Industrial Hemp @ K-State

Trying To Fill The Research Void

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2019 Industrial Hemp Pilot Research Program

- Generated a rush of excitement in new & experienced farmers
- Need for unbiased, research based information

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K-State's Role in Industrial Hemp

- Research, Extension, & Teaching
- Production
- Improvement
- BMPs

- Education

- We have just completed 1st grow

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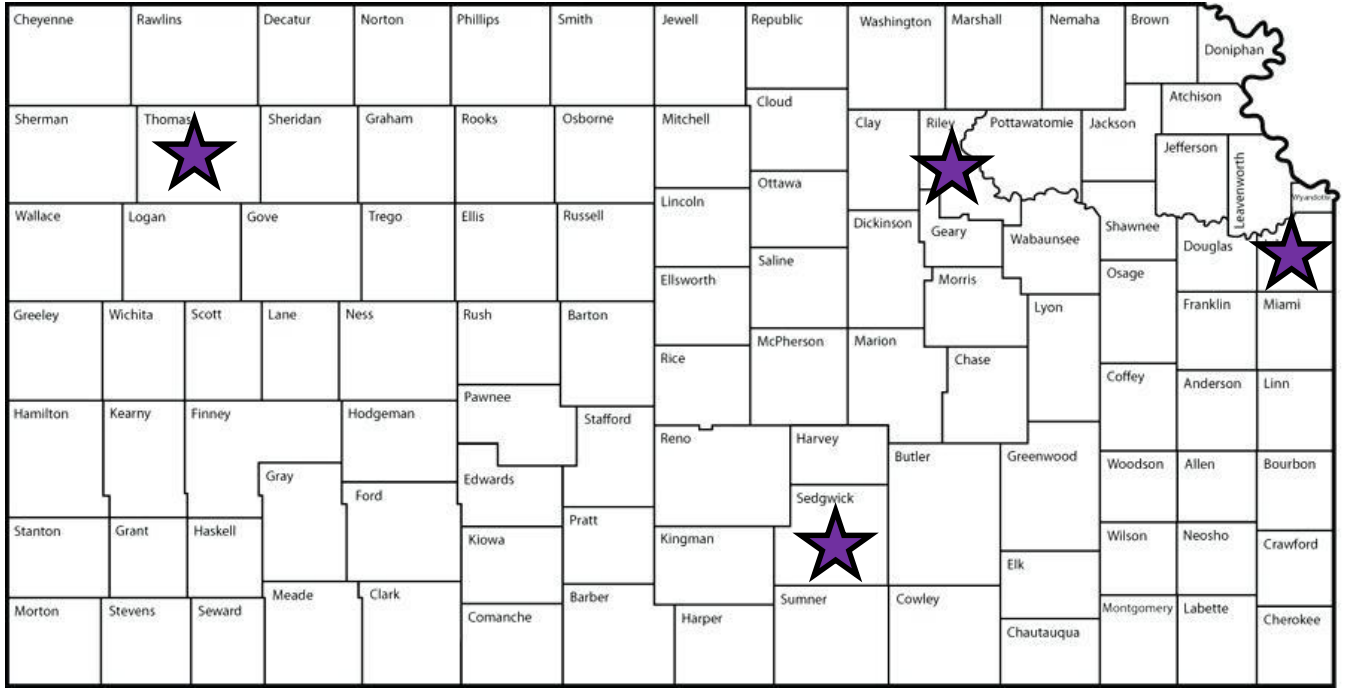
K-State's Role in Industrial Hemp



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Botany of *Cannabis sativa* L.

- Wind-pollinated summer annual.
  - Grain & Fiber: Pollen =
  - CBD Hemp: Pollen =
- Can be dioecious (normally) or monoecious (occasionally).
- Strongly photo-period sensitive
  - Flowers when days begin to shorten, regardless of size
  - Fall or Winter = Lights

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K-State's Role in Industrial Hemp

- <u>Grain & Fiber</u>
- Variety Trials
- 17 varieties
- Strong Genotype x Environment

