RESULTS AND DISCUSSION

Many organophosphorus compounds despite their low persistence exhibit higher mammalian toxicity and their presence in food supply have raised issues related to consumer safety (Caulibaly and Smith, 1994). Suresh and Raghupathy (1998) have studied the residual toxicity of systemic insecticides in banana plants. They noticed the presence of residues from 1.29 to 11.31 µg.g⁻¹ in different parts (Kaur et al. 2001), analyzed twenty market samples of muskmelon for the presence of organophosphorus insecticide residues. They observed very low residue level. Reddy et al. (2000), reported the monocrotophos residues above MRL (0.2mg/kg) in the market samples of grapes. Residues ranged from 0.6748 to 1.3648mg/kg chloropyriphos and quinolphos also recorded residues more than permissible limits in Thomson seedless grapes.

A number of vegetables have been found contaminated with insecticides and fungicides. Shah et al. (2000) have detected the pesticide residues in cauliflower, cabbage, bean, tomato, okra, pigeon pea, chilli, potato, cluster bean, bottle gourd, cow pea, bitter gourd, pointed gourd, etc. from Gujarat. From the above vast list it is clear that, almost all the vegetables contained pesticide residues. An attempt was made to study the persistence of methylparathion and phosphamidon in the vegetables, particularly guar fruits and onion bulbs with leaves (Table-1). Analysis was made after 7 days of sprays of Methylparathion 0.2% and Phosphamidon 0.06% on guar and onion plants. The reports of analysis show the presence of 0.22 mg kg⁻¹ phosphamidon and 0.27 mg kg⁻¹ methylparathion in guar and 0.51 mg kg⁻¹ phosphamidon and 1.70 mg kg⁻¹ methylparathion in onion.
Table 1. Dissipation of organophosphorus pesticides in vegetables after 7 days of spray.

<table>
<thead>
<tr>
<th>Name of plant</th>
<th>Parts</th>
<th>Treatment</th>
<th>Method of analysis</th>
<th>Result of analysis</th>
<th>MRL mg Kg(^{-1})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guar</td>
<td>Fruits</td>
<td>Methylparathion 0.2%</td>
<td>GLC-ECD</td>
<td>0.27</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phosphamidon 0.06%</td>
<td>LC-MS</td>
<td>0.22</td>
<td>0.2</td>
</tr>
<tr>
<td>Onion</td>
<td>Bulb and leaves</td>
<td>Methylparathion 0.2%</td>
<td>GLC-ECD</td>
<td>1.70</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phosphamidon 0.06%</td>
<td>LC-MS</td>
<td>0.51</td>
<td>0.2</td>
</tr>
</tbody>
</table>

MRL : Maximum Residual Limit  
GLC-ECD : Gas Liquid Chromatography - Electron Capture Detector  
LC-MS : Liquid Chromatography - Mass Spectrometer

This result showed that, their dissipation was faster in guar as compared to onion. Their residues were found very high in onion after 7 days of spray. In guar it was slightly higher than MRL. According to WHO$^3$ the MRL for phosphamidon and methylparathion is 0.2 mg Kg\(^{-1}\).

Thus, there is a faster rate of degradation of residues in the fruits of guar. This may be attributed to the growth dilution factor, i.e. faster rate of increase in size of the guar fruits in the initial period (Chinniah, 2000). Hence, a waiting period of 7 days is not sufficient for guar and onion. To safeguard the consumer interest the recommended dose and proper waiting period must be observed by the producer before marketing the farm produce.

REFERENCES


