

**The Role of Basiscrop Technology Package in Determining DRIS Index and
Adjusting Critical Limits of Nutrients in Sugarcane Plants
(*Saccharum officinarum* L.)**

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ABSTRACT

*Sugarcane (*Saccharum officinarum* L.) is a strategic crop for the national sugar industry; however, its productivity remains low due to soil degradation caused by excessive use of inorganic fertilizers. This condition leads to nutrient imbalance and suboptimal attainment of critical nutrient thresholds absorbed by the plant. This study aimed to evaluate the role of the Basiscrop technology package, consisting of filter cake fertilizer, amino acids, and Plant Growth Promoting Rhizobacteria (PGPR), PGPR was formulated from sugarcane root bacteria and sugarcane soil isolates. The package was combined with 50% inorganic fertilizer in treatment P1 and 30% in treatment P2. The objectives were to determine the primary limiting nutrient using the Diagnosis and Recommendation Integrated System (DRIS) and to adjust the critical nutrient levels in sugarcane. The research was conducted from June to November 2024 at UD Jaya Makmur sugarcane plantation, Tegal Besar Village, Kaliwates District, Jember Regency, and at the Testing Laboratory of the Indonesian Coffee and Cocoa Research Institute, Jember. The study applied a descriptive quantitative method with parameters including the balance of macronutrients (N, P, K, Ca, Mg) in plant tissue. Leaf samples were collected in composite form and analyzed in the laboratory. Data were processed using the DRIS method and Nutrient Balance Index (NBI) calculations. The results showed : (1) that treatment P1 significantly reduced the NBI value and identified nitrogen (N) as the primary limiting nutrient. (2) Basiscrop application also contributed to the adjustment of critical nutrient levels, with nitrogen approaching the international threshold although still below the optimal level, while phosphorus, potassium, calcium, and magnesium had reached or exceeded international critical levels. Thus, Basiscrop technology package has the potential to improve nutrient balance and support sustainable sugarcane productivity, although additional nitrogen supplementation is still required.*

Keywords: *Basiscrop technology package, DRIS, critical thresholds, nutrient balance, Sugarcane*