EFFECT OF GROWTH SUBSTANCES ON THE SPROUTING BEHAVIOUR OF 'DORMANT APICES' OF *CERATOPHYLLUM DEMERSUM* LINN.

Ceratophyllum demersum Iinn., a submerged rootless aquatic, is commonly found in fresh water ponds, lakes and other stagnant water-bodies of India. The plant overcomes the adverse winter months by producing special type of perennating buds known as "Squamulae-intravaginales" or 'Dormant apices'[1]. Each bud consists of a cluster of dark-green apical leaves which are slightly more cuticularised than the foliage leaves. One of the sides of these leaves has several teeth (Fig. 1, E). The plant produces 'dormant apices' between the last week of October and the middle of November. On maturity the apices either remain attached to the parent plant or get detached and sink down to the bottom. In either case they remain dormant till the advent of spring season (February-March)[2]. In the present study an effort has been made to see the effect of various growth-promoting chemicals on the sprouting behaviour of these buds.

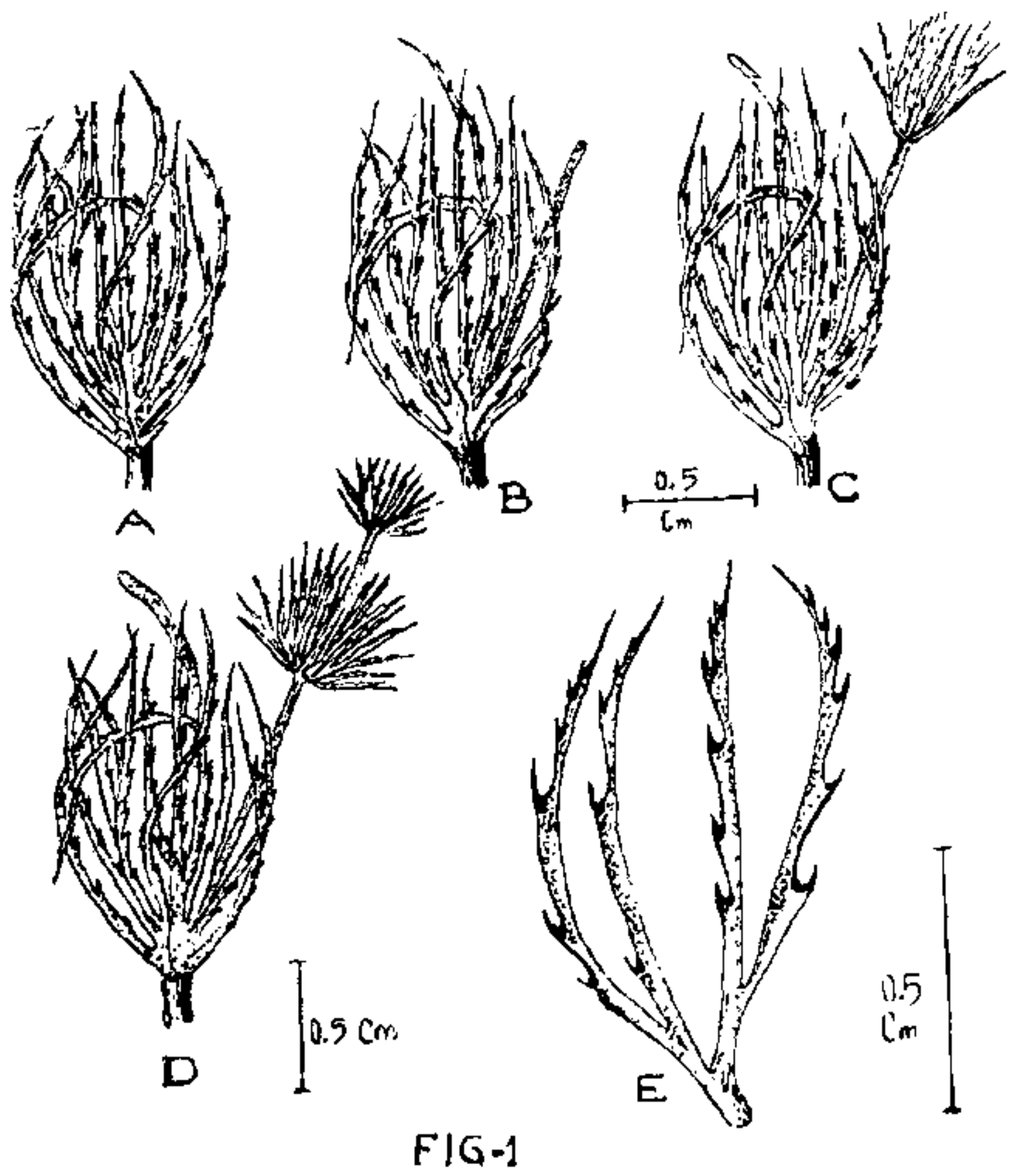

FIG-1

FIG. 1, A-D. Different stages of the sproutings of 'dormant apices' of *C. demersum* Linn.; E, A part of leaf showing teeth.

