Name of Candidate: SARA SAYED ALI EL-SAWY   **Degree**: M.Sc.
Title of Thesis: Effect of Some Mineral Fertilizers on Growth and Productivity
          of Wheat
Supervisors: Dr. EL-METWALLY ABDALLA EL-METWALLY
          Dr. FOUAD EL-SAYED ABDALLA
            Dr. SAYED AHMED SAFINA
Department: Agronomy

ABSTRACT

Two field experiments were carried out at Ismailia Experimental Station, Agric. Res. Center, Ismailia governorate, during 2007/2008 and 2008/2009 seasons to study the influence of spraying magnesium sulphate ($MgSo_4$), copper sulphate ($CuSo_4$) and their interaction on growth, yield and yield components as well as nutrients status of wheat (*Triticum aestivum* L.) cv. Sakha 94. Nine treatments were applied: two levels of magnesium sulphate (3.36 and 6.72 kg/fed.), two levels of copper sulphate (0.84 and 1.68 kg/fed.) and four combined treatments ($MgSo_4$ + $CuSo_4$), in addition to control treatment (water spray) by using randomized complete block design. Results showed positive significant effects on plant height (cm), tillers number/m^2, spike number/m^2, spike length (cm), spike weight (g), grains number/spike, grains weight/spike (g), 1000-grain weight (g), grain yield ardab/fed. and straw yield were achieved by spraying the magnesium sulphate and copper sulphate treatments. However, the highest marked increment in grain yield was obtained by spraying plants with the highest $CuSo_4$ level (1.68 kg $CuSo_4$/fed.), while spraying the lowest level of $CuSo_4$ (0.84 kg $CuSo_4$/fed.) gave the highest straw yield. On the other hand, combination treatment of 6.72 kg $MgSo_4$ + 1.68 kg CuSo4/fed. showed the highest grain-protein content, N, Mg, Cu and Zn. Moreover, spraying wheat plants with the low $CuSo_4$ level (0.84 kg/fed.) gave the highest grain carbohydrate.

Key words: Wheat, *Triticum aestivum* L., magnesium, copper,
          sandy soil

Name of candidate: Hesham Tawfik Othman Hassan   **Degree**: Ph.D.
Title of thesis: Breeding Studies on Development of High Oil Corn (*Zea mays* L.)
Supervisors: Dr. Ahmed Medhat Mohamed Al-Naggar
                   Dr. Mohamed Mohamed Mohamed Atta
                   Dr. Bushra Nagieb Ayaad
Department: Agronomy   **Approval:** 25/5/2011

ABSTRACT

The present study was conducted in 5 seasons during 4 years from 2006 to 2009 at 4 locations, *i.e.* Bani Sweif, Beheira, Menofia, and Minia. The main objectives were to develop new maize populations of high oil content and high oil yield and evaluate predicted and actual progress from one cycle of S_1 recurrent selection. Two sets of 144 S_1's were developed from the local population (Loc-Pop) and exotic one (Pop-59). The highest 14 S_1's for oil content (OC%), grain yield per plant (GYPP) and oil yield/plant (OYPP) were selected, intercrossed separately and left in isolation for random mating to reach equilibrium in one generation. The resulted 6 populations (Pop-59-HOC, Pop-59-HGY, Pop-59-HOY, Loc-Pop-HOC, Loc-Pop-HGY, and Loc-Pop-HOY) along with Pop-59 and Loc-Pop were evaluated under 4 locations for 18 traits. Results indicated wide genetic variation among S_1 progenies for the 3 selected traits. Broad-sense heritability was highest for oil content and lowest for grain yield. Expected gain from direct selection for OC% was higher in the Loc-Pop (71.41%) than in Pop-59 (37.35%) but GYPP was higher in Pop-59 (61.30%) than in the Loc-Pop (43.84%). Actual progress was 1.2 and 1.9% for oil content, 37.3 and 55.9g for GYPP, and 1.9 and 3.0g for OYPP in absolute values and 13.7% and 27.9% for percent OC, 28.6% and 32.7 for GYPP and 15.8 and 25.4% for OYPP in relative values due to one cycle of S_1 recurrent selection practiced in Pop-59 and the Loc-Pop, respectively. Correlated responses to selection were estimated for each selected character and variations among predicted and actual progress were discussed.