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Grain & Fiber

- Grain
- Harvest @ 75% mature
- Hand harvest
- Hand thresh
- Hand clean seed

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Grain & Fiber

- Fiber
- Harvest when male senesce
- Hand harvest

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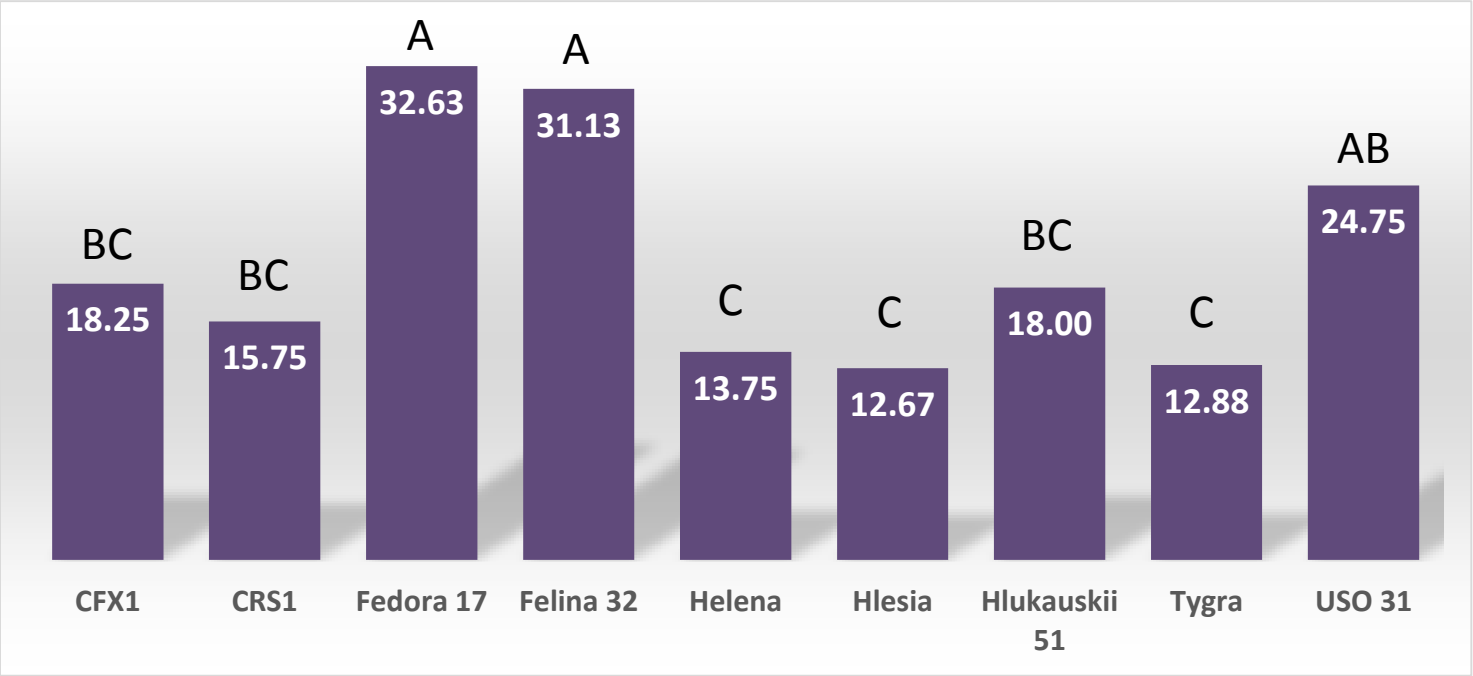
Grain – Plant #/m^2



