

Photoperiod Effects on Corm Initiation and Biomass Partitioning in Two Chinese Waterchestnut (*Eleocharis Dulcis* (Burm. F.) Hensch) Origins

Tom W. Lyall, Volker Kleinhenz and David J. Midmore
Central Queensland University

For commercial production of Chinese waterchestnut in Australia, factors promoting year-round supply for both national and international markets must be studied. Management of photoperiod may have the potential to assist Australian producers to lengthen the production season, thus meeting market supply deficits.

The effect of different photoperiods (8, 12, 16, 20 and 24 photoperiods, natural daylength, and reducing photoperiod from 12.5-11) on corm number and biomass, stolon number, and vegetative biomass was studied for two Chinese waterchestnut origins (from Singapore and Thailand) at Central Queensland University Rockhampton.

Vegetative biomass of plants grown under 8, 12 and (12.5-11) hour photoperiods was significantly lower, corm number and weight significantly higher and, consequently, harvest indices significantly greater. Although genetically near identical, the two origins responded differently to short daylengths with Singaporean material being less responsive and producing greater vegetative biomass. Material from Thailand produced significantly more stolons and corms under short days and, consequently, greater harvest indices.

These results indicate that the critical daylength below which corm formation is initiated lies between 8-14 daylight hours. Therefore, management of photoperiod has the potential to shorten the cultivation period of Chinese waterchestnuts and thereby bringing forward the harvest and extend the season in Australia. Phenotypic variations must be responsible for the significant differences in growth of genetically near identical origins, Origins which are more responsive to photoperiod should be chosen for short-day treatments.