2020 CBD Hemp Fertility Trial at Minot

Summary: The trial was set up as a randomized complete block design with 3 replications. An experimental CBD hemp strain was propagated from feminized seed and planted as 6 inch transplants on June 2 or propagated as clones from a single mother plant and planted on June 15. Clones were 1 to 4 inches tall when planted and many of these did not survive. Residual soil fertility levels were 17 lbs/A N, 16 PPM P and 458 lbs/A K. Fertilizer treatments consisted of urea (46-0-0) as the nitrogen fertilizer, MAP (11-52-0) as the phosphorus fertilizer, potash (0-0-60) as the potassium fertilizer and AMS (21-0-0-24S) as the sulfur fertilizer. Treatments were surface applied in a one foot band over the top of the row on June 5. Growing conditions were generally mild (avg 64F) and dry (6.6") from June 1 through September 30. Due to dry conditions, fertilizer treatments were not effectively translocated into the root zone until rainfall during the first week of July. The trial was harvested on October 9. Individual plants were weighed for yield and approximately 10 inches of the terminal bud was collected and dried at 80F for 5 days to determine moisture content. *A sub-sample of this biomass was collected and will be analyzed for THC, CBD and total cannabinoid content when funds become available.* There was a lot of phenotypic variability within the feminized seed transplants as far as plant height and shape. This variability carried through harvest, resulting in no obvious trend or statistical differences for plant height or dry plant weight between fertility treatments. Data from the clonal production is shown, however, there were not enough harvested plants to perform a good statistical analysis on. In conclusion, this data would suggest that we don't understand the nutritional needs of this crop and therefore more research should be conducted in order to optimize fertilizer use.

Transplant Production Fertilizer Treatment	Harvested Plants	Plant Height	Harvest Moisture	Total THC	Total CBD	Total Cannabinoids	Dry Plant Weight
	**	inches	%	%	%	%	lbs/plant
50 lbs/A N*	8	68	65.0	--	--	--	2.38
100 lbs/A N*	8	70	65.3	--	--	--	2.85
150 lbs/A N*	10	69	68.7	--	--	--	2.69
100 lbs/A N* + 25 lbs/A MAP	8	75	67.3	--	--	--	2.97
100 lbs/A N + 50 lbs/A MAP	8	62	66.3	--	--	--	2.71
100 lbs/A N* + 25 lbs/A potash	6	75	62.0	--	--	--	2.55
100 lbs/A N* + 50 lbs/A potash	7	76	61.3	--	--	--	2.10
100 lbs/A N* + 25 lbs/A AMS	9	66	58.7	--	--	--	1.81
100 lbs/A N* + 50 lbs/A AMS	8	63	64.7	--	--	--	2.32
100 lbs/A N* + 25 lbs/A MAP + 25 lbs/A potash + 25 lbs/A AMS	6	71	59.7	--	--	--	2.74
100 lbs/A N* + 50 lbs/A MAP + 50 lbs/A potash + 50 lbs/A AMS	5	72	62.0	--	--	--	2.36
100 lbs/A N* + 25 lbs/A MAP + 25 lbs/A potash + 25 lbs/A AMS + 50 lbs/A urea applied on Sept. 4	10	67	62.7	--	--	--	2.55
Trial Mean		69	63.7	--	--	--	2.50
C.V. %		12.2	6.7	--	--	--	26.8
LSD 0.05		NS	NS	--	--	--	NS

** Total lbs/A N (residual N + urea)*

***Total number of harvested plants used in this analysis.*

NS = No statistical difference between fertilizer treatments.

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2020 CBD Hemp Fertility Trial at Minot Continued

Clonal Production

Fertilizer Treatment	Harvested Plants	Plant Height	Harvest Moisture	Total THC	Total CBD	Total Cannabinoids	Dry Plant Weight
	**	inches	%	%	%	%	lbs/plant
50 lbs/A N*	3	49	53	--	--	--	1.03
100 lbs/A N*	2	38	53	--	--	--	0.97
150 lbs/A N*	5	57	59	--	--	--	2.14
100 lbs/A N* + 25 lbs/A MAP	1	56	54	--	--	--	0.73
100 lbs/A N + 50 lbs/A MAP	3	52	70		--	--	1.32
100 lbs/A N* + 25 lbs/A potash	1	50	61	--	--	--	1.13
100 lbs/A N* + 50 lbs/A potash	0	--	--	--	--	--	--
100 lbs/A N* + 25 lbs/A AMS	1	57	69	--	--	--	2.46
100 lbs/A N* + 50 lbs/A AMS	0	--	--	--	--	--	--
100 lbs/A N* + 25 lbs/A MAP + 25 lbs/A potash + 25 lbs/A AMS	4	54	60	--	--	--	1.34
100 lbs/A N* + 50 lbs/A MAP + 50 lbs/A potash + 50 lbs/A AMS	2	38	48	--	--	--	0.86
100 lbs/A N* + 25 lbs/A MAP + 25 lbs/A potash + 25 lbs/A AMS fb 50 lbs/A urea applied on Sept. 4	4	52	67	--	--	--	1.08

** Total lbs/A N (residual N + urea)*

***Total number of harvested plants used in this analysis.*

Planting Rate: 5' rows and 5' between plants (1742 plants/A)

Production System: Outdoor. No supplemental irrigation.

Weed Control: Clipping (lawn mower)

***Disclaimer**: This data should be viewed with caution until additional information can be generated.*