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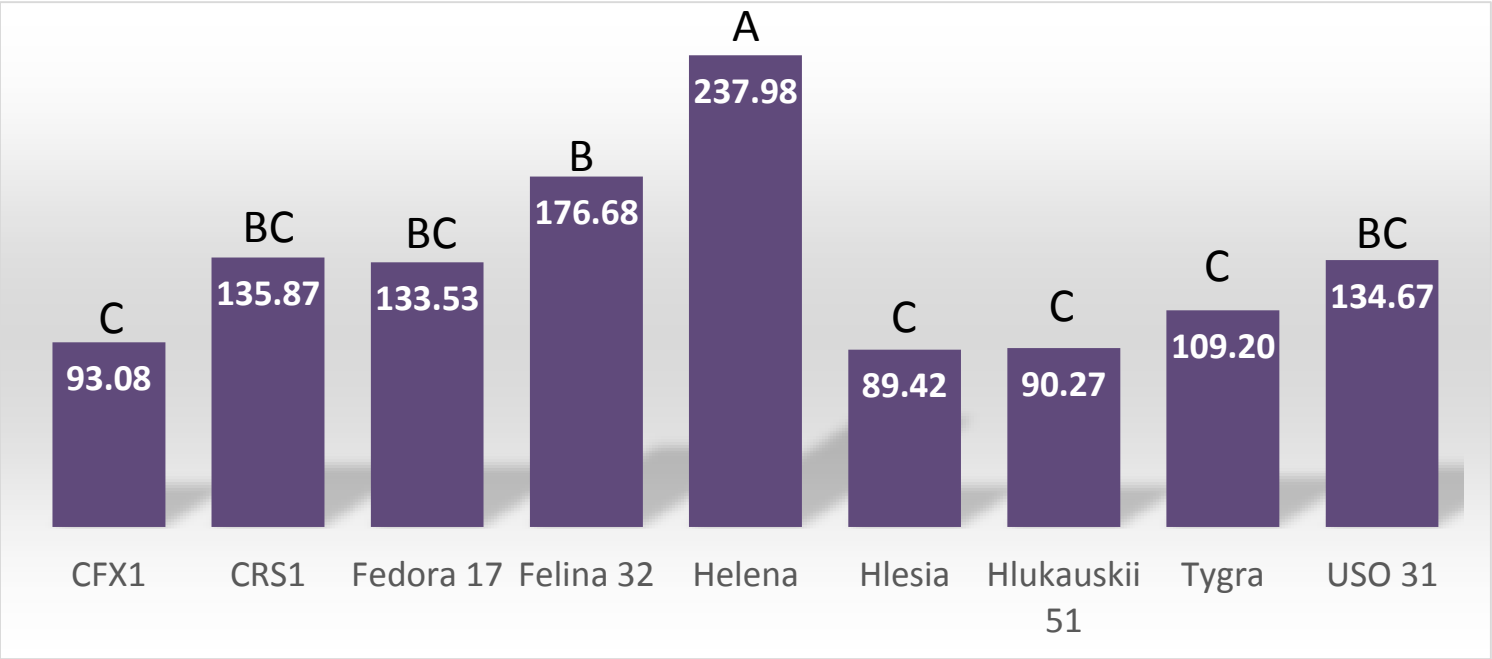
Grain Weight (g)/m²



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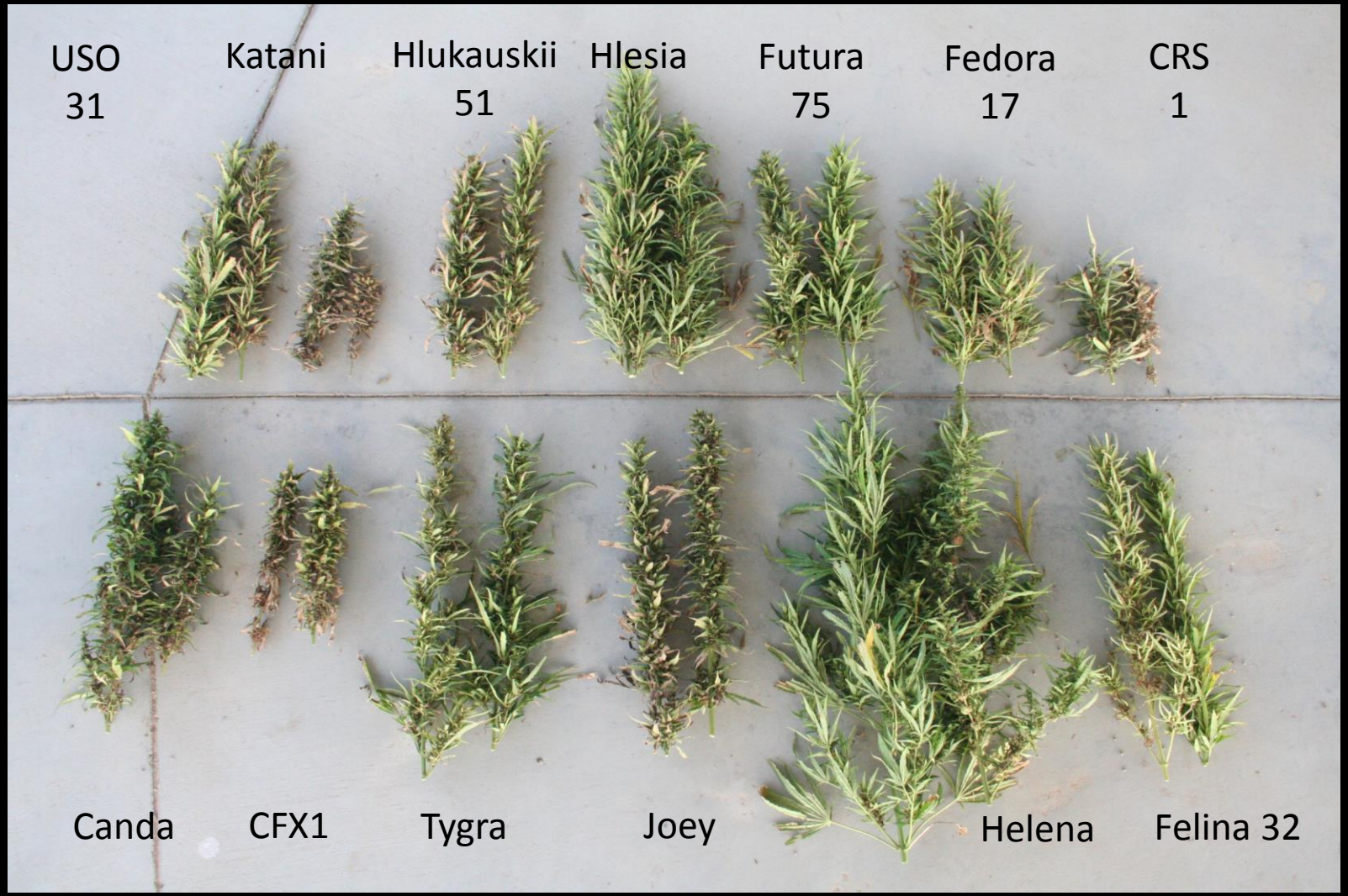
USO 31
Katani
Hlukauskii 51
Hlesia
Futura 75
Fedora 17
CRS 1
Canda
CFX1
Tygra
Joey
Helena
Felina 32

