

5.2 BIFENAZATE (219)

RESIDUE AND ANALYTICAL ASPECTS

Bifenazate was evaluated by JMPR as a new compound in 2006. Trials on citrus fruits, eggplant, and tea had been provided for evaluation by the 2006 JMPR in summary form only and therefore could not be evaluated. Translations of the original Japanese reports on these commodities and the Japanese label have been submitted to the 2008 JMPR for evaluation.

Methods of analysis

The analytical methods used in the supervised trials in Japan either determined bifenazate and bifenazate-diazene together or separately. In the first case, the samples were extracted with acetonitrile/hydrochloric acid solution and the converting bifenazate-diazene metabolite was converted to bifenazate by 1% ascorbic acid. The concentrated extract was sequentially cleaned on three columns and detected with HPLC fluorescence. In the second case the residue components were separated with column chromatography. Bifenazate or bifenazate-diazene residues were determined by HPLC with fluorescence detection. The concentration of bifenazate-diazene was calculated as parent compound equivalent based on molecular mass ratios. The recoveries at the spiking levels of 0.5 mg/kg for citrus pulp, 1 mg/kg for citrus peel, 0.5 mg/kg for eggplant, and 2.5 mg/kg for tea were within the acceptable range (70–110%). The reported LOQs were 0.01 mg/kg for citrus pulp and eggplant, 0.02 mg/kg for citrus peel and 0.05 mg/kg for tea leaves. Data were not provided for validation of the reported LOQs.

Results of supervised residue trials on crops

The translations of supervised trials conducted in Japan on citrus fruits (mandarins, natsudaidai and limes), eggplant and tea were submitted to the Meeting.

Citrus fruits

A total of six supervised trials on citrus fruits, two on mandarins, two on natsudaidai (shaddock or pomelo subgroup) and two on limes were conducted with a 200 SC formulation of bifenazate in different experimental stations in Japan during 1997, according to the Japanese GAP (0.02 kg ai/hL, 7-day PHI). Samples were taken at 7, 14, 30 and 45 days after a single treatment to each plot. Duplicate samples were analysed for the combined residues of bifenazate and bifenazate-diazene, and also for the individual residue components. The results obtained with the two methods were found to be comparable.

The largest residue value, expressed on a whole fruit basis from each site, were 0.46 and 0.69 mg/kg for mandarin, 0.23 and 0.31 mg/kg for natsudaidai, and 0.26 and 0.3 mg/kg for lime.

The corresponding residues in the pulp of mandarins and natsudaidai were 0.01, 0.02, 0.02, and 0.01 mg/kg. In lime pulp residues were not measured.

The trial results demonstrate that the residues are primarily concentrated in the peel of citrus fruits. For mandarins and natsudaidai the median of ratios of residues in whole fruit and pulp and whole fruit and peel were 0.0315 and 3.655, respectively.

The Meeting noted that the residues on different citrus commodities were similar regardless of the size of the fruits. However, six trials in total were considered insufficient to estimate maximum residue levels and STMR values for the citrus group.

Eggplant

Supervised trials on eggplant were conducted at two experimental stations in Japan in 1997 and in 2000 complying with Japanese GAP (one application at 0.02 kg ai/hL and a 1-day PHI). The highest residues from duplicate analyses obtained by the two laboratories were 0.53 and 0.55 mg/kg. The 2006 JMPR evaluated residues in tomatoes, bell and non-bell peppers, but was not able to estimate a group MRL due to marked differences in residue levels for the different commodities. The present Meeting concluded that two additional residue trials on eggplants were insufficient to estimate maximum residue level or STMR values alone or for recommending a group MRL.

Tea, dry

Supervised trials on tea were conducted during 1998 at two experimental stations in Japan, following the Japanese GAP (one application with 0.02 kg ai/hl and 14-day PHI). The residues declined rapidly. The largest residue values in dried tea leaves reported from the two sites at day 14 were 0.47 and 0.82 mg/kg.

The Meeting concluded that data from two trials was insufficient for the estimation of maximum residue level and STMR values.

Fate of residues during processing

A study on brewing tea from dried treated tea was provided for evaluation.

Tea was prepared by mixing 6 g dried leaves with 360 mL of 100 °C water for 5 minutes. The tea extract did not contain detectable residues above 0.05 mg/L.

The median transfer factor calculated from the individual residue data is 0.216 mg/kg.