



# Spatial Variability and Precision Nutrient Management in Sugarcane

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**Abstract** Investigations were carried out to develop precision nutrient management techniques for sugarcane. The study area (800 ha) comprised of Bijapur, Bilgi and Jamakhandi talukas that lie between  $16^{\circ} 34'–28^{\circ} 10'$  N latitudes and  $75^{\circ} 33'–75^{\circ} 37'$  E longitudes and located around Nandi Sahakari Sakkare Karkhane (NSSK) Niyamit, Galagali. The soils are medium to deep black with pH and EC ranging from 7.32 to 8.36 and 0.17 to 1.13 dS/m, respectively. The soils are low to medium in available nitrogen, medium in available phosphorus and high in available potassium content. Crop condition assessment was made through analysis of LISS-III satellite images using Erdas Imagine software. Fertigation

with 300 kg N and 195 kg K per ha at fortnightly interval and soil application of 32 kg P per ha as basal, recorded higher sugarcane yield ( $167 \text{ Mg ha}^{-1}$ ) as compared to  $124 \text{ Mg ha}^{-1}$  obtained with soil application of 250 kg N, 32 kg P and 156 kg K per ha and flood irrigation as per the package recommended by the University(POP). Fertigation of N and K at weekly interval recorded highest NDVI value (0.354) and soil application of nutrients as per POP resulted in the lowest NDVI of 0.219.

**Keywords** Precision Agriculture · Nutrient Management · Sugarcane

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## Introduction

Sugarcane is an economically important crop in many countries around the world including India. India is the largest producer of sugar (13.40 million tonnes) in the world with a productivity of  $60–100 \text{ Mg ha}^{-1}$ . Sugarcane is extensively cultivated in the northern districts (Bijapur, Bagalkot and Belgaum) of Karnataka State, India. The crop is extensively cultivated in irrigated commands of Malaprabha, Ghataprabha and Krishna rivers under surface furrow irrigated conditions. Improper irrigation methods, high cost of fertilizer inputs and lower prices for sugarcane have resulted in reduced profit margins for the farmers. The majority of sugar factories in Karnataka state are in the Co-operative sector and