Grain Wt/Acre (lbs)

Variety	Kansas	NY	KY	VT
Helena	2,100	525		
Tygra	972	400	819	
Felina 32	1,570	400	829	
USO 31	1,195	625		756
CFX 1	830	550		1035

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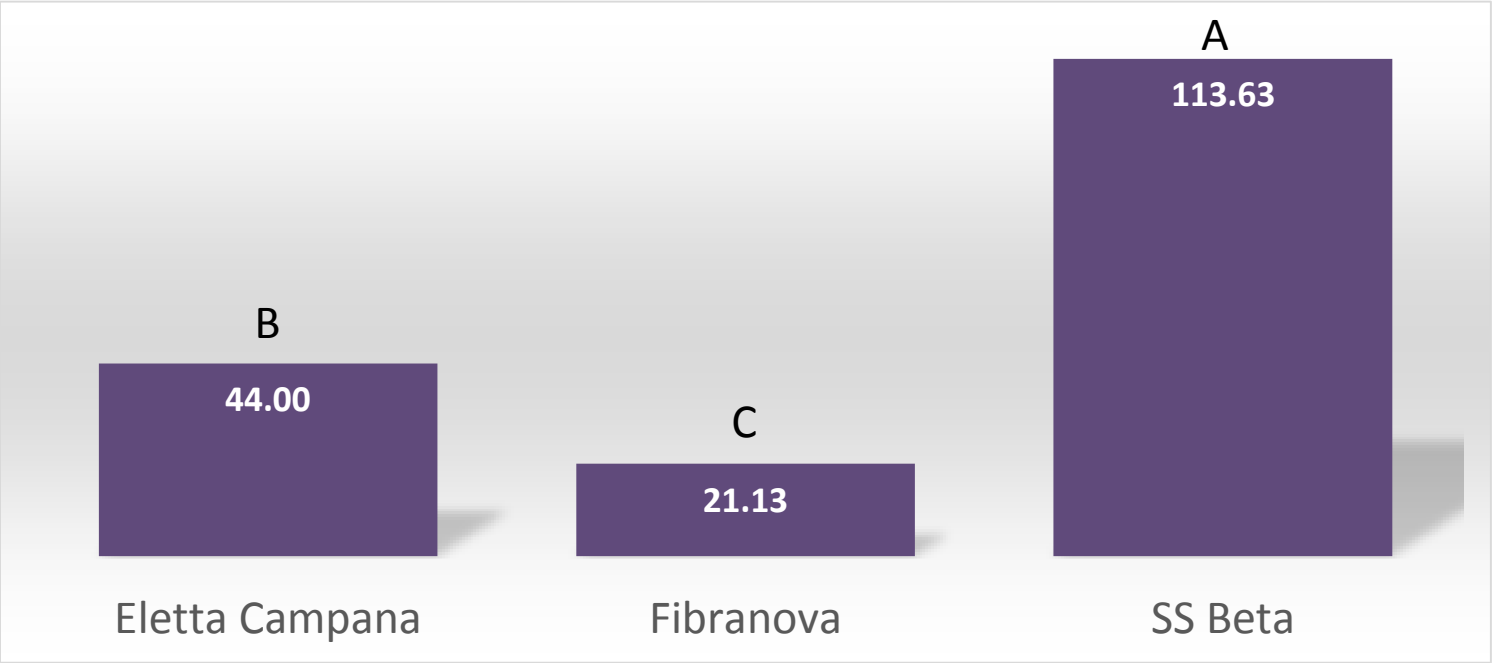
Fiber – Plant #/m^2



