

THE INFLUENCE OF LIGHT INTENSITY ON THE PHOTO-PERIODICAL BEHAVIOUR OF THE RICE PLANT

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It is a well-known fact that even very low intensities of light may have a strong effect on the photoperiodic response of plants. WITHROW and BENE-DICT (1936) report that the long-day plants pansy (*Viola tricolor*), aster (*Callistephus chinensis*) and stock (*Matthiola incana*) flower earlier when the photo-period is lengthened with light intensities up to 10 foot-candles, but that increasing the light intensity up to 100 foot-candles has little influence or no influence at all. The following observations on the flowering of the rice plant may be of some value to those research workers interested in the photoperiodical behaviour of this crop.

In 1952 the photoperiodically very sensitive variety *Kameji* (from the United States) was grown in a) 12 h. daylight, b) 12 h. daylight + 6 h. light of one 40 W. fluorescent tube, c) normal daylength. We noticed that the plants of b which stood straight under the fluorescent tube flowered several days later than the plants standing besides it. Moreover, the plants of group c flowered later than those of group b, though daylength at Wageningen (52° Northern latitude) is always less than 18 h.

In order to pursue these investigations, in 1953 plants of *Kameji* as well as plants of the somewhat less sensitive Italian variety *Nero di Vialone* were grown at p) 12 h. daylight, q) 12 h. daylight + 6 h. light of a fluorescent tube, with an intensity ranging from 1–80 foot candles. The results of this experiment are shown in fig. 1.

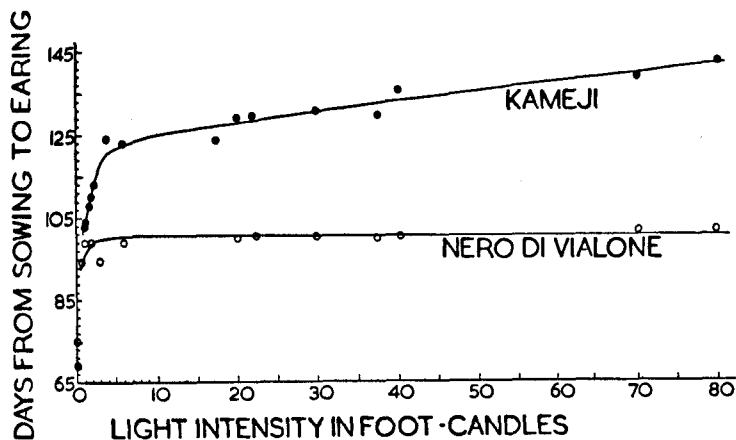


FIG. 1. EFFECT OF LIGHT INTENSITY WHEN SUPPLEMENTAL IRRADIATION IS GIVEN ON THE FLOWERING OF THE RICE VARIETIES *Nero di Vialone* and *Kameji*.

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From this figure it can be seen that:

- 1 The small surplus of light delayed earing much more in *Kameji* than in *Nero di Vialone*,
- 2 With *Nero di Vialone*, earing was practically not affected within a range from 1 to 80 foot candles,
- 3 On the contrary, with *Kameji* an increasing light intensity resulted in an increasing delay in flowering date. This is especially the case in the range between 1 and 10 foot candles, but even at values over 80 foot candles a further retardation in earing may be expected.

LITERATURE

WITHROW, R. B. and H. M. BENEDICT: *Plant Physiology* 11 (1936) 225-249.

