 PLOT	3 ROWFT	1 A	1 PLOT
Number of Subsamples	1	1	1	1	1	1
Assessed By	PCR Team	PCR Team	PCR Team	PCR Team	PCR Team	PCR Team
Data Entry Date	May-4-2022	Sep-25-2022	Sep-25-2022	May-25-2022	Sep-25-2022	Sep-25-2022
Rating Timing	A2	A2	A2	A2	A2	A2
Days After First/Last Applic.	14, 14	14, 14	14, 14	28, 28	28, 28	28, 28
Trt-Eval Interval	14 DA-A	14 DA-A	14 DA-A	28 DA-A	28 DA-A	28 DA-A
Days After Emergence	8 DE-1	8 DE-1	8 DE-1	22 DE-1	22 DE-1	22 DE-1
ARM Action Codes	ET9	AL T3		AL	AL	T4
Number of Decimals		0			0	1

Trt No.	Treatment Name	Appl Code	Plot	1	2	3	4	5	6
3	FIBRUO 79	A	103	16.0	371712	3.0	42.0	975744	100.0
			202	48.0	1115136	3.0	15.0	348480	38.7
			305	42.0	975744	3.0	41.0	952512	100.0
			403	19.0	441408	3.0	27.0	627264	69.7
			Mean =	31.3	650022d	3.0	29.0d	671365d	77.1
4	YUMA (CHINESE ORIGIN)	A	104	36.0	836352	4.0	22.0	511104	56.8
			203	28.0	650496	4.0	39.0	906048	100.0
			308	27.0	627264	4.0	18.0	418176	46.5
			405	48.0	1115136	4.0	42.0	975744	100.0
			Mean =	34.8	785422d	4.0	28.4d	659309d	75.8
5	MS77	A	105	25.0	580800	2.0	34.0	789888	87.8
			208	18.0	418176	2.0	15.0	348480	38.7
			310	21.0	487872	2.0	32.0	743424	82.6
			409	32.0	743424	2.0	36.0	836352	92.9
			Mean =	24.0	544794d	2.0	27.8d	643195d	75.5
6	PUMA	A	106	15.0	348480	3.0	19.0	441408	49.0
			205	37.0	859584	3.0	26.0	604032	67.1
			302	24.0	557568	3.0	20.0	464640	51.6
			410	10.0	232320	3.0	17.0	394944	43.9
			Mean =	21.5	443826d	3.0	20.3d	470314d	52.9
7	JINMA	A	107	12.0	278784	1.0	15.0	348480	38.7
			201	9.0	209088	1.0	16.0	371712	41.3
			304	11.0	255552	1.0	14.0	325248	36.1
			402	11.0	255552	1.0	12.0	278784	31.0
			Mean =	10.8	248393d	1.0	14.2d	329205d	36.8
8	CRS-2	A	108	17.0	394944	1.0	17.0	394944	43.9
			210	13.0	302016	1.0	20.0	464640	51.6
			309	42.0	975744	1.0	23.0	534336	59.4
			408	21.0	487872	1.0	21.0	487872	54.2
			Mean =	23.3	488149d	1.0	20.1d	467674d	52.3
9	RAJAN	A	109	20.0	464640	2.0	24.0	557568	62.0
			207	19.0	441408	2.0	26.0	604032	67.1
			301	18.0	418176	2.0	29.0	673728	74.9
			406	18.0	418176	2.0	12.0	278784	31.0
			Mean =	18.8	435180d	2.0	21.7d	501508d	58.7
10	IH WILLIAMS (SS BETA)	A	110	12.0	278784	2.0	15.0	348480	38.7
			209	31.0	720192	2.0	31.0	720192	80.0
			306	18.0	418176	2.0	18.0	418176	46.5
			407	23.0	534336	2.0	24.0	557568	62.0
			Mean =	21.0	460228d	2.0	21.2d	491837d	56.8

