incubated under a constant temperature of 25 ± 2°C. In 2–4 weeks, shootlets from meristems of leaf axils and even of apical meristems were stimulated to grow. Growth of axillary buds was hastened and developed into bulblets in 6–8 weeks when benzyladenine (BAP) in the medium was doubled (4 mg/l) and the level of naphthaleneacetic acid (NAA) was kept constant (1 mg/l). A kinetin (KN, 2 mg/l) containing medium to which casein hydrolysate (CH, 400 mg/l) had been added as a source of reduced nitrogen, was conducive to bulblet formation. However, the same results could be obtained if the medium was reinforced with IAA (4 mg/l) even when supplemented with CH. In general, halved-bulb inoculum gave better results than quarters. The results could be summarized as follows:

<table>
<thead>
<tr>
<th>Medium (Hormone conc. in mg/l)</th>
<th>No. of Bulblets per half bulb</th>
<th>Roots</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS + BAP(0.5) + IAA(1) + GA₃(1)</td>
<td>(2–3)</td>
<td>–</td>
</tr>
<tr>
<td>MS + KN(2) + NAA(1)</td>
<td>(4–5)</td>
<td>–</td>
</tr>
<tr>
<td>MS + KN(2) + NAA(1) + CH(400)</td>
<td>(8–10)</td>
<td>+</td>
</tr>
<tr>
<td>MS + KN(2) + IAA(4)</td>
<td>(8–10)</td>
<td>+</td>
</tr>
<tr>
<td>MS + BAP(4) + NAA(1)</td>
<td>(8–10)</td>
<td>–</td>
</tr>
</tbody>
</table>

The various stages of bulblet development are represented in figures 1–3. Rooting could be induced in profusion on transfer of the whole clump to basal medium of half strength to which NAA was added at higher concentrations (2 mg/l) and with sucrose reduced to 1%. Each bulblet bearing roots could be grown independently in small paper cups, first with vermiculite and then with soil compost and the survival rate was 80%.

The foregoing experiments clearly demonstrate that this bulblet species has tremendous potential to regenerate under in vitro conditions. From a single bulb, as many as 15–20 bulblets could be raised capable of being rooted in vitro whereas in nature, not more than three or four shootlets could be obtained. Regenerative potential declined with subculture.

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A NEW LEAF SPOT OF CURCUMA LONGA IN SIKKIM

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_Turmeric_ (Curcuma longa) is an important cash crop in Sikkim. During Kharif 1981, the authors observed a devastating foliage disease of turmeric causing heavy damage to the crop. The disease was noticed in subsequent cropping seasons and in increasing proportions ranging between 25 and 30%.

Symptoms of the disease first appeared as water-soaked, translucent lesions on the leaves mostly near the leaf margin or tip. The lesions were irregular in shape and were surrounded by dark margins. Severely infected leaves looked blighted in appearance. On the lower surface of leaves, mousy growth was also observed.

The fungus was isolated on Potato dextrose agar medium and its pathogenicity proved by inoculating spore and mycelial suspension on healthy leaves. Symptoms appeared on the inoculated leaves within a week.

Microscopic and cultural studies helped to identify the causative fungus as _Phaeodactylum alpinae_ (Sawada) M. B. Ellis. Review of published literature indicated that the fungus has not earlier been recorded in the country from turmeric. Therefore this report constitutes a new record of _P. alpinae_ from India and also a new disease from the country. The diseased specimen and culture have been deposited in the Herbarium of CMI Kew, England under reference No. I. M. I. 276708.

The authors are grateful to the Director, CMI Kew, England for identification of the fungus.

10 November 1986; Revised 31 March 1987