

Effect of potassium application schedules at water deficit condition on grain yield and nitrogen uptake by millet. (*Setaria italica*)

Abstract

The research on reducing the water amount in conventional cropping system is one of the important strategies to improve the water usage in agriculture. In order to investigate the effect of potassium application time under different irrigation periods on millet grain yield and protein, a field experiment carried out in Agricultural Research Center of Yasuj, Iran, 2009. The experiment was conducted in split plot design in a randomized complete block with 3 replications. Irrigation regime, including: I₁. seven, I₂. fourteen and I₃. twenty-one days as main factors and sub-plots include potassium fertilizer application in four steps: K₀. planting, K_p. tillering, K_s. stem development and K_f. flowering. Results showed that the effect of irrigation on seed weight, grain and biological yield, harvest index, grains per panicle, plant height, ear size, leaf number, rate of Chlorophyll, water soluble carbohydrate and protein content was significant. By increasing the irrigation period, all of the above mentioned were decreased, except protein content that increased. Also potassium application time affected on seed weight, grain and biological yield, harvest index, grains per ear, plant height, leaf chlorophyll content, water soluble carbohydrate and protein content. Interaction between irrigation and the application of potassium fertilizer at various developmental stages on Traits grain weight, grain yield, plant height, leaf chlorophyll content and water soluble carbohydrates in seeds was significant. The maximum grain yield obtained by seven days irrigation regime and potassium application at the stem development interaction. And the maximum grain protein percent observed in 21 days irrigation regime and potassium application at flowering stage interaction.

Key words: Millet, Nitrogen Uptake, Water Deficit, Yield



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