Performance Crop Research

National Hemp Variety Testing Across the US in 2022

Trial ID: REGIONAL HEMP VARIETY TRIAL	Location: Great Bend, KS Trial Year: 2022
Protocol ID: REGIONAL HEMP VARIETY TRIAL	Investigator (Creator): Melissa L. Nelson
Project ID:	Study Director: Melissa L. Nelson
	Sponsor Contact: Mandi Kerr

Crop Type, Code			C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS
Crop Name			Hemp	Hemp	Hemp	Hemp	Hemp	Hemp
Description			Vigor Scores	Date of Floweri>	Plant Height	Plant Height	Plant Height	Plant Height
Rating Date			May-18-2022		May-18-2022	Jul-27-2022	Aug-8-2022	Aug-30-2022
Part Rated			PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C
Rating Type			VIGOR	FLOW50	HEIGHT	HEIGHT	HEIGHT	HEIGHT
Rating Unit/Min/Max			1-5, 1, 5	DATE, -, -	IN, -, -	IN, -, -	IN, -, -	IN, -, -
Sample Size			1 PLOT	1 PLOT	10 PLANTS	10 PLANTS	10 PLANTS	10 PLANTS
Collection Basis			1 PLOT	1 PLOT	10 PLATOP	10 PLATOP	10 PLATOP	10 PLATOP
Number of Subsamples			1	1	10	10	10	10
Assessed By			PCR Team	PCR Team	PCR Team	PCR Team	PCR Team	PCR Team
Data Entry Date			Sep-25-2022	Sep-25-2022	Jul-18-2022	Jul-27-2022	Aug-9-2022	Aug-31-2022
Rating Timing			A2					
Days After First/Last Applic.			28, 28		28, 28	98, 98	110, 110	132, 132
Trt-Eval Interval			28 DA-A		28 DA-A	98 DA-A	110 DA-A	132 DA-A
Days After Emergence			22 DE-1		22 DE-1	92 DE-1	104 DE-1	126 DE-1
ARM Action Codes						ET4		
Number of Decimals								
Trt Treatment	Appl							
No. Name	Code	Plot	7	8	9	10	11	12
1 BIALOBRZESKI	A	101	4.0	Jun-6-2022	34.6	33.7	33.7	33.7
		204	4.0	Jun-6-2022	34.7	30.5	30.5	30.5
		303	4.0	Jun-6-2022	38.0	36.2	36.2	36.2
		404	4.0	Jun-6-2022	43.9	34.1	34.1	34.1
		Mean =	4.0	Jun-6-2022	37.8	33.6	33.6	33.6
2 FUTURA 75	A	102	2.0	Jul-12-2022	48.1	55.1	55.1	55.1
		206	2.0	Jul-10-2022	63.5	61.1	61.1	61.1
		307	2.0	Jul-12-2022	43.7	66.3	66.3	66.3
		401	2.0	Jul-10-2022	66.5	59.0	59.0	59.0
		Mean =	2.0	Jul-11-2022	55.5	60.4	60.4	60.4

Performance Crop Research

National Hemp Variety Testing Across the US in 2022

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Protocol ID: REGIONAL HEMP VARIETY TRIAL	Investigator (Creator): Melissa L. Nelson
Project ID:	Study Director: Melissa L. Nelson
	Sponsor Contact: Mandi Kerr

