

The kinetic behaviour of Difenoconazole fungicide in the Clay loam soil using High-Performance Liquid Chromatography

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Abstract

Pesticide contamination has become a central issue across the worldwide because of the overuse and misuse of pesticides in agricultural fields. The present study was conducted to explore the kinetic behaviour of Difenoconazole in the clay loam soil. This investigation has been performed using High-Performance Liquid Chromatography (HPLC). The results demonstrated that Difenoconazole is subjected to the first order model, registering 0.01 Mg kg^{-1} as a rate-breaking dawn constant K , compared to the second order that has recorded 0.015 mg kg/mins . In contrast, the distribution coefficient of Difenoconazole reached 1.53 mL g^{-1} . This indicates that Difenoconazole has a high ability to move between the soil and its aqueous. Interestingly, According to the model study, has been observed that Difenoconazole followed the Langmuir model instead of the Freundlich model. The aL/KL value was 0.166 and the bF value was 0.159. This indicates that Difenoconazole moves on the non-regulator surface. Based on the Langmuir model, it takes 55.9 minutes for the first reaction order and 642 minutes for the second reaction order to degrade 50% of the initial concentration.

Keywords: Difenoconazole, Distribution Coefficient, First-order kinetic, Freundlich Isotherm, Langmuir Isotherm.