Behavior of flubendiamide insecticide in grapes and soil

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Flubendiamide (3-iodo-N’-(2-mesyl-1,1-dimethylethyl)-N-{4-[1,2,2,2-tetrafluoro-1-trifluoromethyl)ethyl]-o-tolyl} phthalamide), is a novel insecticide belonging to the chemical class of phthalic acid diamides. It controls lepidopteron pests on grapes which causes immense damage to the crop. Flubendiamide application was given at 48 and 96 g a.i./ha to study its behavior by conducting supervised field trials as per good agricultural practices at IIHR, Bangalore. Flubendiamide treated grapes samples were extracted and purified using modified QuEChERS analytical method with validation studies which included limit of detection (LOD), limit of quantification (LOQ) and measurement uncertainty (MU), recovery, linearity, accuracy/precision etc. The results of method validation showed that the analytical method used was fit for purpose with satisfactory recovery between 82.5-100.3%. The standard curve was linear in the range of 0.015-1.0 ppm, LOQ 0.05 mg/kg, MU in the range of 10.3-15.8 %. The initial residues of flubendiamide on grapes were 3.967 and 5.843 mg/kg, respectively from the recommended single and double dose treatments which dissipated with the half-life of 15.6 and 15.7 days. The pre-harvest interval for safe consumption of grapes was 17.3 and 25.7 days. The experimental field soil had residues of 1.967 and 2.9 mg/kg which decreased gradually. At harvest the residues of flubendiamide were below the maximum residue limit (MRL) of 2 mg/kg. Des-iodo flubendiamide, the major metabolite of flubendiamide, was not detected in grapes or soil. Hence flubendiamide application may result in prolonged control of lepidopteron pests of grapes due to its long persistence, but result in residue level below the permissible limit at harvest.

Biography

Radhika B completed her MSc (Bio-chemistry) in 2010 at M. S. Ramaya College of Arts, Science and Commerce, Bangalore. Currently she is working as Research Associate under the scheme “Monitoring of pesticide residues at national level” under Dr. Soudamini Mohapatra (Principal Scientist) at Indian Institute of Horticultural Research, Bangalore from 2011 till date. She registered for PhD in the year 2013 under the guidance of Dr. Soudamini Mohapatra (Principal Scientist). Currently she is working on “Studies on the persistence and dissipation of flubendiamide on capsicum (Capsicum annuum L), Grape (Vitis vinifera) and soil”.

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