

Brown Flatsedge (*Cyperus fuscus*) A Potential Rice Weed

Charles T. Bryson¹ and Richard Carter²

¹USDA-ARS, Southern Weed Science Research Unit, Stoneville, MS 38776

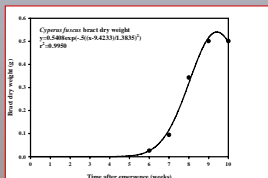
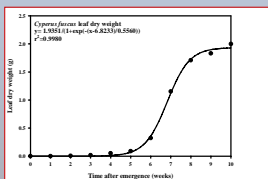
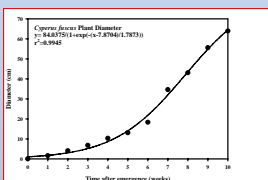
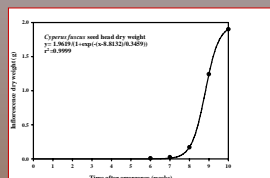
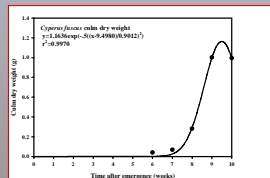
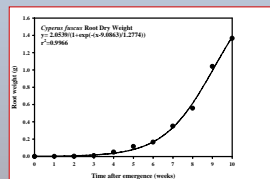
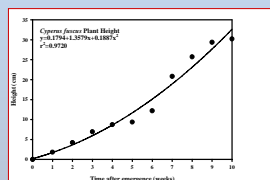
²Department of Biology, Valdosta State University, Valdosta, GA 31698

Introduction

Brown flatsedge (*Cyperus fuscus* L.) is a native to Europe, Asia, Indian subcontinent, and the Mediterranean Region of Northern Africa. It was first discovered in North America in 1877 and apparently was introduced around wharfs from contaminated ballast. Since that time, brown flatsedge has been discovered in Canada and U.S.A. In the U.S.A., it is found in Arkansas, California, Connecticut, Kansas, Maryland, Mississippi, Missouri, Nebraska, Nevada, New Jersey, Pennsylvania, South Dakota, and Virginia (McKenzie et al. 1998; Bryson and Carter 2008). Dispersal of brown flatsedge has been attributed to waterfowl and human activities, including use of construction equipment. Brown flatsedge was reported as a weed in semitropical areas of the old world (Holm et al. 1979, Kukkonen 2001; Simpson and Inglis 2001; Bryson and Carter 2008), where it is a significant weed in rice (Weedon and Stephens 1969; Mingyuan and Dehu 1970; Holm et al. 1979). Because brown flatsedge was reported as a weed in semitropical areas of the Old World where it is a significant weed in rice and it was recently detected in the rice production areas of the Delta Region, research was initiated at Stoneville, Mississippi, to study the basic biology and ecology of brown flatsedge.

Material and Methods

Field observations were made at three sites, Chicot County, Arkansas, and Pearl River and Washington counties, Mississippi, from early spring until frost during 2003 to 2007. Data on dates germination, first culm and inflorescence, and seed production were recorded. Greenhouse studies were conducted in 2007 and 2008 at Stoneville, Mississippi, to determine growth parameters and reproductive potential of brown flatsedge. Brown flatsedge seed were collected from Washington County, Mississippi, during the fall of 2006 and planted during the summer of 2007. Seeds were planted in 15-cm diam. plastic pots filled with a 1:1 mixture of potting media and soil (Bosket sandy loam, fine-loamy, mixed thermic Molic Hapludalfs). Upon emergence, seedlings were thinned to one plant per pot and grown in a greenhouse set to 30/22 C (± 3 C) day/night temperature. Natural light was supplemented with light from sodium vapor lamps to provide at least 14-h of light each day. Plants were watered from below and were grown in greenhouse for 10 weeks. Brown flatsedge plant height, diameter, and number of leaves per plant, and days to first flower were recorded. All plants were harvested and dry weights were recorded for roots, leaves, culms, bracts, and inflorescences.



Results

Field observations at the three sites in Arkansas and Mississippi, determined that brown flatsedge was highly dependent on persistent moist soils or shallow standing water for establishment, growth, and seed production. Over a five-year period and under natural field conditions, brown flatsedge plants germinated from late March and early April until frost. Inflorescences were observed as early as May, and seed production continued until frost. Brown flatsedge scales were predominately green with a trace of reddish-brown or purple in the spring and summer months to predominately reddish-brown to dark purple in the fall as day lengths become shorter and air temperatures become cooler than in the summer months. In greenhouse experiments, ten-week old brown flatsedge plants were 30.2 cm tall and 63.9 cm in diameter with dry weights of 1.4, 2.0, 1.0, 0.5, 1.9 and 6.8 g for roots, leaves, culms, bracts, inflorescences and whole plant, respectively. The first brown flatsedge culm appeared five weeks after emergence (WAE) and all plants produced seed by nine WAE. Although brown flatsedge seems to be in the lag phase, it could pose a threat to rice production in Arkansas, California, Louisiana, Mississippi, Missouri, Tennessee, and Texas. Additional research is needed to determine the ecological range potential and to develop control methods for brown flatsedge.



Acknowledgments

We thank Paige Goodlett for technical assistance in the greenhouse studies.

Literature Cited

- Bryson, C. T. and R. Carter. 2008. The Significance of Cyperaceae as Weeds. Pp. 15-102 in R. F. C. Naczi & B. A. Ford (editors), Sedges: Uses, Diversity, and Systematics of the Cyperaceae. Monogr. Syst. Bot. Missouri Bot. Gard. 108.
- Holm, L., J. V. Pancho, J. P. Herberger, and D. L. Plucknett. 1979. A geographical atlas of world weeds. John Wiley and Sons, New York.
- Kukkonen, I. 2001. Cyperaceae, No. 206. Pages 1-277, in S. I. Ali and M. Qaiser, Flora of Pakistan. University of Karachi and Missouri Botanical Garden, Karachi and St. Louis.
- McKenzie, P. M., B. Jacobs, C. T. Bryson, G. C. Tucker, and R. Carter. 1998. *Cyperus fuscus* (Cyperaceae), new to Missouri and Nevada, with comments on its occurrence in North America. Sida 18:325-333.
- Mingyuan, X. and M. Dehu. 1970. Farmland weeds of China: a collection of coloured illustrated plates. Agricultural Publishing House, Beijing, China.
- Simpson, D. A. and C. A. Inglis. 2001. Cyperaceae of economic, ethnobotanical, and horticultural importance: a checklist. Kew Bulletin 56:257-360.
- Weedon, R. R. and H. A. Stephens. 1969. *Cyperus fuscus* in Nebraska and South Dakota. Rhodora 71:433.

