



Effect of herbicides on microbial activities and productivity of maize

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Abstract : A field experiment was conducted during *Kharif* season 2010 at Main Agricultural Research Station, University of Agricultural Sciences, Dharwad to study the effect of herbicides on soil respiration, dehydrogenase activity and productivity of maize. The data on dehydrogenase activity and soil respiration revealed that at 60 and 90 DAS weed free check recorded highest dehydrogenase activity which was at par with sequential application of atrazine (0.75 kg ha^{-1}) followed by 2, 4-D (1.00 kg ha^{-1}) and post-emergent application of oxyfluorfen (0.25 kg ha^{-1}) but at harvest dehydrogenase and soil respiration activity was decreased. This was mainly due to the lesser microbial activity at the harvest and lesser herbicidal residual activity at this stage. At recommended dose of herbicides initially stimulates but subsequently inhibits the dehydrogenase and soil respiration activity. Plant height, number of green leaves, LAI and total dry matter production, grain yield, straw yield, test weight and harvest index was higher in atrazine ($0.75 \text{ kg/ha pre-em}$) followed by 2,4-D ($1.00 \text{ kg/ha post-em}$). Significantly higher net returns (Rs.72992.50) and benefit cost ratio (3.47) was recorded in atrazine ($0.75 \text{ kg/ha pre-em}$) followed by 2,4-D ($1.00 \text{ kg/ha post-em}$). Application of oxyfluorfen ($0.25 \text{ kg/ha post-em}$) at 20 DAS showed phytotoxic effect on crop.

Key Words : Herbicides, Soil respiration, Soil dehydrogenase, LAI, Yield, Maize

View Point Article : Shantveerayya, H., Agasimani, C.A. and Patil, C.R. (2013). Effect of herbicides on microbial activities and productivity of maize. *Internat. J. agric. Sci.*, **9**(2): 791-794.

Article History : Received : 16.03.2012; Revised : 24.04.2013; Accepted : 25.05.2013