بسم الله الرحمن الرحيم

Sudan University of Science and Technology

College of Graduate studies

ESTIMATION OF VARIABILITY IN SOME GENOTYPES OF MAIZE (*Zea maysL.*)

تقدير تباين بعض الطرز الوراثية من الذرة الشامية

AThesis submitted in partial fulfillment of the requirements for The Degree of M.Sc in field crop science

By

Hajer Mohamed Ibrahim Sid Ahmed

B.Sc Honours

Sudan University of Science and Technology

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Supervisor

Dr. Ahmed Ali Mohamed Osman

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الآية

قال سبحانه وتعالى:

﴿وآية لهم الأرض الميتة أحييناها وأخرجنا منها حباً فمنه يأكلون)33(وجعلنا فيها جنات من نخيل وأعناب وفجرنا فيها من العيون)34(ليأكلوا من ثمره وما عملته أيديهم أفلا يشكرون)35(سبحان الذى خلق الأزواج كلها مما تنبت الأرض ومن انفسهم ومما لايعلمون)36[﴾

صدق الله العظيم،،،

سورة يس الآيـ(33ـ 36)ـة

Dedication

To my beloved parents

Sisters …Brother

To those who support

And encourage me with unlimited love

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Firstly, I do thank ALLAH who supports me with ultimate help, strength and patience to complete this work successfully and peace. I am deploy indebted to my supervisor Dr. Ahmed Ali Mohamed Osman for his continuous inspiration, valuable suggestions, assistance ,guidance and supervision of this work . Recognition also extended to Dr.Samia Osman The head Dep of Agronomy for her help and encouragement My warm thanks to all other staff members of the Agronomy Department, collage of Agricultural studies.

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خلاصة الاطروحة

اجريت هذة الدراسة فى الحقل التجريبى بكلية الزراعة جامعة السودان للعلوم والتكنولوجيا خلال الفترة من يوليو وحتى سبتمبر 2009م. لتحديد التباين الوراثى للنمو والانتاجية ومكوناتها لتسعة طرازاً وراثياً من محصول الذرة الشامية، وقد استخدم تصميم القطاعات العشوائية الكاملة بثلاث مكررات تم تقدير التباين المظهرى والوراثى ومعامل التباين الوراثى ودرجة التوريث والتقدم الوراثى علي احد عشر صفة دلت النتائج على وجود فروقات معنوية عالية لكل من 50 % من الازهار المذكرة و 50 % من الازهار المؤنثة حرايرر). ايضاً اظهرت النتائج فروقات معنوية فى مساحات الورقة وسمك الساق فى القراءة الاولى . ايضا لوحظ وجود فروقات غيرمعنوية فى كل من طول النبات (سم) وعدد الاوراق فى النبات وطول الكوز ووزن الحبوب فى النبات وعدد الحبوب فى الكوز ووزن المائة حبة والانتاجية فى الهكتار. سجلت مساحة الورقة اعلى قيمة لمعامل التباين الوراثى (339.1 %) امااادنى قيمة لمعامل التباين الوراثى فقد سجل فى عدد الاوراق فى النبات (0.35 %). سجلت كل من 50 % ازهار مذكرة و 50 % حرايرر ، اعلى قيم لدرجة التوريث فى حين ان مساحة الورقة ، سمك الساق فى القراءة

الاولى ، طول النبات فى القراءة الثالثة ، طول الكوز ، طـول النبـات فى القراءة الثانية ، عدد الاوراق فى القراءة الثالثـة, ووزن الحبـوب، طول النبات فـى القـراءة الاولـى ، عـدد الحبـوب فـى الكـوز، سـمك الساق فى القراءة الثانية سجلت ادنى قيم لدرجة التوريث .

ABSTRACT

Nine genotypes of maize (Zea mays L.) were evaluated at the Demonstration Farm of the College of Agricultural studies, Sudan University of Science and Technology Shambat, during the period from 9th July to September 2009. to determine the genetic variability for growth, yield and yield components.

The design used was a Randomized Complete Block design with three replications, in order to study the phenotypic (6^2 ph) and genotypic (6^2g) variances, genetic coefficient of variation (GCV%), heritability (h^2), genetic advance (GA), Data on eleven characters were collected The results revealed high significant differences in days to 50 % tasseling and silking, leaf area and stem diameter at the first reading.

Non significant differences were observed for plant height, number of leaves per plant, length of cob, weight of grains per plant, 100- grain weight, number of grains per coband grains yield per hectare.

The highest mean of GCV was exhibited for leaf area (339.1 %) whereas the lowest mean of GCV was observed for the number of leaves per plant (0.35 %) at first reading The high estimated heritability (h^2 > 60 %) were recorded for days to 50 % tasseling, and silking. while the lowest estimated (h^2< 40 %) was obtained for leaf area, stem diameter at first reading plant height at

third reading, length of coband plant height at the second reading, and number of leaves at third reading, weight of grains per plant, plant height at first reading, number of leaves at the second reading, number of leaves per plant at first reading, 100-grain weight, number of grains per cob and stem diameter at the second reading.