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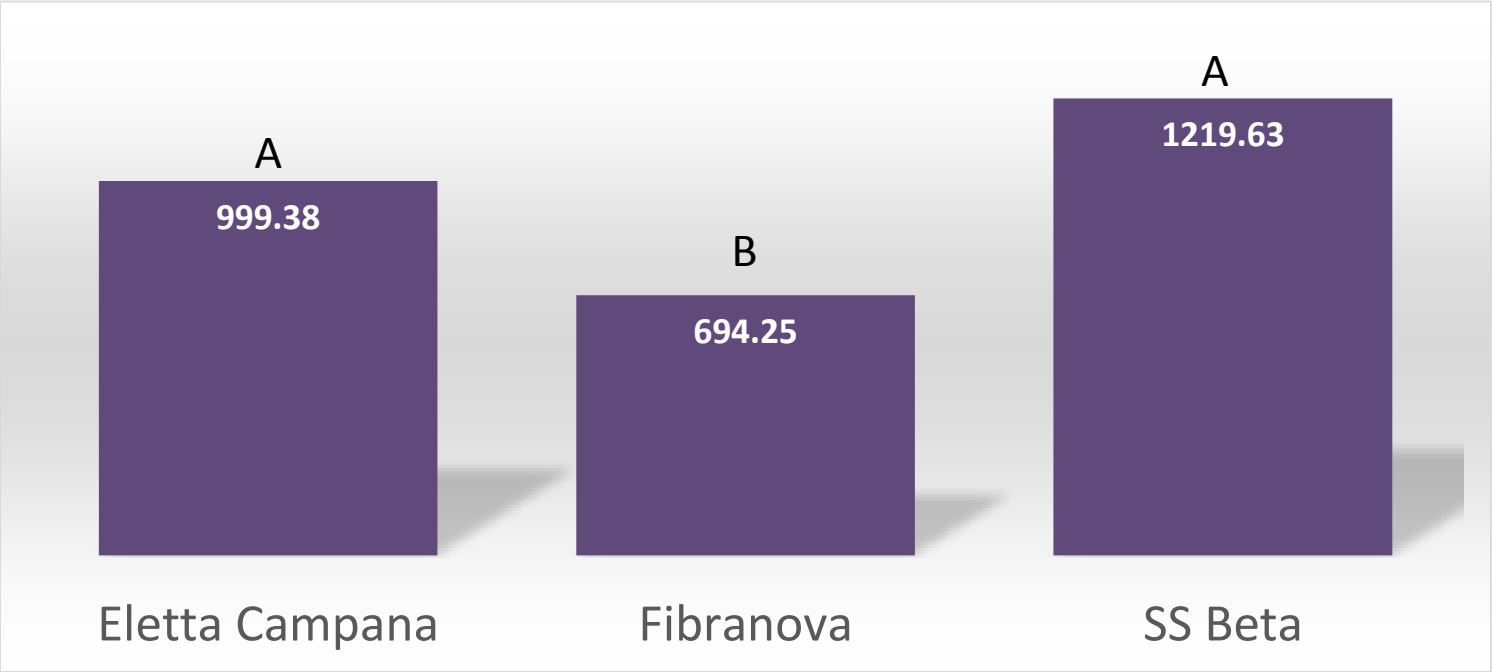
Fiber – Stem Dry Wt. (g)/m^2



