Dedicatio

To the soul of my mother – (God mercy her)
To my dear father
To my sisters and brother
To my teachers
Finally, to my all friends and colleagues, this work is dedicated
ACKNOWLEDGEMENT

I am deeply grateful to Allah who bestowed me good health and courage to accomplish this study.

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**ABSTRACT**

The study was carried out at the College of Agricultural Studies, Sudan University of Science and Technology at Shambat, during the period from July to October 2009. The main object of this research is to study variability and correlation in eleven genotypes of forage sorghum (*Sorghum bicolor* L. Moench) for some morphological characters. A complete randomized block design with three replications was used. The parameters measured were plant height, leaf area, number of leaves per plant, stem diameter and days to 50% flowering. Phenotypic and genotypic variances,
phenotypic and genotypic coefficient of variation and interrelationships among different growth parameters were investigated.

The analysis of variance revealed highly significant differences (p≤0.01) among genotypes for most growth parameters. Leaf area showed the highest value of phenotypic variance, while plant height exhibited the highest value for genotypic variance. The highest values for phenotypic and genotypic coefficient of variation were obtained by plant height that showed positive and non-significant phenotypic and genotypic correlation with all growth characters other than days to 50% flowering. Correlation between days to 50% flowering with each of plant height and number of leaves was significantly positive. Leaf area was significantly negative correlation with plant height. The genotypes panar 888, Ankolib traditional and Ankolib S-18 scored the highest values of plant height, number of leaves / plant and leaf area, respectively.
دراسة التباين المظهري والوراثي، معامل التباين المظهري والوراثي، الارتباط المظهري والوراثي بين مختلف الصفات.

أثبتت الدراسة من خلال تحليل التباين وجود فروقات معنوية عالية (p<0.01) بين الأصناف لمعظم الصفات في دراسة. دلت النتائج على أن مساحة الورقة أظهرت أعلى قيمة للتبان المظهري بينما أظهر طول النبات أعلى قيمة للتبان الوراثي. أعلى قيمة لمعامل التباين المظهري والوراثي تم الحصول عليها بواسطة طول النبات. الارتباط المظهري والوراثي وطول النبات كان موجباً وغير معنوي مع كل الصفات المظهرية النمو ما عدا صفة عدد الأيام لـ 50% إزهار فقد أظهرت إرتباطاً موجباً وعالي المعنوية على المستوى المظهري. أظهرت الدراسة وجود ارتباط موجب ومعنوي بين عدد الأيام لـ 50% إزهار وكل من عدد الأوراق وطول النبات. الارتباط بين مساحة الورقة وعدد الأيام لـ 50% إزهار كان سالباً ومعنوباً. أحرزت الأصناف بانار 888 وعتكويب ترادشنان وعتكوليب S – 18 أعلى قيم لطول النبات ومساحة الورقة وعدد الأوراق للنبات على الترتيب.