Effect of superabsorbent polymer (A-200) application on yield and yield components of barley under drought stress conditions

Hamidreza OWLIAIE

Yasouj University, College of Agriculture, Soil Science Dept., Yasouj, Iran, (e-mail: h_owliaie@yahoo.com)

Abstract

The aim of present study is evaluation of the effect of four rates of superabsorbent polymer (0, 1, 2 and 4 g kg-1) and three drought stress conditions (100, 70 and 50% FC) on yield and yield components of barley (cult. Kavir) under green house conditions. The experiment was carried out in Yasouj region, Kohgilouye Province, southwestern Iran during autumn to spring seasons of 2008-2009. This region has a semi-arid climate with a mean annual rainfall and temperature of 700 mm and 14.5^{o}C, respectively). The soil of experimental site was silt loam, with 37% of neutralizing substances, low in nitrogen (0.07%), low in organic carbon (0.56-060%) and alkaline in reaction with a pH of 7.8 and EC = 0.32 dSm^{1-}. The results showed that water deficit stress affected all parameters measured. The effect of two-way interaction between moisture levels × superabsorbent polymer levels was significant for all variables except for *1000-seeds weight* and seed number per spike. It was shown, water deficit stress decreases yield and its components. Moreover the results exhibited that superabsorbent levels had a significant effect on dry weight, grain yield, harvest index and biological yield. The results of analysis of variance for experimental data exhibited that soil moisture levels had a significant effect ($p<0.01$) on grain yield, biological yield, harvest index, seed number per spike and per pot as well as *1000-seeds weigh. More research is suggested* to determine the role of different levels of SAP on other crops, soils and climates of southern parts of Iran.

Key words: superabsorbent, drought stress, barley, soil, southwestern Iran

sa2011_a0115