justifiable to conclude that the relative amount of aromatic amino acids and sulphur containing amino acids are the determining factors for resistance rather than the mere quantity of soluble nitrogen in the greengram X. campestris pv. vignaeradlatae interaction.

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\cite{3} Dementides, S. D. Nature 177 : 95-98, (1956).

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Evaluation of chemicals for the control of citrus canker

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Citrus canker caused by Xanthomonas campestris pv. citri (Hasse) Dye, is one of the common and important diseases of citrus in India. Almost all the orchards in the country harbour this disease in varying degree of severity. The experiments were conducted during 1979 and 1980 to find out some chemical (s) which may be used to control the disease from the beginning of the plant growth in the orchards and the results have been reported herein.

Acid lime plants were grown and maintained following standard horticultural practices. During 1979 five chemicals namely, Bordeaux mixture (5 : 5 : 50), and four antibiotics viz., paushamycin, agrimycin—100, streptocycline and plantomycin each at 500 ppm were used while during 1980 paushamycin was deleted and five more treatments i. e. bacvisin (0.1 per cent), Bordeaux mixture in combination with bacvisin, streptocycline, agrimycin—100 and plantomycin were also included in the experiment.
Three year old plants were sprayed with the chemicals on 5th Feb., 5th and 20 July and 4th Aug., during both the years. The disease severity was recorded before every spray and one month after the last spray in the 0-5 scale where, 0 = free, 1 = 1-10 per cent leaf area infected, 2 = 10-25 per cent leaf area infected, 3 = 25-50 per cent leaf area infected, 4 = 50-75 per cent leaf area infected and 5 = 75-100 per cent leaf area infected.

The results on the effect of different chemicals on the severity of citrus cranker showed that during 1979 the maximum disease control over check was recorded on streptomycin sprayed plants followed by pausamycin, plantomycin, Bordeaux mixture and agrimycin —100 (Table 1). The differences in the disease indices of plantomycin were non-significant with that in pausamycin and Bordeaux mixture. During 1980 all the treatments significantly reduced the disease but the minimum disease developed on Bordeaux mixture + streptomycin sprayed plants followed by streptomycin which were at par with each other. The next effective treatments were Bordeaux mixture + plantomycin, agrimycin —100, and Bordeaux mixture + agrimycin—100, which showed non-significant differences among themselves. The remaining treatments were less effective in reducing the disease (Table 1).

**Table 1 : Effect of different chemicals on the severity of citrus cranker.**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Average disease index (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1979</td>
</tr>
<tr>
<td>Plantomycin</td>
<td>*7.8 (16.17)</td>
</tr>
<tr>
<td>Agrimycin—100</td>
<td>13.7 (21.78)</td>
</tr>
<tr>
<td>Pausamycin</td>
<td>4.9 (12.88)</td>
</tr>
<tr>
<td>Streptomycin</td>
<td>1.3 ( 6.82)</td>
</tr>
<tr>
<td>Bordeaux mixture</td>
<td>11.3 (19.62)</td>
</tr>
<tr>
<td>Bavistin</td>
<td>—</td>
</tr>
<tr>
<td>Bordeaux mixture + Bavistin</td>
<td>—</td>
</tr>
<tr>
<td>Bordeaux mixture + Plantomycin</td>
<td>—</td>
</tr>
<tr>
<td>Bordeaux mixture + Streptomycin</td>
<td>—</td>
</tr>
<tr>
<td>Bordeaux mixture + Agrimycin—100</td>
<td>—</td>
</tr>
<tr>
<td>Check</td>
<td>27.9 (31.92)</td>
</tr>
<tr>
<td>C. D. at 5%</td>
<td>3.8</td>
</tr>
</tbody>
</table>

*Average of 3 replications (6 plants/replication).
Figures in the parentheses indicate the angular transformation values.
(—) Not tested.

Thus streptomycin at 500 ppm with 4 spray schedule was effective in reducing the disease during both the years of study and hence this can be used to protect the crop from the seedling stage. Earlier also the chemicals have been recommended for the control of the disease. Rangaswami et al. and Nirvan showed that streptomycin sulphate at 500 and 1000 ppm was effective in controlling the disease but presently
It is thus apparent that susceptible rice cultivars of early flowering duration or those planted from older seedlings resulting in early flowering are likely to be severely affected with glume blight.


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Effect of fungicidal control of leaf spot diseases of tomato on the quality of fruits

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Tomato crop is severely affected by two leaf spot diseases caused by Alternaria solani (Ell. and Mart.) Jones and Grout. and Septoria lycopersici Speg. Mancozeb and Captan were found to be highly effective in control of both these diseases increasing the yield. The leaf spot diseases are known to affect the quality of the produce67. The present studies were therefore undertaken to assess the quality of tomato fruits harvested from fungicide sprayed fields.

Two field trials were conducted during 1978-79 at Coimbatore and Bhavansagar (Tamil Nadu) using cultivar Co. I. Mancozeb and Captan were sprayed at 0.2 per cent for four times at 15 days interval commencing from one month after transplanting. The final disease intensity was assessed by grading 75 leaves from 25 plants selected at random into five categories (0,1,2,3,4) depending upon the intensity of infection. Per cent disease intensity was calculated as given below:

\[ \text{Per cent disease intensity} = \frac{\text{Sum of numerical ratings} \times 100}{\text{Total number of leaves assessed}} \times \text{Maximum disease category} \]

The data from the two field trials were pooled and mean of the two data is given in Table 1. Number of leaves fallen per plant, number of fruits per plant and yield of fruits per plant were recorded by selecting 100 plants in each treatment and replication. The data were statistically analysed. The fruits were harvested from these plots and samples were drawn by picking 50 fruits at random. All the fruits were pulped in a waring blender and the pulp was used immediately for the analysis of juice content, sugar and total soluble solids contents and titrable acidity and specific gravity by the standard methods3. Vitamin C4 and phenolics5 contents were also analysed. All the data presented are mean of the samples from the independent trials.

Both mancozeb and captan effectively controlled Alternaria and Septoria leaf spot diseases. These treatments reduced the defoliation and increased the fruit production. Weight of the fruits from the unsprayed plots was less compared to those from the fungicides treated plots. Juice content and specific gravity and titrable acidity of the juice were not much altered due to the diseases. The fruits from fungicides sprayed plots had significantly more sugars and vitamin C and less