

***The Effect of BASISCROP Technology on Soil Physical Properties,  
Soil Organic Carbon Content, and Microbial Population  
in Sugarcane Fields***

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**ABSTRACT**

*This study aimed to evaluate the impact of BASISCROP technology a microbial-based package integrating blotong, amino acids, and BC fertilizer (PGPR) on soil physical properties, organic carbon (C-organic) content, and total microbial population in sugarcane fields at UD Jaya Makmur, Kaliwates, Jember, from June 2024 to May 2025. The research employed a descriptive method with three treatments: A1 (100% chemical fertilizer as control), A2 (50% chemical fertilizer + 50% BASISCROP), and A3 (30% chemical fertilizer + 70% BASISCROP). Results showed that BASISCROP application in A2 and A3 significantly improved soil physical properties compared to A1, evidenced by darker soil color, more stable temperature, consistent texture (clay class), and higher aggregate stability. Soil C-organic content in A2 and A3 tended to be more stable despite fluctuations due to priming effects and mulch addition post-klentek. The microbial population (TPC) in A2 reached the highest and most consistent levels (up to  $1.5 \times 10^6$  CFU/g), while A1 experienced a drastic decline to  $<10^5$  CFU/g due to limited organic substrate availability. The study concluded that BASISCROP technology, particularly the 50% chemical and 50% organic fertilizer combination (A2), was most effective in enhancing and maintaining soil physical, chemical, and biological fertility in sugarcane fields sustainably. Further long-term research across multiple cropping cycles is recommended to confirm prolonged effects.*

**Keywords:** *BASISCROP technology, soil physical, organic C, soil microorganisms, sugarcane land, soil biology.*