Title Photoperiod induction, gibberellic acid, mulch and row cover effects on fresh cut flower production of three *Rudbeckia hirta* L. cultivars

Author Kieran Johnson and David H Tatum

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Abstract

Photoperiod studies have been the subject of research projects for decades. In such studies, *Rudbeckia hirta* L. has often been chosen due to its early recognition (1920's) as a long day plant. *R. hirta* has also been the subject of experiments to evaluate the timing of floral initiation in regard to the exogenous application of phytohormones. Former projects have been primarily directed toward understanding floral initiation mechanisms of long day plants for the production of greenhouse grown crops. Photoperiod manipulation and exogenous application of phytohormones have not been used to the same extent for field-grown fresh flower research.

Three experiments were conducted in the spring of 2006 to determine if time to flowering could be manipulated for field grown *R. hirta* without subsequent loss of quality. In the first experiment, two cultivars, *R. hirta* 'Indian Summer' and *R. hirta* 'Irish Eyes' were given 4-hour night interruption (NI) using a 60-watt incandescent bulb during greenhouse production. Night interruption lasted for 0, 21, 28 or 35 days. Prior to field transplanting, GA_3 was exogenously applied once to transplants at rates of 0, 150 or 300 ppm.

For 'Indian Summer', early flowering was achieved with 35 days of NI alone or with either rate of GA_3 plus 21-day NI. Increasing GA_3 to 300 ppm improved stem length. For 'Irish Eyes', 35-day NI alone was equally effective at producing early blooms compared to 35-day NI and either rate of GA3.

The second experiment included *R. hirta* 'Irish Spring' grown in the greenhouse then given 0 or 35 days NI as in the first experiment. Then, seedlings were transplanted to the field in plots with various combinations of polyethylene row cover, black plastic mulch and bare ground. Only plants receiving 35-day NI flowered during the test. Polyethylene row cover increased the percentage of blooms harvested.

The third experiment measured the vase life of blooms harvested from experiments one and two. Treatments did not affect vase life of blooms. Mean postharvest life for all treatments was greater than 7 days.