THREE NEW HOST RECORDS FROM INDIA

While making a routine survey of parasitic fungi of District Jaunpur (U.P.) during 1975–76, senior author came across severe infections of leaves of *Lycopersicon esculentum*, *Carica papaya* and *Amorphophallus campanulatus* in the localities of village, Darana (Shahganj). The specimens were collected and examined for the identity of the fungi involved in leaf-spotting. The causal organism on *L. esculentum* and *C. papaya* were found to be *Cladosporium tenuissimum* Cooke and *Cladosporium cladosporeoides* (Fresen) De Vries respectively while that on *A. campanulatus* was found to be *Phoma tropica* Schneider and Boerema.

The identity of these fungi was confirmed from the Mycologists working at Commonwealth Mycological Institute, Kew, England where the materials have been deposited at IMI No. 211536, 211406 and 210487 respectively.

It has been observed that secondary parasites like *Cladosporium* can accelerate the process of damage and cause considerable loss to the plant produce. Both *Lycopersicon esculentum* and *Carica papaya* as well as the *Amorphophallus campanulatus* are plants of much economic value and in this remote part of Eastern U.P. where they are grown extensively, the secondary invasion of *Cladosporium* is posing a real threat to the growers.

A perusal of the literature revealed that there is no record on the occurrence of *Cladosporium cladosporioides* on *Carica papaya* *Cladosporium tenuissimum* on *Lycopersicon esculentum* and of *Phoma tropica* on *Amorphophallus campanulatus* and hence these host-parasite associations are new for India.

The authors are thankful to the Director, C.M.I., Kew, England, for confirming the identity of the fungi and Dr. G. C. Srivastava, Head, Botany Department, St. Andrew’s College, for facilities for the work.

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EFFECTS OF SOME SELECTED ANTIBIOTICS ON SOIL ALGAE

The use of antibiotics to control plant diseases is an important advance in the science of plant protection. In modern agricultural practices the crop fields are sprayed with antibiotics. During this operation some of these antibiotics do fall on the soil. The potential algicidal value of antibiotics have been investigated on aquatic algae or pure algal cultures by Job et al.,7 Hutner and Veigh8, Kumar9, Lampmen and Arnow10, Palmer and Maloney11, Zechner and Hughes12. They opined that algae are generally less sensitive towards antibiotics than bacteria and fungi. In the present investigation the authors made preliminary observations on the effects of four antibiotics on the soil algae of the field of Botanical garden, Institute of Science, Nagpur. The algal members present in the composite soil sample were studied by means of De’s modified benceck’s liquid culture medium. Twenty-seven algal taxa were observed. Out of these, first eighteen belong to Cyanophyceae and the rest to Chlorophyceae (Table I). Four antibiotics, Agromycin–100, Aureofungin, Tetracyclin–HCl and Streptocycline were used in five different concentrations, i.e., 100 ppm, 200 ppm, 300 ppm, 400 ppm and 500 ppm to study their effects on the survival of algae to evaluate their algicidal potential. Ten ml solution of the different concentrations of the four antibiotics were added to separate flasks containing 5 gms of soil sample and 190 ml of nutritive culture media. To the flasks serving as control, equal amount of sterilized water were added in place of the antibiotic solution.

The results are presented in Table II. It can be concluded that the soil algae were less sensitive towards
### Table I

Table showing total number of algal species present in the soil samples from the field of the Botanical Garden, Institute of Science, Nagpur

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Cyanophyceae</th>
<th>Sl. No</th>
<th>Chlorophyceae</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><em>Aphanocapsa roesena</em> de Bary.</td>
<td>1.</td>
<td><em>Chlamydomonas</em> sp.</td>
</tr>
<tr>
<td>5.</td>
<td><em>Oscillatoria subhrevis</em> Schmidele.</td>
<td>5.</td>
<td><em>Oedogonium</em> sp.</td>
</tr>
<tr>
<td>10.</td>
<td><em>Lyngbya martensiana</em> Menegh ex Gomont</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td><em>Lyngbya majuscula</em> Harvey ex Gomont</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td><em>Anabaena oryzae</em> Fritsch.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td><em>Anabaena</em> sp.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td><em>Aulosira implexa</em> Bornet. et Flahault.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td><em>Hapalosiphon welwitschia</em> W. et G. S. West.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table II

