

5.26 MALATHION (49)

RESIDUE AND ANALYTICAL ASPECTS

The JMPR evaluated malathion residues for the first time in 1966, and several times thereafter. The compound was evaluated within the periodic review programme in 1999, and the residue was defined as malathion for compliance with MRL values as well as for consumer dietary intake assessment. An ADI of 0–0.03 mg/kg bw and an ARfD of 2 mg/kg bw were established by the 1999 and 2005 JMPRs, respectively.

The manufacturer provided current US labels for ground and aerial application of malathion on sweet and tart cherries, and resubmitted the reports of supervised trials conducted in 1993 in the USA at higher rates than permitted by the present US GAP, to be evaluated applying the proportionality concept adopted by the Thirty-sixth Session of CAC. No new information was provided.

Results of supervised residue trials on crops

The present US GAP specifies a maximum 4 ground treatments of cherries at 3 day intervals, a maximum dose rate of 1.96 kg/ha with a PHI of 3 days. The compound may be used for aerial application four times at seven days intervals on sweet cherries and six times on tart cherries at a maximum dose rate of 1.37 kg ai/ha with a PHI of 1 day.

Supervised trials were conducted in USA in 1993. The sweet and tart cherry plots were treated 6 or 7 times with an EC formulation at 4.2 kg ai/ha rate by foliar ground application 7 days apart. Samples were collected at 3, 7 and 14 days after the last application.

The residues in whole sweet cherries at a 3-day PHI were: 0.26, 0.45 and 1.2 mg/kg.

The residues in whole tart cherries at a 3-day PHI were: 1.1, 1.6 and 2.6 mg/kg

At the same geographical locations the cherry trees were aeriaily treated 6 times with an ULV formulation at a rate of 1.37 kg ai/ha 7 days apart. Samples were collected at 1, 4, 7 and 14 days after the final application.

The residues in whole sweet cherries at a 1-day PHI were: 0.02, 0.17 and 0.19mg/kg.

The residues in whole tart cherries at a 1-day PHI were: 0.03, 0.34, 0.47 mg/kg.

The Meeting noted that the last 3 ground treatments were carried out at 4.2 kg/ha rate in all trials and the early applications with 8.96 kg ai/ha did not affect the residues in harvested fruits, as the residues derived from these trials were within the residue ranges observed in other trials. As a result the Meeting agreed to apply the proportionality approach to the data set.

The residues following ground treatments were adjusted with the proportionality factor of $1.96/4.2=0.467$. This resulted in residues in sweet cherries of 0.12, 0.21 and 0.56 mg/kg, and in tart cherries of 0.51, 0.75 and 1.21mg/kg.

The Meeting noted that the aerial treatment resulted in lower residues in both commodities than the ground application, and that tart cherries contained higher residues than the sweet cherries. Since the highest and lowest residue values in the datasets overlapped the Meeting decided to use the residue data derived from ground application to estimate maximum, median and high residues.

The combined residue data in cherries in rank order were: 0.12, 0.21, 0.51, 0.56, 0.75 and 1.21 mg/kg.

The Meeting considered that residues in sweet and tart cherries properly represent various cherry fruits and estimated a median residue of 0.535 mg/kg, a HR of 1.21 mg/kg and a maximum residue level of 3 mg/kg for cherries.

RECOMMENDATIONS

On the basis of the data from supervised trials, the Meeting concluded that the residue levels listed below are suitable for establishing maximum residue limits and for IEDI assessment.

Definition of the residue (for compliance with the MRL and for estimation of dietary intake) for plant and animal commodities: *malathion*.

The residue is fat soluble

DIETARY RISK ASSESSMENT

Long-term intake

The evaluation of malathion resulted in recommendations for MRL and STMR values for cherries. The results are shown in Annex 3. The International Estimated Daily Intake for the 13 GEMS/Food diet based on estimated STMR value was up to 0% of the maximum ADI of 0.03 mg/kg bw. The Meeting concluded that the long-term intake of residues of malathion from cherries is unlikely to present a public health concern.

Short-term intake

The International Estimated Short-term Intake (IESTI) for malathion was calculated for cherries for which maximum residue levels and STMR values were estimated. The results are shown in Annex 4. The IESTI was 0% of the ARfD (2 mg/kg bw).

Meeting concluded that the short-term intake of residues of malathion resulting from its use on cherries is unlikely to present a public health concern.