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RESEARCH PAPER

Influence of subsurface drip fertigation duration and levels on growth parameters of plant and ratoon sugarcane

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Abstract : The simultaneous delivery of water and fertilizers to the active root zone through subsurface drip fertigation system ensures optimum growth of sugarcane. Field experiment was conducted at ZARS, V.C. Farm, Mandya during 2014-15 and 2015-16 seasons comprising of plant and ratoon cane, respectively. The investigation was conducted to know the performance of sugarcane as influenced by duration and levels of subsurface drip fertigation. Results revealed that fertigation duration upto 9.5 months recorded significantly higher growth parameters of plant and ratoon cane at harvest *viz.*, plant height (330.6 and 296.2 cm), number of tillers m^{-1} (34.66 and 43.33), leaf area $dm^2 m^{-1}$ (87.32 and 118.69), total dry matter production g $plant^{-1}$ (652.57 and 466.91) and SPAD reading (34.67 and 37.72), respectively. Growth parameters significantly not influenced by fertigation levels. Whereas, the interaction between fertigation duration and levels were significant. Fertigation upto 9.5 months with 125 per cent RDF recorded significantly higher growth parameters *viz*., plant height (332.5 and 299.5 cm), number of tillers m^{-1} (34.97 and 43.98), leaf area $dm^2 m^{-1}$ (89.27 and 121.63), total dry matter production g $plant^{-1}$ (658.70 and 473.37) and SPAD reading (34.92 and 37.82) in plant and ratoon cane, respectively at harvest. Stastically, at par results were observed with fertigation upto 9.5 months with 100 per cent of RDF and fertigation upto 9.5 months with 75 per cent of RDF. Normal method of sugarcane cultivation with surface irrigation with 100 per cent RDF soil application recorded lower plant height (281.4 and 259.1 cm), number of tillers m^{-1} (29.2 and 38.15), leaf area $dm^2 m^{-1}$ (57.34 and 84.38), total dry matter production g $plant^{-1}$ (519.69 and 340.36) and SPAD reading (23.39 and 26.47). Thus, results clearly indicated that 25 per cent of the recommended dose of fertilizer could be saved with higher cane growth through sub surface drip fertigation (SSDF) over normal practice of sugarcane cultivation.

Key Words : Sub surface drip fertigation, Fertigation duration, Fertigation levels, SPAD reading

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