

2020 CBD Hemp Row Spacing and Planting Rate 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 or propagated as clones from a single mother plant. Plants were planted into 30 inch and 60 inch rows with 24, 48 and 72 inch spacing between plants within the row. Growing conditions were generally mild (avg 64F) and dry (6.6") from June 1 through September 30. The trial was harvested on October 14. Plants were weighed for yield and a bulk sample of approximately 10 inches of each 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, moisture content at harvest or individual dry plant weight between row spacing or plant spacing treatments. Results from the clonal production were very similar to the transplant production with the exception of the 30 inch row with 48 inches between plants which showed a twofold increase in biomass yield. The assumption is that this was a random occurrence due to genetic variability with the feminized seed transplants. As would be expected, higher plant populations on a per acre basis produced higher biomass yields. In conclusion, this data would suggest that row spacing and spacing between plants had little effect on individual plant biomass production and that overall plant density may be more important to maximizing space efficiency. Plant genetics are also an important consideration, as plant shape and size affects sunlight interception, air movement and weed competition. High plant density may enhance weed competition, however, higher plant densities may hinder air movement, creating an environment more conducive to diseases and molds.

Transplant Production

Row Spacing	Plant Spacing	Planting Rate	Plant Height	Harvest Moisture	Total THC	Total CBD	Total Cannabinoids	Dry Plant Weight	Dry Biomass
inches	inches	plants/A	inches	%	%	%	%	lbs/plant	lbs/A
30	24	8712	65	69.4	--	--	--	1.38	12,052
30	48	4356	66	65.1	--	--	--	2.18	9,511
30	72	2904	60	64.1	--	--	--	1.85	5,382
60	24	4356	59	67.3	--	--	--	1.27	5,547
60	48	2178	60	63.6	--	--	--	1.43	3,115
60	72	1452	67	68.7	--	--	--	1.92	2,783
C.V. %			9.8	7.1	--	--	--	22.4	25.4
LSD 0.05			NS	NS	--	--	--	NS	1,784

NS = No statistical difference between fertilizer treatments.

Clonal Production

Row Spacing	Plant Spacing	Planting Rate	Plant Height	Harvest Moisture	Total THC	Total CBD	Total Cannabinoids	Dry Plant Weight	Dry Biomass
inches	inches	plants/A	inches	%	%	%	%	lbs/plant	lbs/A
30	24	8712	56	68.7	--	--	--	1.18	10,251
30	48	4356	59	70.9	--	--	--	1.10	4,770
30	72	2904	57	60.5	--	--	--	1.64	4,748
60	24	4356	57	68.1	--	--	--	1.36	5,939
60	48	2178	66	60.0	--	--	--	1.43	3,115
60	72	1452	55	69.9	--	--	--	1.91	2,768
C.V. %			12.9	7.1	--	--	--	32.9	33.5
LSD 0.05			NS	NS	--	--	--	NS	2,317

NS = No statistical difference between fertilizer treatments.

Production System: Outdoor. No supplemental irrigation. Weed control: clipping (lawn mower).