

PHOTOPERIOD AND NIGHT TEMPERATURE EFFECTS ON LOTUS TENUIS

II. GROWTH ANALYSIS

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The purpose of this paper was to study the responses of Lotus tenuis plants to different environmental conditions of growth.

Lotus tenuis (Waldst et Kic) (birdsfoot trifoli) seedlings were transplanted to plastic pots on a sand substratum, then inoculated with a suspension culture of native rhizobium, and watered with a nitrogen-free Hoagland solution. Plants were grown in culture rooms under three different night temperatures 17°, 21° and 27°C, and for each temperature, at two different photoperiods: short day (SD) of 8 h direct solar radiation, and long day (LD) of 8 h direct solar radiation and of 8 h low light intensity. Five harvests were done at fortnight intervals.

The lowest dry matter accumulation occurred at 27°C

and shoot-dry matter per whole-plant-dry matter ratio increased with temperature with LD, and with plant growth. Leaves evolved sooner to the adult form as temperature decreased. The greatest leaf area duration was observed at 21°C, and the Net Assimilation Rate increased as temperature decreased.

Apical dominance was first broken under short days. The number of leaves and branches were higher under SD than under LD, the differences increasing as temperature decreased. Foliar area per plant, foliar area per leaf and internode length were larger under LD, increasing the differences as temperature decreased.