



Persistence and degradation of pyrazosulfuron-ethyl in soils of Karnataka

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SUMMARY

Persistence of pyrazosulfuron-ethyl was studied in three different soils (Shimoga, Mandya and Chamrajanagar) of Karnataka under three moisture regimes (maximum water holding capacity, half maximum water holding capacity and submergence). The persistence of pyrazosulfuron-ethyl indicated a close correspondence to first order exponential degradation kinetics in soils and mainly influenced by soil organic matter and moisture. Faster disappearance was noticed under submergence followed by maximum water holding capacity and half maximum water holding capacity in all soils. Persistence of pyrazosulfuron-ethyl was lower in Shimoga soil followed by Chamrajanagar and Mandya under all moisture regimes. Half lives for pyrazosulfuron-ethyl under half maximum water holding capacity, maximum water holding capacity and submergence ranged from 74.6 to 85.5, 57.7 to 62 and 42.9 to 53.8 days, respectively.

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PPyrazosulfuron-ethyl (Ethyl 5- [(4, 6-dimethoxy-pyrimidin-2-yl carbamoyl) sulfamoyl]-1-methylpyrazole-4-carboxylate) is a newly introduced selective pre-emergence sulfonylurea herbicide effective against most annual grasses and broad-leaf weeds in crops like paddy, wheat, maize and some of vegetables.

Persistence of Pyrazosulfuron-ethyl in soils is influenced by various factors like soil moistures, organic matter content and microbial activity. A number of field studies conducted to know the fate of pyrazosulfuron-ethyl in soil.

The fate of any herbicide depends on its properties and that of soils to which it is applied, the present study undertaken to determine the persistence of pyrazosulfuron-ethyl in soils under three different moisture conditions namely maximum water holding capacity, half maximum water holding capacity and submergence.

EXPERIMENTAL METHODS

Surface soil samples from 0-15 cm depth were collected from Shimoga (sandy loamy *Ultic haplustalfs*),

Mandya (sandy clay loam *Typic rhodustalfs*) and Chamrajanagar (sandy clay loam *Typic Paleusterts*). The data on physical and chemical properties of these soils are presented in Table A.

Pyrazosulfuron-ethyl (technical purity-99% obtained from Sigma- Aldrich Labor chemikalien GMBH chemicals) was used in the present investigation.

Persistence of pyrazosulfuron-ethyl was studied in soils under three moisture regimes namely maximum water holding capacity, half maximum water holding capacity and submergence. Twenty gram of each soil samples were weighed in to 50 ml test tubes and the herbicide rate of application $10 \mu\text{g g}^{-1}$ in acetone medium. After thoroughly mixing soil with herbicide, the moisture level was maintained at half maximum water holding capacity, maximum water holding capacity and submergence. Submergence was achieved by maintaining two centi meter water column over the soil surface. The weight of each test tube was recorded for periodic adjustments of water content. Test tubes were incubated in incubator. Duplicate tubes were removed for estimation

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