Crop Type, Code			C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS	C, CNISS
Crop Name			Hemp	Hemp	Hemp	Hemp	Hemp	Hemp
Description			Vigor Scores	Date of Floweri>	Plant Height	Plant Height	Plant Height	Plant Height
Rating Date			May-18-2022		May-18-2022	Jul-27-2022	Aug-8-2022	Aug-30-2022
Part Rated			PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C	PLANT, C
Rating Type			VIGOR	FLOW50	HEIGHT	HEIGHT	HEIGHT	HEIGHT
Rating Unit/Min/Max			1-5, 1, 5	DATE, -, -	IN, -, -	IN, -, -	IN, -, -	IN, -, -
Sample Size			1 PLOT	1 PLOT	10 PLANTS	10 PLANTS	10 PLANTS	10 PLANTS
Collection Basis			1 PLOT	1 PLOT	10 PLATOP	10 PLATOP	10 PLATOP	10 PLATOP
Number of Subsamples			1	1	10	10	10	10
Assessed By			PCR Team	PCR Team	PCR Team	PCR Team	PCR Team	PCR Team
Data Entry Date			Sep-25-2022	Sep-25-2022	Jul-18-2022	Jul-27-2022	Aug-9-2022	Aug-31-2022
Rating Timing			A2					
Days After First/Last Applic.			28, 28		28, 28	98, 98	110, 110	132, 132
Trt-Eval Interval			28 DA-A		28 DA-A	98 DA-A	110 DA-A	132 DA-A
Days After Emergence			22 DE-1		22 DE-1	92 DE-1	104 DE-1	126 DE-1
ARM Action Codes						ET4		
Number of Decimals								
Trt No.	Treatment Name	Appl Code Plot	7	8	9	10	11	12
3	FIBRUO 79	A 103	4.0	Jul-12-2022	45.3	44.7	44.7	44.7
		202	4.0	Jul-14-2022	55.7	55.4	55.4	55.4
		305	4.0	Jul-14-2022	53.3	59.8	59.8	59.8
		403	4.0	Jul-12-2022	46.6	56.3	56.3	56.3
		Mean =	4.0	Jul-13-2022	50.2	54.1	54.1	54.1
4	YUMA (CHINESE ORIGIN)	A 104	4.0		47.2	53.0	73.7	89.6
		203	4.0		60.3	61.9	77.2	88.9
		308	4.0		45.6	15.5	15.5	15.5
		405	4.0		62.8	67.7	82.5	97.5
		Mean =	4.0	.	54.0	49.5	62.2	72.9
5	MS77	A 105	5.0		47.3	57.6	76.8	91.0
		208	5.0		61.7	68.3	79.8	88.8
		310	5.0		45.9	61.9	75.7	98.5
		409	5.0		54.7	59.8	74.6	74.6
		Mean =	5.0	.	52.4	61.9	76.7	88.2
6	PUMA	A 106	5.0		53.9	64.1	74.9	85.8
		205	5.0		57.7	61.8	74.0	86.9
		302	5.0		45.2	69.9	82.2	101.8
		410	5.0		61.0	62.5	74.8	91.0
		Mean =	5.0	.	54.5	64.6	76.5	91.4
7	JINMA	A 107	2.0		45.3	69.1	82.2	97.8
		201	2.0		60.5	73.3	85.0	100.4
		304	2.0		58.7	71.6	86.2	97.4
		402	2.0		64.5	76.6	93.0	98.4
		Mean =	2.0	.	57.3	72.7	86.6	98.5
8	CRS-2	A 108	1.0	Jun-1-2022	21.0	21.9	21.9	21.9
		210	1.0	Jun-1-2022	19.3	12.7	12.7	12.7
		309	1.0	Jun-1-2022	16.3	64.6	64.6	64.6
		408	1.0	Jun-1-2022	19.3	34.5	34.5	34.5
		Mean =	1.0	Jun-1-2022	19.0	33.4	33.4	33.4
9	RAJAN	A 109	2.0	Jun-6-2022	31.5	30.2	30.2	30.2
		207	2.0	Jun-6-2022	36.8	33.7	33.7	33.7
		301	2.0	Jun-6-2022	44.2	34.6	34.6	34.6
		406	2.0	Jun-6-2022	39.5	32.6	32.6	32.6
		Mean =	2.0	Jun-6-2022	38.0	32.8	32.8	32.8
10	IH WILLIAMS (SS BETA)	A 110	3.0	Aug-19-2022	45.6	57.4	68.2	76.3
		209	3.0	Aug-19-2022	52.9	64.0	69.9	85.9
		306	3.0	Aug-19-2022	56.1	70.4	80.3	89.0
		407	3.0	Aug-19-2022	63.1	68.7	77.1	86.1
		Mean =	3.0	Aug-19-2022	54.4	65.1	73.9	84.3

