

Sprouting Behaviour of the 'Dormant Apices' of *Potamogeton crispus* Linn.

Potamogeton crispus Linn., a submerged aquatic, is commonly found in fresh water ponds and puddles of India. The plant propagates and tides over the unfavourable winter months by producing specialized perennating organs called 'dormant apices'. Each apex normally consists of 3-6 axillary buds which are protected firmly by hard, toothed leaves quite unlike the normal foliage ones, which are lanceolate, translucent and undulate with crisp margins. They do not enfold themselves but stand out at a wide angle from the axis (Figure 1a). The plant starts producing these dormant apices towards the end of October and continues to do so till the end of November. After maturity, they get detached from the plant and sink down to the bottom, remaining dormant till the advent of summer months (May-June). In the present investigation, an attempt has been made to study the effect of various growth-promoting chemicals on the sprouting of these dormant apices.

The mature apices were collected in November 1967 from Ramgarh lake in Gorakhpur (U.P., India). They were washed in running water and kept in 1000 ppm solution of potassium nitrate, potassium dihydrogen ortho-phosphate, ammonium sulphate, thiourea and IAA for 12 and 24 h (for each treatment 50 apices were taken). Subsequently, after thorough washing, they were kept in glass troughs containing distilled water for sprouting under ordinary laboratory conditions (temperature $25 \pm 5^\circ\text{C}$). The visual detection of a young shoot from the axillary bud was taken as a criterion for sprouting. The observations in all sets were continued for 15 days and were stopped when no further sprouting took place continuously for 5 days after the specific period. The percentage sprouting was calculated as under: Percentage sproutings = $100 \times \text{total number of axillary buds sprouted} / \text{total number of axillary buds present (out of 50 apices)}$. The different stages of sprouting are shown in Figure 1a-d and the results obtained under different treatments in Figure 2a-f.

It is evident from Figure 2, that winter apices of *P. crispus* are really 'dormant apices' and the possibility of their very slow sprouting (up to 2.6%) as obtained in present observation, under control condition can be excluded. When they are soaked in growth-promoting chemicals they sprout up to 100% (in thiourea). The above experimental observation indicates that the dormancy in these apices can be broken by treating with the latter. Further, it was observed that soaking period of 24 h was the most suitable one for getting maximum percentage sproutings.

FRANK¹ reported that dormancy of the winter apices of *Potamogeton nodosus* could be successfully broken by soaking them in solutions of fenac, sucrose, IAA, NAA or GA₃. He got 100% sproutings when he treated the apices with 1000 ppm of IAA solution for 18 h. In *P. crispus*, however, only 86% sproutings were obtained in 24 h soaking with IAA solution.

The observations in the present study differ from the findings of ARBER² and SCULTHORPE³, who reported that the majority of winter apices of *P. crispus* do not need any dormant period for their sproutings.

On the actual physiology of dormancy in apices of *P. crispus*, little work has been done. The present observations, however, indicate that dormancy in freshly collected apices is probably due to the presence of certain natural inhibitors whose action is overcome by the use of growth promoting chemicals⁴.

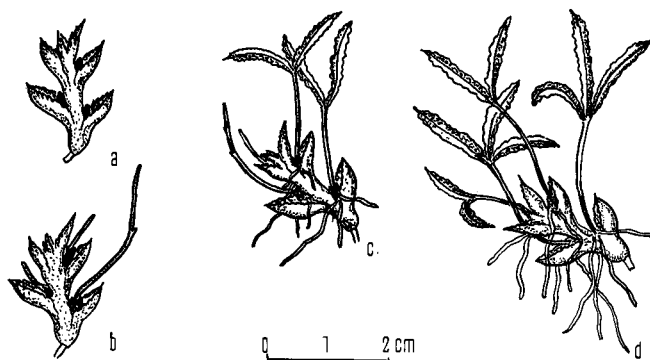


Fig. 1a-d. Different stages of the sproutings of 'dormant apices' of *P. crispus* Linn.

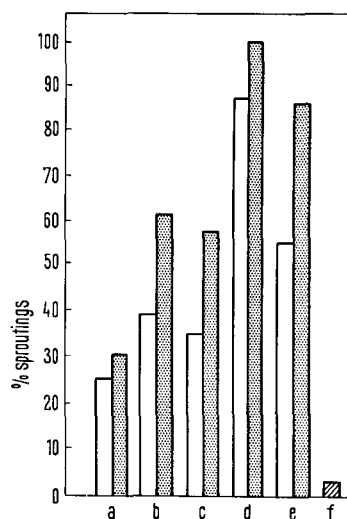


Fig. 2a-f. Effect of chemicals on percentage sproutings of the 'dormant apices' of *P. crispus* Linn. a, potassium nitrate; b, ammonium sulphate; c, potassium dihydrogen-ortho-phosphate; d, thiourea; e, indole-3-acetic acid and f, control (untreated). The white and black bars correspond to the percentage of sprouting obtained after soaking of 12 and 24 h in different chemicals.

Zusammenfassung. Winterknospen von *Potamogeton crispus* Linn. können durch Vorbehandlung mit Lösungen verschiedener Salze (Thioharnstoff, Indoleessigsäure) zum Keimen gebracht werden.

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Gorakhpur (U.P., India), 13 November 1968.

¹ P. A. FRANK, J. expl. Bot. 17, 546 (1966).

² A. ARBER, *Water Plants* (Cambridge 1920).

³ C. D. SCULTHORPE, *The Biology of Aquatic Vascular Plants* (Edward Arnold Publishers Ltd., London 1967).

⁴ We are thankful to Professor K. S. BHARGAVA for providing facilities and SHRI R. L. CHAUDHARY for his kind help in collection. The U.G.C. Scholarship is also acknowledged for providing financial assistance to one of us (A.B.S.).