5.4 BUPROFEZIN (173)

RESIDUE AND ANALYTICAL ASPECTS

The insecticide buprofezin was first evaluated by the JMPR in 1991 and under the Periodic Re-evaluation Programme in 2008 when an ADI of 0–0.009 mg/kg bw and an ARfD of 0.5 mg/kg bw were established. The residue definition for compliance with the MRL and estimation of dietary intake in plant commodities is buprofezin.

Buprofezin was scheduled by the 47th Session of the CCPR for the evaluation of additional uses by the 2016 JMPR. Residue data were submitted to the present Meeting on basil by the government of Thailand and on mango, papaya and soya bean by the company.

Methods of analysis

A GC-NPD method for determination of buprofezin in papaya involved extraction with acetone, acidification, partitioning with hexane, with further partitioning of the residues in the aqueous phase partitioned into dichloromethane before analysis. The lowest validated level was 0.05 mg/kg.

LC-MS/MS methods were validated for the analysis of buprofezin in mango and soya bean. The sample is extracted with acetonitrile and a salt-mixture and quantification was performed using either the ion m/z: 306 → 201 or 306 → 116. The method LOQ was 0.01 mg/kg.

In a GC-ECD method for determination of buprofezin in soya bean, the sample was extracted with dichloromethane and cleaned-up on deactivated florisil. The method was validated at an LOQ of 0.02 mg/kg.

A summary report of recovery data of an LC-MS/MS method for the analysis of buprofezin in basil was provided. Mean recoveries at 0.05 to 10 mg/kg levels ranged from 88 to 96% (n = 6 at each level), with % RSD < 7% in all cases.

Stability of pesticide residues in stored analytical samples

A storage stability study was provided for papaya fruit samples fortified with buprofezin at 2 mg/kg showing that residues were stable for 220 days at -20 °C.

No storage study was provided on soya bean.

Results of supervised residue trials on crops

Mango

In Brazil, GAP for buprofezin on mango is 3 applications at 0.05 kg ai/hL and 7 days PHI. In four trials conducted in Brazil according to GAP, residues in the whole fruit were 0.01 (2), 0.02_and 0.05 mg/kg.

The Meeting confirms its previous recommendation (2008) of a maximum residue level of 0.1 mg/kg for buprofezin in mango.

In Brazil, GAP for buprofexin on avocado is 3 applications at 0.05 kg ai/hL and a 7 day PHI. The meeting agreed to extrapolate the recommendation on mango to avocado along with an STMR and HR of 0.01 mg/kg.

Papaya

Buprofezin is registered in the USA to be used at 0.63 to 0.84 kg ai/ha, with a maximum of 5 applications or 3.2 kg ai/ha per season, and 3 days PHI. Two independent trials were conducted in the USA in 2004 using 5 × 0.43 kg ai/ha, giving residues of 0.50 and 0.65 mg/kg at 3 days DAT. The rate corresponds to 67% of the maximum rate per season. Applying the proportionality principle, the residues estimated if the trials were conducted according to the maximum GAP would be 0.75 and 0.97 mg/kg, respectively.

The Meeting agreed that two trials are not sufficient to estimate a maximum residue level for buprofezin in papaya.

Soya bean

Buprofezin is registered in Brazil to be used at 3 × 0.25 kg ai/ha and a 20 day PHI. In eight rials conducted in the country according to 2 × GAP (3 applications at 0.50 ai/ha), residues were < 0.01 (4) and < 0.02 mg/kg (4). Residues in samples harvested at 10 days DAT gave the same results.

The Meeting estimated a maximum residue level of 0.01* mg/kg and an STMR of 0.01 mg/kg for buprofezin in soya bean.

Basil

Buprofezin is registered on basil in Thailand at 2 × 0.08 kg ai/hL and a 7 day PHI. In three independent trials conducted in the country according to GAP, residues were 0.017, 0.45 and 0.72 mg/kg.

The Meeting estimated a maximum residue level of 1.5 mg/kg, an STMR of 0.45 mg/kg and an HR of 0.72 mg/kg for buprofezin in basil.

Residues in animal commodities

The estimation of residues of buprofezin in the crops considered by the current Meeting does not impact on the previous recommendations for residues in animal commodities made by the 2008 JMPR

RECOMMENDATIONS

On the basis of the data obtained from supervised residue trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for IEDI and IESTI assessment.

DIETARY RISK ASSESSMENT

Long-term dietary exposure

The IEDI of buprofezin based on the STMRs estimated by the 2012 JMPR Meeting for the 17 GEMS/Food cluster diets were up to 40% of the maximum ADI of 0.009 mg/kg bw. The STMRs estimated for soya bean, avocado and basil made by the current Meeting did not change the previous conclusion that the long-term dietary exposure to residues of buprofezin is unlikely to present a public health concern

Short-term dietary exposure

The ARfD for buprofezin is 0.5 mg/kg bw. The International Estimated Short-Term Intake (IESTI) of buprofezin for the commodities for which STMR, HR and maximum residue levels were estimated by the current Meeting. The results are shown in Annex 4. The IESTI represented a maximum of 0.2% of the ARfD. The Meeting concluded that the short-term dietary exposure of buprofezin residues, from uses considered by the current Meeting, was unlikely to present a public health concern.