

EFFECT OF PHOTOPERIOD ON GROWTH OF FIVE SOLANACEOUS WEEDS. Joel Felix and Douglas J. Doohan, Research Associate and Associate Professor, The Ohio State University/OARDC Wooster, OH 44691.

Temperature and photoperiod are the two most important environmental variables influencing the rate of development in many plants including weeds. Our objective was to quantify the effect of photoperiod on growth and reproduction of eastern black nightshade (*Solanum ptycanthum*), smooth groundcherry (*Physalis subglabrata*), clammy groundcherry (*Physalis heterophyll*), horsenettle (*Solanum carolinense*), and apple of Peru (*Nicandra physalodes*). Light-shielded tents were setup in a greenhouse room at 28/16C (day/night) to provide plants with one of the following light/dark regimes; 10/14hrs, 14/10hrs, 16/8hrs.

Response to photoperiod was observed for all species. All plants were smallest when exposed to 10/14 hr light/dark regime; with horsenettle and clammy groundcherry not flowering even after 120 days. Flower buds were initiated 15 days after emergence (DAE) for apple of Peru and 17 DAE for eastern black nightshade under 10/14 hr regime. When exposed to 14/10 and 16/8 hrs of light/darkness, apple of Peru and eastern black nightshade flowered 31 DAE compared to 60 days for clammy and smooth groundcherry. Horsenettle flowered 97 DAE under 14/10 and 16/8hrs regimes, but did not set seeds, probably due to lack of pollinating agents in the tents.

Under the 10/14 hr regime, apple of Peru plants averaged 376 cm<sup>2</sup> leaf area compared to 211 cm<sup>2</sup> for eastern black nightshade at flowering. Leaf area for apple of Peru and eastern black nightshade growing under 14/10 hr was 698 and 1067 cm<sup>2</sup>, respectively. Apple of Peru and eastern black nightshade exposed to 16/8hrs of light/darkness averaged 1528 and 1159 cm<sup>2</sup> of leaf area at flowering. Leaf area for common- and clammy groundcherry growing under 14/10hrs was 2405 and 2444 cm<sup>2</sup>, respectively. When exposed to 16/8hrs, common- and clammy groundcherry averaged 3047 and 3051 cm<sup>2</sup>, respectively. Seed set for common and clammy groundcherry was very poor probably due to lack of pollinating agents. Seed production was lowest for apple of Peru and eastern black nightshade growing under 10/14 light/darkness regime. Results suggest that apple of Peru and eastern black nightshade germinating in late summer or in crop-shaded canopies have an ability to produce seeds that will contribute to soil seedbanks.