COMPETITION BETWEEN THE EXOTIC GRASS *ERAGROSTIS PLANA* AND FORAGE GRASS *PASPALUM NOTATUM* UNDER DROUGHT CONDITIONS. M. O. Bastiani*[1], F. P. Lamego[2], F. C. Caratti[3], D. Rockenbach[3], A. Balbinot[3], G. M. Souza[3]; [1]University of Arkansas, Fayetteville, AR, [2]Embrapa PecuÃ¡ria Sul, BagÃ©, Brazil, [3]Universidade Federal de Pelotas, Pelotas, Brazil (23)

ABSTRACT

Eragrostis plana (tough lovegrass) is an invasive weedy grass in several native pasture areas of South America. This species was already reported in some localized areas in United States. It has low forage quality compared with *Paspalum notatum,* which is one of most important native forages distributed in livestock areas, specially in South Brazil. *E. plana* has traits of an invasive grass that confer competitive advantage under degraded areas, including rapid growth, potential allelopathic effect, persistent seed bank and ability to tolerate freezing and drought conditions. Considering the known competitive ability of this species as well as current and predicted global changes in precipitation patterns, we performed a greenhouse experiment to determine whether drought conditions would increase *Eragrostis plana* competitiveness with the forage grass, *Paspalum notatum.* In this study, the species were grown from emergence to grain filling stage using three plant proportions (100:0, 50:50 and 0:100 for *P. notatum* and *E. plana*, respectively) to simulate the competition under well-watered conditions, then at panicle emergence, plants were allowed to compete also under drought condition for 50 days. Relative water content (RWC), stomatal conductance (g_S), chlorophyll *a* fluorescence parameters, chlorophyll index, plant height, tiller and panicle number, and above-ground biomass were measured at the end of water-stress period. The analysis of variance revealed no signiï¬¬cant interactions ($p \geq 0.05$) among plant proportions and water stress factors. *E. plana* had a negative impact on *P. notatum* overall growth by reducing plant height, tiller and panicle number, above-ground biomass and chlorophyll *a* fluorescence in both water conditions. Likewise, the forage grass had reduced quantum yield of electron transport (Φ_{Eo}) where it could increase the dissipated energy flux (DI_0/RC) when competing with *E. plana*. In addition, the low competitive ability of *P. notatum* was confirmed by favoring the above-ground biomass production and increasing the panicle number in *E. plana*. The water stress had a significant impact on both species by reducing g_S, RWC, plant height and panicle number for *E. plana* and RWC and above-ground biomass in *P. notatum*. Additionally, water restriction promoted reduction of electron transport flux (ET_0/RC) and quantum yield of electron transport (Φ_{Eo}) on *P. notatum*. However chlorophyll *a* fluorescence in *E. plana* was not altered in drought stress condition underlining its tolerance to drought. Overall, our results suggest that *E. plana* could overcome the forage grass *P. notatum* either in well-watered or drought conditions, emphasizing the invasive potential of *E. plana*.