

Effect of moisture stress on morphological and physiological attributes of *Amaranthus viridis* and *A. retroflexus*

Asad M. Khan¹, James P. Hereward², Jeff A. Werth³, Gimme H. Walter² and Bhagirath Singh Chauhan¹

¹ Queensland Alliance of Agriculture and Food Innovation, University of Queensland, Australia

² School of Biological Sciences, University of Queensland, Australia

³ Department of Agriculture and Fisheries, Toowoomba, Queensland, Australia

(asad.khan@uqconnect.edu.au)

Summary Cotton growers in Australia face significant challenges eradicating weeds from the cotton cropping system. Poor weed management can cause up to 90% yield loss in cotton due to competition with the crop for nutrients and water. *Amaranthus retroflexus* is one of the most common, widely distributed and troublesome weeds of cotton growing areas of Queensland and New South Wales. Numerous factors have enabled this species to become dominant and difficult-to-control. These factors include rapid growth rate, high fecundity, genetic diversity, and ability to tolerate adverse conditions. Crop growth and yield is known to be affected by many factors especially water stress; however, the effect of water stress on growth and propagation of weed is not deeply understood. A water stress experiment was conducted at University of Queensland wire house to determine the effect of

duration and degree of water stress on growth and seed production of two *A. retroflexus* (Gatton and Goondiwindi) biotypes. The experiment included four water stress treatments of 100, 75, 50, 25 of soil water content applied at 7 days interval. No significant difference was observed in growth, development and seed production of 2 different biotypes. Highest plant height and number of leaves and branches were observed at 75 % of soil water content. While the lowest number of leaves, branches were observing in the water soil water content of 25%. The lowest level of seed production was also observed in 25% soil water content treatment. The study determined that the *A. retroflexus* can survive and produce seed under high degree of water stress.

Keywords Weeds, *Amaranthus*, water stress.