OPTIMAL NUTRIENT REQUIREMENT FOR CBD HEMP IN PIEDMONT NORTH CAROLINA

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**Background**

- Hemp differs from its cousin marijuana on the basis of THC (0.3%)

- Hemp plants are used to produce seeds, fiber, and cannabinoids (CBD)

- After legalization there has been an emerging market for CBD hemp that has medicinal properties

- Not much information available on agronomic practices (e.g. N fertilizer requirements, harvest etc.)

Source: John Ivey, Research Technician
**Research Objective**
To determine the effect of different nitrogen fertilizer rates and time of harvest on performance of 2 CBD hemp varieties.

Measurements: 1) cannabinoids (CBD and THC) concentrations, 2) plant tissue testing, 3) soil testing, 4) yield during the growing season.

**Treatments**
1) **Varieties:** Therapy and Spectrum
2) **Fertilizer rates:**
   - 0 (F1), 50 (F2), 100 (F3) and 200 (F4) kg N ha\(^{-1}\)

Randomized complete block design with 4 replicates in the field at NCA&T research farm on 1/3\(^{rd}\) of an acre
Hemp Planting for 2019 growing season

Seeds were sown in pots at greenhouse on May 1st and transplanted to field on June 4th.

Clones were planted on June 4th.

Source: John Ivey, Research Technician
Hemp plants in the field during July
Hemp plants from August
Pictures from the September (pre-harvest)
HARVEST
Conclusions

1. Plant tissue analysis indicated that Mg levels dropped below sufficiency levels at initiation of flowering

2. Harvest time on the basis of highest CBD % depends on the type of variety planted (early Therapy vs late Spectrum maturity)

3. Average fresh weight floral yield ranged from 500-3000 g per plant at harvest (post harvest depends on the target market)

4. No significant increase in yield and CBD% was observed between 100 and 200 kg N ha⁻¹ fertilizer application rates
Thank you, Aggie Pride!

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A&T Industrial Hemp Page- https://www.ncat.edu/caes/hemp-program/