Table showing survival of algae in some selected antibiotics treatment

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Algal sp. Present in control soil</th>
<th>Agrimycin-100 Conc. part per million</th>
<th>Aureofungin Conc. part per million</th>
<th>Tetracyclin-HCl Conc. part per million</th>
<th>Streptocycline Conc. part per million</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>100 200 300 400 500</td>
<td>100 200 300 400 500</td>
<td>100 200 300 400 500</td>
<td>100 200 300 400 500</td>
</tr>
<tr>
<td>I.</td>
<td>Cyanophyceae</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II.</td>
<td>Chlorophyceae</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td><em>Chlamydomonas</em> sp.</td>
<td>A A A A A A A A A A A A A A P P P P P P A A A A A A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No. of algal species surviving: 6

Total no. of algal species surviving 27

P = Present  A = Absent
these antibiotics. Of these Agrimycin-100 was more effective than the rest. The Cyanophycean members were resistant to all the concentrations of the four antibiotics, with the sole exception of Aulosira impexa which was susceptible only in Agrimycin-100 treatment in higher concentrations.

The Chlorophycean members showed varying degrees of resistance to different antibiotics. Majority of the Chlorophycean members, e.g., Chlamydomonas sp., Oedogonium sp., Ulithrix sp., Spirogyra sp. and Closterium sp. were found to be very susceptible to higher concentrations of all the four antibiotics used, whereas Ulithrix sp., Protococcus vividis, Oedoceladium sp. and Chlorococcum hunicolo survived with all the concentrations of the antibiotics. The mechanism of action of antibiotics on algal cells is not clearly known. The lethal effects in some algal forms in higher concentrations of antibiotics may be due to disturbed metabolic stability on account of irreparable damage caused to DNA.

Botany Department,
Institute of Science,
Nagpur, April 18, 1978.

J. L. TARAR
D. B. KELKAR

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POLLEN DIMORPHISM IN THE HETEROSTYLED
SOLANUM MELONGENA LINN

Pollén dimorphism in the heterostylons genus Rudgea
(Rubiaceae) has been recorded as early as 1877 by
Darwin. Since then a number of Workers 1-4 described
pollen dimorphism associated with heterostyly.
Viullelumier 3 reported heterostyly in 26 angiosperm
families including Solanaceae. Köhler 5 in a very
comprehensive work described pollen dimorphism
associated with heterostyly in the genus Waltheria.

Material for the present work was collected from
Lucknow and pollen slides were prepared for longi-
stylos and brevistylos flowers separately by the
acetolysis method of Erdtman 6. For morphological
analysis about 1,000 pollen grains were examined.

Flowers in Solanum melongena are brevistylos and
longistylos.

Pollen grains of the species are normally 3-zono-
colporate (Fig. 1). Considering both the longi and
brevistylos forms, three more apertural types have
been found namely, 1-aperturate (Figs. 2 and 3), 2-
syncolporate (Figs. 4 and 5) and 6-pantocolporate
(Fig. 6) (3 equatorial and 3 mesocolp.)

Fig. 6 : 6. Pantocolporate.
Abbreviations ec—ectocolpium, en—endocolpium,
ek—ekteixine.

The 3-zonocolporate pollen grains are (PXE) 21–25 μ
× 27–31 μ; endocolpium lalongate (1-5 × 15 μ);
etoexine in the endocolpium region thick and conspicu-
cuously protruding and granulose exine surface.

In Solanum melongena the basic 3-zonocolporate
type is found in both the longi- and brevistylos
flowers. However, in the brevistylos forms, 92% of
grains are 3-zonocolporate, while 1-aperturate
(size range 12–14 μ × 14–17 μ) are 2%, also 2-syncolpo-
cerate (size range 12–21 μ × 14–28 μ) are 6% and the
6-pantocolporate (27–31 μ × 29–32 μ) are less than
0–5%, which are completely absent in the logistylos
flower type. In Waltheria Köhler 5 reported two abso-
lutely different morphotypes, the spinate and the
smooth (with greater number of apertures) in the
longistylos and brevistylos forms respectively.
Erdtman 6 observed larger and smaller grains in the
longistylos and brevistylos forms respectively in
Primula. Pollen dirmorphism is known to be associated