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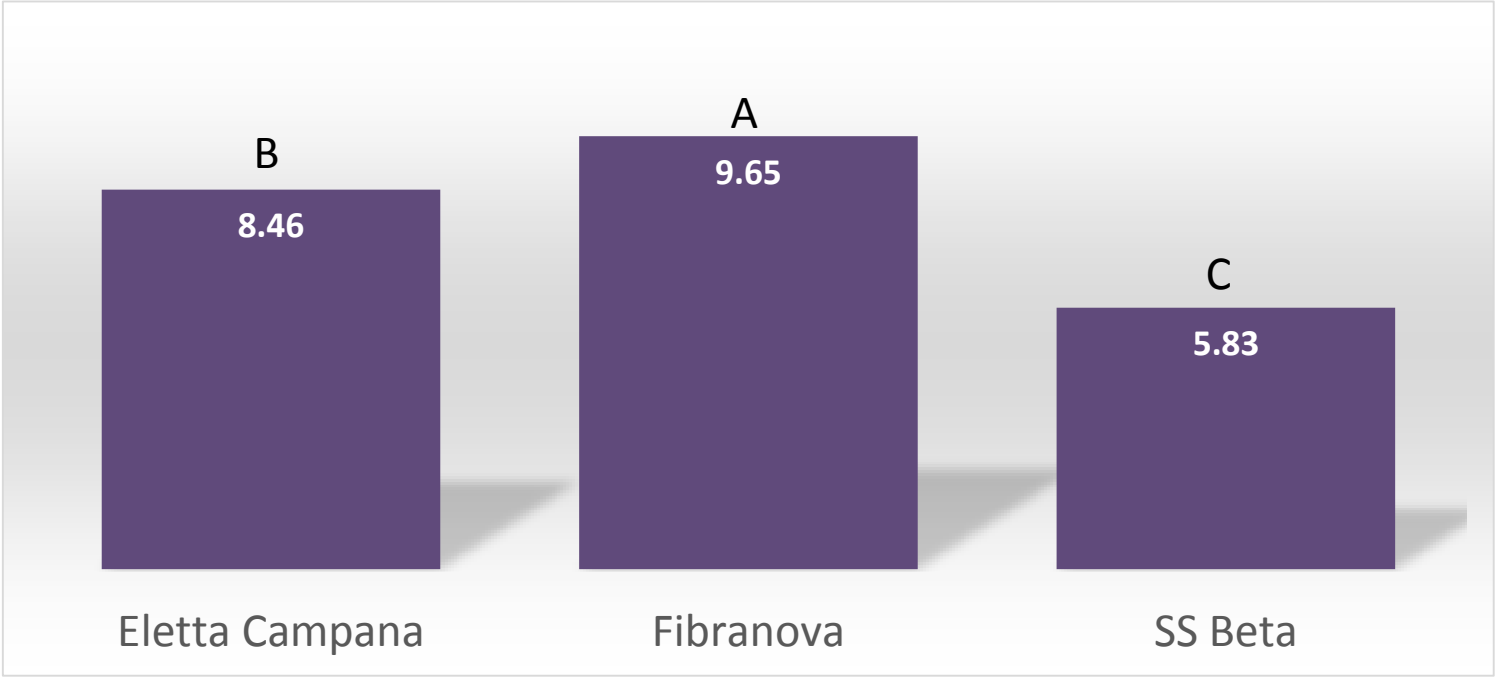
Fiber – Stem Caliper (mm)



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K-State's Role in Industrial Hemp

- <u>CBD</u>
- Variety Trials
- High Tunnel production
- Greenhouse production
- CBD vs THC content
- High CBD varieties and THC

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CBD Variety Trial

- 7 Varieties
- Organic v. Conven. Fert.
- Container v. Fabric Bag
- High Tunnel v. Outdoors

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CBD High Tunnel v. Outdoors

Table 3. Number of primary colas on Cannabis plants fertilized with Osmocote (15-9-12) or Turf-Mate (4-2-3)

	Out		HT	
	4	15	4	15
AC/DC	6.4	12.3	35.4	44.4
Cherry	0.0	0.0	19.4	23.1
OttoIIStout	8.9	16.0	30.0	51.1
Super CBD	3.9	17.5	47.9	52.9
The Wife	8.5	11.3	32.6	68.6

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Industrial Hemp

- Future Work
  - Plan to continue this line of work
    - Water utilization
    - Production practices
    - Variety evaluations
    - Human Health
    - Animal Nutrition
    - Helping KS farmers be more successful
  - Partnerships
    - Industry
    - K-State Vet School
    - KU Geology
    - KU Med School
    - USDA Multi-State working group

COLORADO HEMP GENETICS

CRAIGER Enterprises

USDA NIFA

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