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Drip fertigation effects on yield, nutrient uptake and soil fertility of Bt Cotton in semi arid tropics

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Abstract

Field experiment was conducted for 2 seasons to study the influence of drip fertigation in combination with or without bio fertilizers on yield, plant uptake and soil fertility of Bt cotton. The treatments comprised of four levels of drip fertigation viz., 75, 100, 125 and 150 per cent of recommended dose of fertilizers (RDF, NPK) combined with and without bio fertilizers, drip irrigation with soil surface application of 100 per cent RDF and surface irrigation with soil surface application of 100 per cent RDF as control. Biofertilizers used for fertigation is azophosmet containing Azospirillum, phosphobacterium and pink pigmented facultative methylotroph. Most of the yield attributes *viz.*, number of sympodial branches per plant, number of fruiting points, bolls per plant, plant uptake and available soil N, P and K of Bt cotton were significantly increased by the drip fertigation treatments. Application of 150 per cent RDF as drip fertigation combined with biofertigation of liquid formulation of azophosmet @ 250 ml (10^{12} cells ml^{-1}) ha^{-1} registered the highest seed cotton yield of 3395 kg ha^{-1} and was significantly superior over control. Biofertigation significantly increased seed cotton yield and a progressive increase in seed yield was noticed with increasing levels of NPK fertilizer application. Application of nutrients through drip fertigation improved seed cotton yield by 43.0 per cent compared with conventional surface irrigation with soil surface application of fertilizers. The nutrient uptake pattern and post harvest soil fertility status also followed similar trend and confirmed the significance of drip fertigation with biofertilizers.

Keywords: Available soil nutrients; Cotton; Plant uptake; Yield attributes and yield.