

Dedication

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 ($p \leq 0.01$) 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.

خلاصة الأطروحة

أجريت الدراسة بكلية الدراسات الزراعية جامعة السودان للعلوم والتكنولوجيا، شملات خلال الفترة من يوليو إلى أكتوبر 2009 ، وذلك بهدف دراسة التباين والارتباط في احدي عشر صنفاً من الذرة الرفيعة العلفية لبعض الصفات المظهرية. صممت التجربة علي تصميم القطاعات العشوائية الكاملة في ثلاثة مكررات وتم رصد الصفات المظهرية المتمثلة في طول النبات، مساحة الورقة، عدد الأوراق، قطر الساق وعدد الأيام لـ 50% إزهار، تم

دراسة التباين المظهري والوراثي، معامل التباين المظهري والوراثي، الارتباط المظهري والوراثي بين مختلف الصفات.

أثبتت الدراسة من خلال تحليل التباين وجود فروقات معنوية عالية ($p \leq 0.01$) بين الأصناف لمعظم الصفات قيد الدراسة. دلت النتائج علي أن مساحة الورقة أظهرت أعلى قيمة للتباين المظهري بينما أظهر طول النبات أعلى قيمة للتباين 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 ارتباطاً 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 ومعنوياً. أحرزت الأصناف بانار 888 و عنكويب ترادشغال و عنكوليب 18 - S أعلى قيم لطول النبات ومساحة الورقة وعدد الأوراق للنبات علي الترتيب.