The mature apices were collected in second week of November, 1971 from 'Chilua Tal', a perennial pond in Gorakhpur (U.P.), India. They were thoroughly washed in running tap water and kept under normal laboratory conditions (temperature 20 ± 2° C) in glass troughs containing solutions of 1,000 ppm of IAA, 2, 4 D, urea, thiourea, sucrose and ½ sucrose + ½ urea for 12 and 24 hr durations (for each treatment twenty-five apices were taken). The observations for noting down the number of sproutings in each set were taken at a specific time on subsequent days and stopped when no further sprouting took place in any of the sets continually for 5 days. The different stages of sprouting are shown in Fig. 1, A-D. The percentage of sprouting was calculated as per method given by Sahai and Sinha[3] and is shown in Fig. 2.

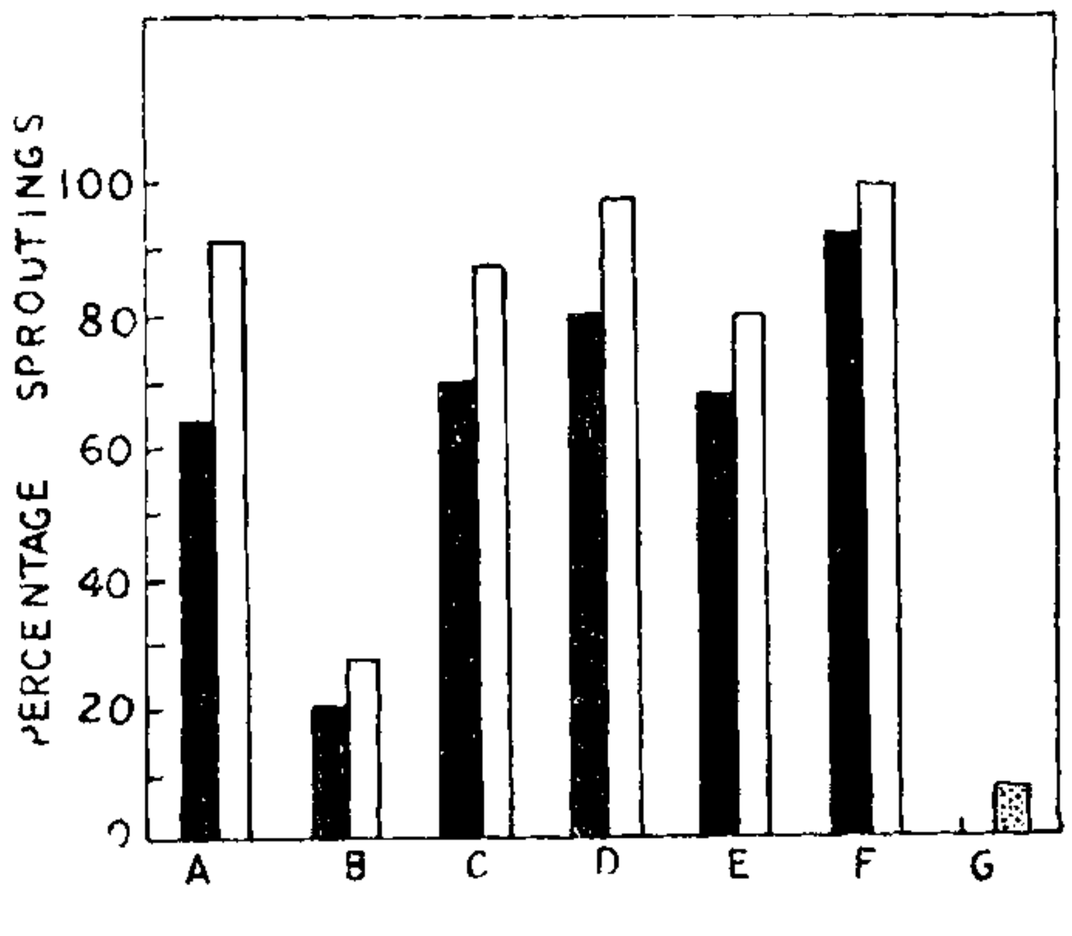

FIG. 2 A-G. Effect of the chemicals on the percentage sproutings of 'dormant apices' of *C. demersum* Linn. A, indole-3-acetic-acid; B, dichlorophenoxy-acetic-acid; C, urea; D, thiourea; E, sucrose; F, ½ sucrose + ½ urea and G, control (untreated). The black and white bars correspond to the percentage sproutings obtained after soaking in the different chemicals for 12 and 24 hrs.

The observations show that the 'dormant apices' of *C. demersum* are usually dormant at the time of their collection (percentage of sprouting being up to 8% only in the control set). As can be seen from Fig. 2 their dormancy is broken when they are treated with different growth-promoting chemicals for different durations. Cent per cent sprouting was noted in the set having buds soaked in a mixture of ½ sucrose + ½ urea for 24 hr. The duration of soaking invariably affects the percentage of sprouting as it was observed that the number of sproutings in the 24 hr soaking period were always more than in the 12 hr period (Fig. 2).

