CHAPTER-III

MATERIALS AND METHODS

The procedures used in the field experiment for the Present investigations are described briefly under the following appropriate:

3:1 Experimental Site:

For the investigation on the role of whitefly (Bemisia tabaci Germ.) transmitting leaf curl virus disease of tomato (Lycopersicon esculentum Mill.) and its management the Experiments were conducted at insectary, Department of Entomology, C.S. Azad University of Agriculture and Technology, Kanpur. The Experiments on the screening of varieties strains of tomato and the evaluation of effective as well as economical control measures against whiteflies and leaf curl virus disease were laid out under field conditions during kharif 2008-2009.

3:2 Geographical Situation:

C.S. Azad university of Agriculture and Technology Kanpur is situated in subtropical zone, falling between $25^0 - 26'$ and $26^0$) 58'north longitude and $79^0 31'$ and $80^0 34'$ east latitude.

The height of the place where the experiments were planned is about 125.90 metres above sea level. The average rainfall obtained mostly From first week of July to middle of October is about 807.30 mm. with a few showers in winter season,
3.3 Soil:

The soil of experimental field was sandy loam with average fertility level. The topographical condition was homogenous and soil of the test plots was well drained and under regular cultivation of pulses, vegetables and oil seed crops. and soil of the test plots was well drained and upper regular cultivation of pulses, vegetables and oil seed crops.

3.4 Preparation of land

Before transplanting, the experimental field was prepared by ploughing twice which desi plough and once by cultivator, each followed by planking to have a smooth and leveled the field.

3.5 Experiment 1: Screening of tomato varieties / strains against Whitefly and Leaf curl Virus disease:

3.5.1 Treatments (Varieties / Strains):

The following varieties / strains of tomato were screened for observing their susceptibility / resistance against whitefly (Bemisia tabaci Genn) and leaf curl disease.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Varieties/ Strains</th>
<th>Symbol</th>
<th>S. No.</th>
<th>Varieties/ Strains</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>KS-24</td>
<td>V₁</td>
<td>8</td>
<td>KS-118</td>
<td>V₈</td>
</tr>
<tr>
<td>2</td>
<td>KS-21</td>
<td>V₂</td>
<td>9</td>
<td>KT-1</td>
<td>V₉</td>
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<tr>
<td>3</td>
<td>KS-17</td>
<td>V₃</td>
<td>10</td>
<td>Angoorlata</td>
<td>V₁₀</td>
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<td>7804</td>
<td>V₄</td>
<td>11</td>
<td>KS-115</td>
<td>V₁₁</td>
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<tr>
<td>5</td>
<td>8730</td>
<td>V₅</td>
<td>12</td>
<td>KS-131</td>
<td>V₁₂</td>
</tr>
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<td>KS-15</td>
<td>V₆</td>
<td>13</td>
<td>Azad T-2</td>
<td>V₁₃</td>
</tr>
<tr>
<td>7</td>
<td>KS-162</td>
<td>V₇</td>
<td>14</td>
<td>Azad T-3</td>
<td>V₁₄</td>
</tr>
</tbody>
</table>
Fig. 2: Layout Plan of the Field Experiment (Insectisidal Trial)
Effect of different treatments of insecticides on whitfly.

This insecticidal trial was conducted in the insectary, Department of Entomology, C.S. Azad Unit of Agricultural & Technology, Kanpur during kharif 2008-2009.

Insecticidal used:

1. Chlopyrifos
2. Dimethoate
3. Methyl-o-demeton
4. Phoshamidon
5. Phorate
6. Carbofuran
7. Endosulfan
8. Malathian

3:11 Observations:

The data on incidence of whitefly and leaf curl virus disease were recorded at an interval of 15 days starting from 15 days after transplanting upto 75 days to evaluate the relative susceptibility/resistance of various varieties/strains of tomato against the above pest and disease. The observations regarding whitefly population and percentage of plant infected under the influence of various treatments were collected one day and seven days after the application of each sprayings. In all three sprayings were performed with an interval of 15 days starting first just after 15 days of transplanting.
3:11:1 Whitefly:

The procedure for counting the population of whitefly (*Bemisia tabaci* Genn.) in this experiment was fallowed more or less similar to that of *Sastry* and *Singh* (1973c). Under this technique, five plants in each replication were selected at randomly at each observation. Out of these, three leaves from each plant, situated at different positions (i.e. one at top, one at middle and one at the bottom) were selected for this purpose. The attempts were made to take these observations in early hours of the day because the flies by nature are less active during this period. The number of insects on upper surface of leaf were counted at first and later on lower surface by gently turning the leaf.

3:11:2 Disease:

According to characterized symptoms of leaf curl disease, the number of infected plants were counted and their percentage against the healthy plants was worked out by a simple calculation formula i.e. number of infected plants / total number of plants observed x 100.