Performance Crop Research

National Hemp Variety Testing Across the US in 2022

Trial ID: REGIONAL HEMP VARIETY TRIAL	Location: Great Bend, KS Trial Year: 2022
Protocol ID: REGIONAL HEMP VARIETY TRIAL Investigator (Creator): Melissa L. Nelson	
Project ID:	Study Director: Melissa L. Nelson
	Sponsor Contact: Mandi Kerr

Crop Type, Code			C, CNISS	C, CNISS	C, CNISS	C, CNISS
Crop Name			Hemp	Hemp	Hemp	Hemp
Description			Delta 9-THC Con>	Pounds Per Plot	Pounds Per Acre	Tons Per Acre (>
Rating Date			Aug-22-2022	Sep-1-2022	Sep-1-2022	Sep-1-2022
Part Rated			PLANT, C	PLANT, C	PLANT, C	PLANT, C
Rating Type			CONC-THC	WEIGHT	YIELD	YIELD
Rating Unit/Min/Max			mg/g, -, -	lb/plot, -, -	lb/ac, -, -	T-US, -, -
Sample Size			1 TREATM	1 PLOT	1 PLOT	1 PLOT
Collection Basis			1 PLOT	1 PLOT		
Number of Subsamples			1	1	1	1
Assessed By			ProVerde Labora>	PCR Team	PCR Team	PCR Team
Data Entry Date			Aug-29-2022	Sep-1-2022		
Rating Timing				H1	H1	H1
Days After First/Last Applic.			124, 124	134, 134	134, 134	134, 134
Trt-Eval Interval			124 DA-A	134 DA-A	134 DA-A	134 DA-A
Days After Emergence			118 DE-1	128 DE-1	128 DE-1	128 DE-1
ARM Action Codes				ER2	ER2 T1	ER2 T2
Number of Decimals			4		1	1
Trt Treatment	Appl					
No. Name	Code	Plot	13	14	15	16
1 BIALOBRZESKI	A	101	0.2300	98.0	17787.0	8.9
		204				
		303		90.0	16335.0	8.2
		404		95.0	17242.5	8.6
		Mean =	0.2300	94.3	17121.5	8.6
2 FUTURA 75	A	102	0.0000	89.0	16153.5	8.1
		206				
		307		90.0	16335.0	8.2
		401		93.0	16879.5	8.4
		Mean =	0.0000	90.7	16456.0	8.2

Performance Crop Research

National Hemp Variety Testing Across the US in 2022

Trial ID: REGIONAL HEMP VARIETY TRIAL	Location: Great Bend, KS	Trial Year: 2022
Protocol ID: REGIONAL HEMP VARIETY TRIAL	Investigator (Creator): Melissa L. Nelson	
Project ID:	Study Director: Melissa L. Nelson	
	Sponsor Contact: Mandi Kerr	

					Crop Type, Code	C, CNISS	C, CNISS	C, CNISS	C, CNISS
					Crop Name	Hemp	Hemp	Hemp	Hemp
					Description	Delta 9-THC Con>	Pounds Per Plot	Pounds Per Acre	Tons Per Acre (>
					Rating Date	Aug-22-2022	Sep-1-2022	Sep-1-2022	Sep-1-2022
					Part Rated	PLANT, C	PLANT, C	PLANT, C	PLANT, C
					Rating Type	CONC-THC	WEIGHT	YIELD	YIELD
					Rating Unit/Min/Max	mg/g, -, -	lb/plot, -, -	lb/ac, -, -	T-US, -, -
					Sample Size	1 TREATM	1 PLOT	1 PLOT	1 PLOT
					Collection Basis	1 PLOT	1 PLOT		
					Number of Subsamples	1	1	1	1
					Assessed By	ProVerde Labora>	PCR Team	PCR Team	PCR Team
					Data Entry Date	Aug-29-2022	Sep-1-2022		
					Rating Timing		H1	H1	H1
					Days After First/Last Applic.	124, 124	134, 134	134, 134	134, 134
					Trt-Eval Interval	124 DA-A	134 DA-A	134 DA-A	134 DA-A
					Days After Emergence	118 DE-1	128 DE-1	128 DE-1	128 DE-1
					ARM Action Codes		ER2	ER2 T1	ER2 T2
					Number of Decimals	4		1	1

