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Influence of one or two Bt genes transgenic cotton free living nitrogen fixers and p-solubilising microorganisms in vertisols and alfisols

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India, the largest cotton grower in the world benefited from the cultivation of genetically modified Bt transgenic cotton. Bt cotton with the single gene (cry 1Ac) contributed to increased productivity over the last eight years. But in the recent years, there has been an increasing trend to adopt two genes (cry 1Ac and cry 2Ab) transgenic cotton in India. The two gene Bt cotton hybrids were planted over a large area (57%) during 2009 than the single gene Bt cotton hybrids. In this context, the field experiments were conducted in farmers field in both Vertisols and Alfisols during monsoon season of 2009 to study the effect of a single gene Bt hybrid (RCH-2Bt, JK-99Bt, Mallika Bt, MRC-6918 Bt, Brahma Bt, RCH-708 Bt, Bunny Bt) as well as two gene Bt hybrids (RCH-2 BGII Bt, Bunny BGII Bt) compared with the non genetically modified (non-Bt) hybrid (DHH-11) on the population of free living nitrogen fixing microorganisms (Azospirillum and methylotrophs) and P-solubilizers in two different soil types under rainfed situation. Observations on microbial population were recorded at flowering and at harvest in both the soil types. Results indicated a higher population of Azospirillum, methylotrophs and P-solubilisers in the rhizosphere grown with single or two gene Bt hybrid and non-Bt hybrid at flowering stage in both the soil types. In Vertisol, significantly higher population of methylotrophs in MRC-6918 Bt (30 x 102/g of soil), P-solubilizers in RCH-2 Bt (31x103/g of soil) and Azospirillum in RCH-708 Bt (0.79 x 106 /g of soil) was recorded as compared to non-Bt hybrid DHH-11 (2 x 102/g of soil, 12 x 103/g of soil, 0.54 x 106/g of soil), respectively. Whereas, in Alfisol, significantly higher population of methylotrophs in RCH-2 Bt (13x 102/g of soil), P-solubilisers in JK-99 Bt (38 x 103/g of soil) and Azospirillum in RCH-2Bt (0.57 x 106/g of soil) was recorded over non Bt hybrid DHH-11 (2x 102/g of soil, 13x 103/g of soil and 0.17 x106/g of soil) respectively. Our results indicate no negative impact of Bt hybrids expressing single or two gene on the population of nitrogen fixers and P-solubilisers in rhizosphere soil. Variations in the population of the microorganisms observed among different Bt hybrids expressing single or two gene and non-Bt hybrid may be due to the genotype related effect rather than the cry toxins. However, impact of Bt hybrids expressing single or two gene on the population of the microorganisms in the rhizosphere soil over longer period needs to be investigated.