

PRECISION NITROGEN USE IN CBD HEMP

WHAT GROWERS NEED TO KNOW FOR BETTER YIELD AND QUALITY

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OVERVIEW

CBD hemp is becoming more popular for medical use, health supplements, and even cosmetics. However, there is not enough research on the best ways to grow hemp sustainably, especially when it comes to fertilizer use.

One big challenge for growing CBD hemp is the lack of research in optimum fertilizer recommendations specific to different regions. This is even more important for organic hemp farmers, who face high costs for organic fertilizers and need to use nutrients efficiently.

We conducted a two-year field study (2022–2023) at Rodale Institute–Pocono Organic Center in Blakeslee, PA to find out how different nitrogen (N) fertilizer rates and application methods affect CBD hemp yield and quality.

Acronym: CBD = cannabidiol, N = nitrogen, and THC = delta-9-tetrahydrocannabinol

HIGHLIGHTS



We studied how organic nitrogen fertilizer impacts CBD hemp grown using regenerative organic practices.



More nitrogen led to higher biomass yield and increased CBD and THC levels.



The best nitrogen rate for the Northeastern region is 150 lb per acre, with a possible upper limit of 200 lb per acre.

READ THE FULL ARTICLE HERE:



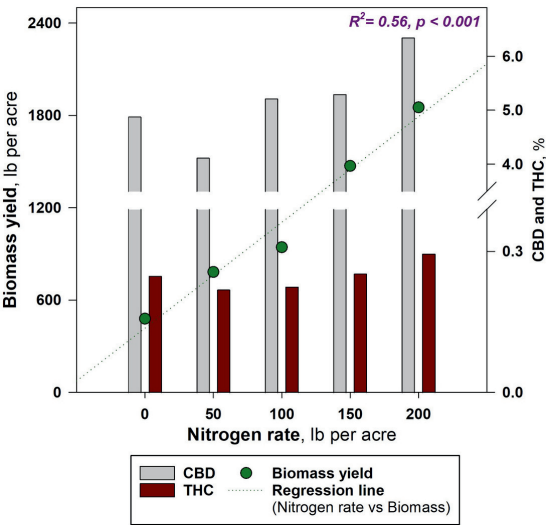
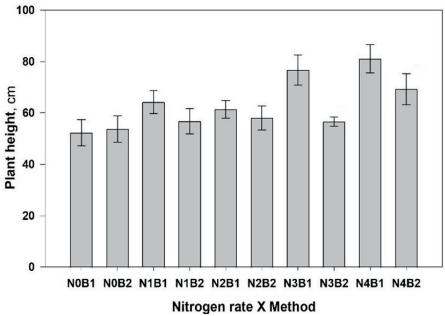
This study tested two things: the amount of N fertilizer (i.e., blood meal) and how it was applied.

Nitrogen rates were 0 (N0), 50 (N1), 100 (N2), 150 (N3), and 200 (N4) lb per acre. The fertilizer was applied in two ways: banding (B1) and broadcasting (B2).

CBD hemp plants grew taller as more N fertilizer was applied, with the greatest height observed at higher N rates, especially when fertilizer was applied using the banding method (Figure 1).

FIGURE 1.

Interaction effects of N rate and application method on plant height. N0, N1, N2, N3, and N4 represent N rates while B1 and B2 represent application methods. Each bar represents mean ($\pm$ SE).



CBD and THC levels were measured from the harvested top floral parts. We found a strong link between N application rate and both hemp biomass yield and CBD levels (Figure 2).

Applying more N increased plant growth and CBD levels, but it also raised THC levels. For example, the highest N rate led to the highest THC levels in 2022 (Figure 2), which is a concern because THC levels must stay below 0.30% to remain legal.

We also looked at N use efficiency, which measures how much extra yield farmers get per lb of N applied. We advise a N rate of 150 lb per acre, with a maximum of 200 lb per acre in CBD production. This rate balances fertilizer efficiency, environmental impact, and farm profitability. Banding method is recommended than broadcasting.

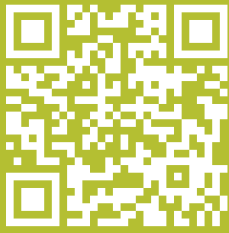
FIGURE 2.

Interaction Relationship between hemp biomass yield and CBD and THC levels at various N rates in 2022.



KEY TAKEAWAY

Using the right nitrogen rate helps maximize yield while keeping THC levels under control for CBD hemp production. Farmers in the Northeast can adopt 150 lb N per acre for the best results.



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