Trt No.	Treatment Name	Appl Code	Plot	13	14	15	16
3	FIBRUO 79	A	103	0.0720	55.0	9982.5	5.0
			202				
			305		52.0	9438.0	4.7
			403		75.0	13612.5	6.8
			Mean =	0.0720	60.7	11011.0	5.5
4	YUMA (CHINESE ORIGIN)	A	104	0.0950	86.0	15609.0	7.8
			203				
			308		102.0	18513.0	9.3
			405		128.0	23232.0	11.6
			Mean =	0.0950	105.3	19118.0	9.6
5	MS77	A	105	0.0000	120.0	21780.0	10.9
			208				
			310		138.0	25047.0	12.5
			409		158.0	28677.0	14.3
			Mean =	0.0000	138.7	25168.0	12.6
6	PUMA	A	106	0.2410	150.0	27225.0	13.6
			205				
			302		130.0	23595.0	11.8
			410		105.0	19057.5	9.5
			Mean =	0.2410	128.3	23292.5	11.6
7	JINMA	A	107	0.1290	99.0	17968.5	9.0
			201				
			304		126.0	22869.0	11.4
			402		100.0	18150.0	9.1
			Mean =	0.1290	108.3	19662.5	9.8
8	CRS-2	A	108	0.0740	0.0	0.0	0.0
			210				
			309		0.0	0.0	0.0
			408		0.0	0.0	0.0
			Mean =	0.0740	0.0	0.0	0.0
9	RAJAN	A	109	0.0831	0.0	0.0	0.0
			207				
			301		0.0	0.0	0.0
			406		0.0	0.0	0.0
			Mean =	0.0831	0.0	0.0	0.0
10	IH WILLIAMS (SS BETA)	A	110	0.0000	97.0	17605.5	8.8
			209				
			306		105.0	19057.5	9.5
			407		85.0	15427.5	7.7
			Mean =	0.0000	95.7	17363.5	8.7

Performance Crop Research

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Protocol ID: REGIONAL HEMP VARIETY TRIAL	Investigator (Creator): Melissa L. Nelson
Project ID:	Study Director: Melissa L. Nelson
	Sponsor Contact: Mandi Kerr

Crop Type, Code
 C = EPPO species (Bayer) codes
 CNISS, BDIC, Cannabis sp., Hemp = US
Part Rated
 PLANT = plant
 C = Crop is Part Rated
Rating Type
 COUPLA = count - plant / emergence - objective
 VIGOR = vigor
 GERRAT = germination rate
 FLOW50 = flowering - 50 % flowers open
 HEIGHT = height
 WEIGHT = weight
 YIELD = yield
Rating Unit/Min/Max
 NUMBER, , = number
 1-5, 1, 5 = 1-5 index/scale
 %, 0, 100 = percent
 DATE, , = calendar date
 IN, , = inch
 lb/plot, , = pounds per plot
 lb/ac, , = pounds per acre
 T-US, , = ton (short=2000 lb)

 PLOT = total plot
 TREATM = treatment

 ROWFT = row-foot
 A = acre
 PLOT = total plot
 PLATOP = plant top
Rating Timing
 A2 = 2nd Assessment According to trial Schedule
 H1 = 1st Harvest
ARM Action Codes
 ET9 = Excluded treatment 9
 AL = Automatic log transformation of X+1
 ET4 = Excluded treatment 4
 ER2 = Excluded replicate 2
 T3 = (43560/(7.5/12))*([C1]/3)
 T4 = ([C5]/900000)*100
 T1 = ([C14]*43560)/240
 T2 = [C15]/2000