عنوان مقاله:

Introducing a Suitable Strategy to Improve Wheat Properties and Water Productivity under Moisture Stress Conditions in a Sandy Loam Soil

محل انتشار:

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خلاصه مقاله:

One way of developing sustainable agriculture is to increase crop Water Productivity (WP). In drought conditions, cultivation management should result in reducing water consumption as well as lowering the negative impacts on crop yield and quality. This experiment was conducted to determine the influence of irrigation levels (full and deficit irrigation, providing ۱۰۰ and ۷۵% of the irrigation water requirement, respectively) and soil water retaining materials (organic fertilizer, superabsorbent at depths of ۳۰ and ۴۰ cm, superabsorbent mixed with soil, band application of superabsorbent, plastic installation at depths of ۳۰ and ۴۰ cm and control) on WP, leaf Relative Water Content (RWC), Electrolyte Leakage (EL), photosynthetic pigments, yield and yield components of wheat during the growing seasons of ۲۰۱۷ and ۲۰۱۸. The deficit irrigation caused an increase in WP and EL and decreased yield, yield components, RWC, and photosynthetic pigments, while the soil water retaining materials improved these properties. The average yields in the organic fertilizer treatment and installation of plastic at a depth of ۴۰ cm were ۹.۵۵ and ۸.۷۶ tons ha-۱, respectively. The highest WP (۱.۸۹ kg m-۳) was observed in the organic fertilizer treatment. Application of cow manure and installation of plastic membrane did not have significant effect on wheat properties in the two water conditions. Overall, utilizing organic fertilizer and nylon membranes under deficit irrigation, improved wheat characteristics and WP. However, to reach a comprehensive conclusion, it is necessary to evaluate these treatments for several consecutive years with different soil and water conditions.

کلمات کلیدی:

Deficit irrigation, Drought conditions, Water retaining material.