Use of saline water for weed control in seashore Paspalum (Paspalum vaginatum).

Abstract

Weeds are a serious problem in turfgrass establishment and management. Widespread use of herbicides to control weeds has resulted in environmental issues, and has led to the search for alternative control methods. Thus the use of sea water to control weeds was investigated. Glasshouse studies were conducted to determine responses of a number of local common weeds and the turfgrass species Paspalum vaginatum Swartz to five levels of salinity treatments. Twenty seven weed species comprising of nine broadleaved weeds, nine grasses and nine species of sedges, and Paspalum vaginatum were treated with distilled water as control, or seawater at salinities of 24, 48, 72, or 96 dSm-1. Visual injury scores on weeds and turfgrass were recorded at day 3, 7, 14 and 21. Dry weights of shoots and roots per pot were recorded at the end of experiment. Results obtained showed that the response to salinity varied among species. Among the weeds tested Tridax procumbens L., Hedyotis corymbosa (L.) Lamk and Borreria latifolia (Aubl) K. Schum were the most sensitive and were completely killed at salinities of 24 dSm-1 or higher. Four broadleaved weeds [Ageratum conyzoides L., Euphorbia prunifolia (Jacq), Desmodium triforum (L.) DC, and Lindernia crustacea F. Muell], and two sedges [Cyperus iria L. and Fimbristylis globulosa (Retz.) Kunth] were less sensitive at 24 dSm -1, but were severely injured at 48 dSm -1 salinity. Other weed species and Paspalum vaginatum were tolerant to all salt water treatments. The results indicate that sea water has excellent potential for sustainable control of several common broadleaved weeds and sedges in Paspalum vaginatum turf.

Keyword: Sea water; Seashore paspalum; Turf grass; Weed control.