Yield and Nutrient Uptake by Sudangrass (*Sorghum Vulgare var. Sudanense*) as Influenced by Phosphorus and Zinc Application

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Abstract. The study was conducted at the Basrah University / Karmat Ali, Iraq during the fall season 2020, to investigate the effects of four rates of phosphorus,(P0 =0, P1=40,P2=80 and P4=120 kg P ha^{-1}) and spraying four concentrations of zinc (Zn0-control,Zn1= 25,Zn2=50,Zn=75mgL^{-1} on growth and forage yield of Sudangrass. The randomized complete block design (RCBD) was carried out in three replicates using a split plot experiment , zinc concentrations were put in the main plots while, rates of phosphorus in subplots. Application with P_{120} resulted to a significantly greater stem diameter (14.61mm) number of leaves (20.00 leaf $plant^{-1}$),leaf area (7420cm^2), number of branches (14.967 branch $plant^{-1}$) green and dry forage yield (29.25,12.69 t ha^{-1}).Foliar application of Zn_{75} resulted in greater plant height (251.2cm), stem diameter (14.21mm), number of leaves (19.42 leaf $plant^{-1}$),leaf area (6163cm^2) and number of branches (13.450 branch $plant^{-1}$). The combination of P× Zn had no significant effect on green and forage yield. Both P and Zn application had significant effect on N and P percentage of forage Sudangrass, on the other hand, no significant effect of their application on K percentage .

Keywords. Forage Sudangrass, Phosphorus, Zinc, Green forage, Dry forage.