Frank[4] observed that the dormancy of winter apices in *Potamogeton nodosus* can be successfully split by soaking them in solutions of fenac, sucrose, IAA, NAA or GA. He got 100% and 76%

sprouting when he treated the apices with 1,000 ppm of IAA and sucrose for 18 hr respectively. Sahai and Sinha[3] reported up to 86% sprouting in *Potamogeton crispus* on treatment with 1,000 ppm of IAA solution for 24 hr. Whereas, in 1,000 ppm solution of thiourea, Frank[4] got only 31% sprouting with 18 hr treatment, Sahai and Sinha[3] got up to 100% with 24 hr treatment.

So far the authors are aware no work on the actual physiology of dormancy on the apices of *C. demersum* has been done. The present findings, however, indicate that dormancy in the freshly sampled apices of this species is probably due to the presence of certain natural inhibitors whose action is overcome by the use of growth promoting chemicals.

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A NEW RECORD OF *NEOCOSMOSPORA AFRICANA* v. ARX FOR INDIAN SOILS

DURING an investigation on soil fungi from grasslands of Jabalpur, India, the authors encountered a species of *Neocosmospora* which differed distinctly from frequently isolated type species *Neocosmospora vasinfecta* in having smooth walled ascospores. On comparison with a description given by Udagawa[1], the fungus was identified as *Neocosmospora africana* v Arx. Its cultural and morphological characters are as described below :

Colonies on potato dextrose agar growing rapidly, floccose, yellowish brown, producing abundant perithecia after a six day incubation at 28° C, reverse yellow orange. Mycelium composed of much-branched, septate, smooth, pale yellow hyphae 2·5–6·5 μ thick. Perithecia superficial, yellowish brown to brown, translucent, pyriform, bare excepting rhizoidal hyphae, 348·0–430·0 × 275·5–330·0 μ (Fig. 1, A). Asci cylindrical, hyaline, 8-spored, stipitate, 81·2–99·5 × 10·8–14·8 μ (Fig. 1, B). Paraphyses inconspicuous, simple, septate. Ascospores uniseriate, subglobose to ovoid, 10·5–12·4 × 9·9–12·7 μ, hyaline and with reticulate wall when young, becoming yellowish brown and almost entirely smooth-walled at maturity with germ pore obscure (Fig. 1, A and B).

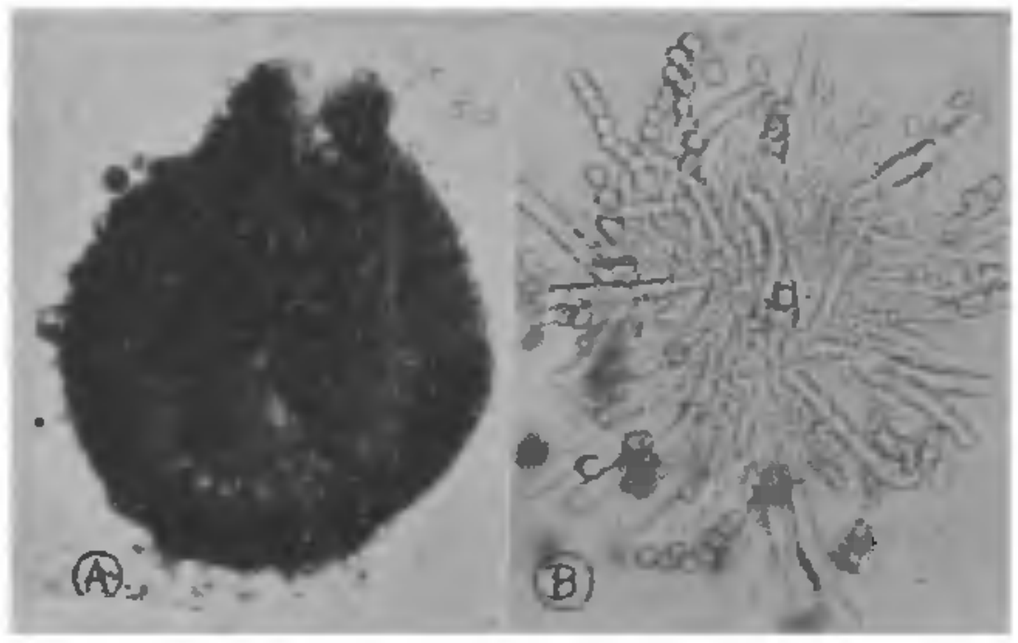

FIG. 1. *Neocosmospora africana* v. ARX. A, Perithecium, × 220; B, Asci and ascospores, × 350.

The present isolate differs slightly in the size of perithecia, asci and ascospores from the description given by Udagawa. However the presence of smooth-walled subglobose to ovoid ascospores undoubtedly places it in *N. africana*. Since the recognition of the species by v. Arx[2], *N. africana* has been reported only from Japanese soils. So far it has not been reported from India on any substrata. It is therefore the first record from the country.

The culture has been deposited to Indian Type Culture Collection, New Delhi No. 1647, and in the Herbarium H.C.I.O. 31187.

The authors are thankful to Dr. S. K. Hasija for examining the culture; to Dr. G. P. Agarwal for encouragement and to the Principal for the laboratory facilities.

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