

Dissipation of Tebuconazole in Cropland Soils as Affected by Soil Factors

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Abstract : Dissipation study of tebuconazole in alluvial, black and deep-black clayey soils collected from paddy, mango and peanut cropland of tropical agro-climatic zone of India at three concentration levels were carried out for monitoring the water contamination through persisted residual toxicity. The soil-slurry samples were analyzed by capillary GC-NPD methods followed by ultrasound-assisted extraction (UAE) technique and cleanup process. An excellent linear relationship between peak area and concentration obtained in the range 1 to 50 μgkg^{-1} . The detection (S/N, 3 ± 0.5) and quantification (S/N, 7.5 ± 2.5) limits were 3 and 10 μgkg^{-1} respectively. Well spiked recoveries were achieved from 96.28 to 99.33 % at levels 5 and 20 μgkg^{-1} and method precision (% RSD) was $\leq 5\%$. The soils dissipation of tebuconazole was fitted in first order kinetic-model with half-life between 34.48 to 48.13 days. The soil organic-carbon (SOC) content correlated well with the dissipation rate constants (DRC) of the fungicide Tebuconazole. An increase in the SOC content resulted in faster dissipation. The results indicate that the soil organic carbon and tebuconazole concentrations plays dominant role in dissipation processes. The initial concentration illustrated that the degradation rate of tebuconazole in soils was concentration dependent.

Keywords : cropland soil, dissipation, laboratory incubation, tebuconazole

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