HortScience 27(1):80. 1992.

Inductive Cycles Required for Flowering of *Sisyrinchium bermudiana*

G.L. Roberts and M.J. Tsujita
Department of Horticulture, University of Guelph, Guelph, Ont. N1G2W1, Canada

Additional index words. photoperiod, Iridaceae, short days, blue-eye grass

Sisyrinchium bermudiana L. is a member of the family Iridaceae with small actinomorphic, blue flowers. It propagates naturally from small rhizomes or seeds that are dispersed in late summer from capsules and germinate in November through December. The striking blue flowers and bright-green foliage of *S. bermudiana* make it an attractive plant that has commercial potential if flowering can be controlled by manipulating the environment.

Prior experiments have shown that S. *bermudiana* is a short-day plant requiring a photoperiod of not more than 10 h (Roberts, 1990a). Determination of the inductive cycle is of importance if the plant is to become an economic bedding plant or a potted ornamental.

The objective of this experiment was to determine the inductive cycle needed to initiate flowers in *S. bermudiana.*

Sisyrinchium bermudiana seeds were leached for 48 h in running water (Roberts, 1990b). They were then sown in plug flats containing 253 cells (3 cm^3) filled with Pro-gro plug medium (Fern Lea Flowers, Delhi, Ontario). Two flats were placed in each of four EY8VH growth chambers (Controlled Environments, Winnipeg, Manitoba) set at 14 h (long days, LD) and 21 ± 2C/16 ± 2C (day/night). Light was provided by 12 very high-output cool-white fluorescent bulbs (Sylvania F48T12/CW/VHO-F12; Drummondville, Que., Canada) and eight 15-W incandescent bulbs producing a combined photosynthetic photon flux of 350 $\mu mol \cdot m^{-2} \cdot s^{-1}$.

After germination, uniform seedlings were selected and planted two per 395-cm^3 pot. Thirty pots were placed in each of two chambers set at a 14-h LD. The temperature was raised to 28 ± 2C/23C ± 2C (day/night), which corresponds to average temperatures during development in the natural habitat (Naval Oceanography Command Facility, 1985-1987).

After 3 weeks, the photoperiod was changed to a 10-h short day (SD). Four pots were periodically removed and placed under LD to give 2, 4, 6, 8, 12, 14, or 16 weeks of SD exposures,

Once in LD, the plants were observed for flowering. Final cyme count was taken when one treatment showed 50% of the plants at visible bud (Roberts, 1990b).

No flowering occurred unless plants had received at least 8 weeks of SD inductive cycles (Fig. 1). At least 16 weeks of inductive cycles were required to achieve 50% flowering. The high correlation coefficient of 0.990 and the F value of 98.63 suggest a very close relationship between number of inductive cycles and flowering. The fact that some plants took longer to develop, even after floral initiation, could be attributed to the genetic variance between the population from which seed was collected (Mosquin, 1970). Further studies are required to see if flowering can be enhanced and made more uniform.

Literature Cited

Mosquin, T. 1970. Chromosome numbers and a proposal for classification in *Sisyrinchium* (Iridaceae). Madrono 20:269-275.

Naval Oceanography Command Facility. 1985-1987. Records. Naval Oceanog. Command Facility, Bermuda.

Roberts, G.L. 1990a. Photoperiodic response of *Sisyrinchium bermudiana* L.-A possible new bedding plant. Acta Hort. 272:129-131.

Roberts, G.L. 1990b. Germination and flowering in *Sisyrinchium bermudiana* L. MS Thesis, Univ. of Guelph, Ontario, Canada.

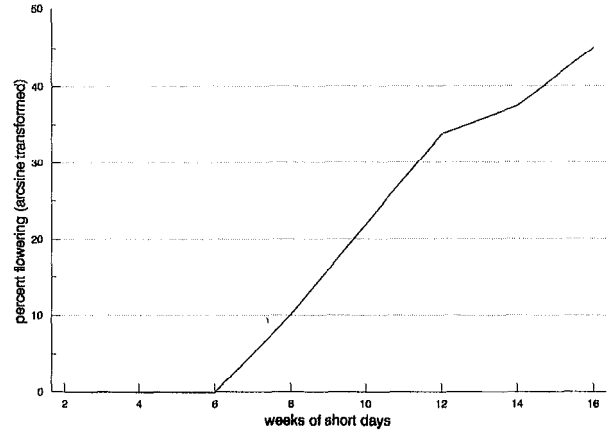

Fig. 1. Percentage of plants that produced cymes after receiving various short-day inductive cycles. Regression was carried out on arcsin-transformed data; $r = 0.990$.

Received for publication 22 Feb. 1991. Accepted for publication 15 Aug. 1991. Reference to trade names does not imply recommendation to the exclusion of others that may be suitable. The cost of publishing this paper was defrayed in part by the payment of page charges. Under postal regulations, this paper therefore must be hereby marked *advertisement* solely to indicate this fact.