Determination of Tetraconazole and Diniconazole Fungicide Residues in Tomatoes and Green Beans by Capillary Gas Chromatography

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Abstract

A sensitive gas chromatographic method using an electron-capture detector (ECD) has been developed for the determination of tetraconazole and diniconazole fungicide residues in tomatoes and green beans. The developed method consists of extraction with methanol, partition with methylene chloride, and column chromatographic clean-up, followed by capillary gas chromatographic determination. The recoveries of both fungicides were greater than 90% for both plant samples. The limits of determination of the method were 0.001 ppm for both fungicides. The method was applied to determine residues and the rate of disappearance of tetraconazole and diniconazole from tomatoes and green beans [open field treatment, 50 cc of Domark 10% EC (emulsifiable concentrate), and 35 cc of Sumi-eight 5% EC; both for 100 l of water]. The fungicides incorporated into the plants decreased rapidly with a half-life around 3 days for diniconazole and from 4.5 to 6.5 days for tetraconazole. No residues could be detected in the plants during the period of study of 21 days after field application. Hence, the plants could be used safely after that period of time.

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