Short Communication

Atsushi TAKIMOTO*, Yoshio TASHIMA** and Shun-ichiro IMAMURA* :
Effect of Temperature on Flower Initiation of *Pharbitis*
Nil Cultured *in Vitro*

滝本敦*・田島良男**・今村駿一郎*： アサガオの花芽形成におよぼす温度の影響

Received June 27, 1960

Tashima and Imamura reported previously that *Pharbitis Nil* cultured aseptically on a medium containing sucrose initiated flower primordia in total darkness. They came to the conclusion that the essential process leading to the formation of the flowering stimulus proceeded in the absence of light¹). In their experiment, however, flower initiation occurred at relatively low temperatures of 10–15° but not at 25–29°. This was attributed to the fact that the plants were exhausted, especially severely at high temperature, by etiolation, but no further attention was paid to the influence of temperature on flower initiation.

Seeds of *Pharbitis Nil*, strain Violet, sterilized with calcium hypochlorite, were sown in 18 mm. diameter test tubes on modified White's medium containing 5% sucrose and 0.75% agar. They were then subjected to three light conditions at 10°, 1) continuous light of ca. 3000 lux from fluorescent lamps, 2) short day consisting of an 8-hour period of light from fluorescent lamps and a 16-hour dark period, and 3) complete darkness. Three months after the start of the experiment, all dissected plants have produced not only axillary flower buds but also terminal flower buds, indicating that they had received strong flowering induction irrespective of the light condition to which the plants were exposed. In the comparable experiment at 20°, no plants under continuous illumination but all under short day condition initiated flower primordia. Plants cultured in total darkness at 20° were extremely etiolated, and flower buds were observed only on 15% of them.

Under continuous illumination the difference in flowering response due to different temperature is very obvious. At low temperature the plants seem to be insensitive to the inhibiting effect of light, which at high temperature suppresses flowering entirely.

Apart from temperature, sugar added to the culture medium seems to have a pronounced effect, as our preliminary experiment indicates. Whether the strong elongation of hypocotyl caused by etiolation, which is more striking at high temperature, has some influence on the flowering response or not, remains also to be investigated.

Reference

- 1) Tashima, Y., and Imamura, S., Proc. Japan Acad., **29**: 581 (1953).

* Laboratory of Applied Botany, Faculty of Agriculture, Kyoto University, Kyoto, Japan.
京都大学農学部応用植物学研究室

** Laboratory of Forestry, Department of Agriculture, Kagoshima University, Kagoshima, Japan. 鹿児島大学農学部林学教室