

ACCUMULATION OF ORGANIC CARBON AND AVAILABLE NUTRIENTS IN SOIL FERTILIZED WITH LIGNITE HUMIC ACID AND FERTILIZERS UNDER SUBSURFACE DRIP FERTIGATION OF SUGARCANE CV. COC (SC) 24 IN COASTAL SOIL OF TAMIL NADU (INDIA)

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ABSTRACT

Agricultural soils in the coastal region have meager soil fertility characteristics because of their sandy textures, salt content, kaolinitic clays, low cation exchange capacity, diminutive soil organic carbon and nutrient contents. The decreasing trend in the productivity of sugarcane was noticed during recent years. Recently however, drip irrigation combined with fertigation has been found to benefit the farmers because of the very high efficiency of fertilizer use for such irrigation schemes. It has long been recognized that humic substances have many beneficial effects on soil and plant growth. The objectives of this study were to determine the impact of lignite humic acid additions with and without fertilizers on soil fertility characteristics. The lignite humic acid had a pH of 6.8, contained total organic carbon content of 9.36 g/litre. The potassium, nitrate, phosphate, sulphate, calcium and magnesium were 20.1, 12.5, 0.1, 0.09, 0.01 and 0.001 g / lit respectively. The combination of 125 per cent NPK with 15 litres of humic acid /ha recorded higher cane yield of 141.12/ha. When compared to conventional method. Reducing the fertilizer levels by 25 % with 20 litres of humic acid /ha resulted in the cane yield of 136.94/ha. The organic carbon content accumulation was found to be increased with application of graded doses of humic acid. The available nitrogen content was accumulated at 20 cm depth and near the drip point. Available phosphorus distribution was higher at 40 cm than other depth of soil layers. Similarly, higher available potassium was observed at 20 and 60 cm depth of soil and at near the drip point. Based on this study, application of 125 kg recommended dose of fertilizers with 15 litres of humic acid ha⁻¹ may be recommended to improve yield of sugarcane cv CoC (SC)24 and fertility of coastal soils of Tamil Nadu. Lignite humic acid additions to the coastal soil caused significant fertility improvements

KEYWORDS: Lignite Humic Acid, Rhizosphere, Soil Conditioner, Soil Nutrient Dynamics, Sub Surface Drip Fertigation

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