



University of zabol
Graduate school
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**The Thesis Submitted for the degree of Master of Science (In
the field of) Agronomy**

**Effect of drought stress and different
levels of Potassium fertilizer on
qualitative and quantitative
characteristics of Kochia**

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Abstract

In order to study the effect of potassium fertilizer under drought stress conditions on growth of kochia, a field experiment in split plot design with three replications was conducted at the University of Zabol, in growing season 2011. Drought stress at three levels (50%, 70% and 90% depletion of irrigation water) were assigned as main plots and four levels of potassium fertilizers including (control, 75, 150 and 225 kg/ha sulfate potassium) were randomized in sub-plots. Results showed that drought stress and potassium fertilizer significantly wet and dry forage yield and height plant but no significant different was observed on number of secondary branches. The results indicated that the all measured characteristics of kochia decreased by drought stress except number of secondary branches. The maximum value of wet and dry forage weight, plant height and number of secondary branches was obtained by 225 kg/ha potassium fertilizer. The interaction of drought stress and potassium application were affect significantly on all measured traits only branches number per plant. As regard to the qualitative characteristics, The results dry matter digestibility, water soluble carbohydrate, acid detergent fiber, neutral detergent fiber and ash were affect by drought stress and potassium application significantly. The crude protein affected by drought stress but not by potassium application. The maximum amount for dry Matter digestibility, crude Protein, and ash were observed 50 percent depletion of irrigation water but by 90 percent depletion of irrigation water, the water soluble carbohydrate, acid detergent fiber and neutral detergent fiber were more the other treatments. The maximum amount of dry matter digestibility, water soluble carbohydrate, crude protein and ash were observed by application of 225 kg/ha potassium but The maximum amount of acid detergent fiber and neutral detergent fiber obtained by control (without potassium fertilizer application). The Interaction of drought stress and potassium application had a significant effect on all measure traits. According to the results obtained maximum qualitative and quantitative forage yield is achieved after 50% depletion of irrigation water and consumption of 225 kg potassium fertilizer per hectare.

Keywords: kochia, potassium fertilizer, drought stress, forage yield.