Key words: maize, recurrent selection, oil content, grain yield, oil yield, predicted GA, actual progress, heritability, S_1 variability, quality traits.

Name of Candidate: Nabil Eshack Gergis Mekhaile.		**Degree:** Ph.D.
Title of Thesis:	Statistical models for optimizing productivity of some maize genotypes	
Supervisors:	Dr. Deyea Ahmed El-Kadi.	
	Dr. Mohamed Ali El-Lakany.	
	Dr. Ahmed Ali Abd El-Halim.	
Department: Agronomy.		
		Approval: 11/12/ 2011

ABSTRACT

A field experiment was conducted at Sids Research Station, Agricultural Research Center, during 2005 and 2006 summer seasons to study the effect of macro environmental factors (climatic and soil) and two planting dates on productivity of six maize (Zea mays L.) genotypes.

Multiple linear regression analysis, stepwise regression analysis, path coefficient analysis, factor analysis and traits mean performance combined across seasons were used. Results indicated that multiple linear regression analysis (full model) and stepwise regression analysis revealed an equation accounting for 84.8% and 82.1% of the total variation in maize yield for all studied variables, respectively. Stepwise analysis indicated that 100-kernel weight, wind speed, rows/ ear, leaves/ plant, kernels/ row and ear position accounted for 82.1% of the total variation, contributing 51.6%, 11.5%, 9.2%, 4.8%, 2.6% and 2.4%, respectively.

Path analysis revealed that growing degree days, relative humidity, 100-kernel weight, No. of kernels/ row, ear length, ear leaf area, No. of rows/ ear, ear diameter, days to 50% tasseling and ear position are the variables that have positive effect through simple correlation of these variables on the yield variation (88.55%). Thus, plant breeder must take in account this result when planning his breeding programs. So, selection for these variables will be highly effective for improvement of maize grain yield.

Factor analysis method was used to extract the important factors affecting the yield variation. It reduced the large number of variables (17) to 3 factors which explained nearly 71% of the total variability in the dependence structure. Factor 1 can be named growth factor that is affected by soil factors and accounted for 28.56% of the total grain yield variability. Factor 2 (flowering factor that was affected by climatic variables) and factor 3 (yield components) accounted for 25.55% and 17.13%, respectively. These findings revealed that the use of factor analysis by plant breeders has the potentiality of increasing the comprehension of the casual relationships of variables and can help to determine the nature and sequence of traits to be selected in a breeding program.

Combined analysis of data indicated significant differences between studied cultivars of maize. Also, obvious effect of delaying planting date was noticed. Delay of planting date from nearly late May to late June led to significant decrease in grain yield, 100-kernel weight, No. of leaves/ plant and No. of kernels/ row. Mean while there was an increase in ear length in the second planting date.

Key words: Factor analysis, stepwise regression analysis, statistical models, maize.

الكلية / المعهد : الزراعة　　　　　　القسم :محاصيل

١ – الدرجة العلمية : 　　ماجستير

٢ – بيانات الرسالة :

عنوان الرسالة باللغة العربية :
العلاقة بين الصفات الطبيعية والميكانيكية للتيلة وخيوط الغزل لبعض أصناف القطن المصرى

عنوان الرسالة باللغة الأجنبية :

RELATIONSHIP BETWEEN FIBER AND YARN PHYSICAL AND MECHANICAL PROPERTIES IN SOME EGYPTIAN COTTON VARIETIES

التخصص الدقيق :

تاريخ المناقشة : ٣١/ ١٠/ ٢٠١١

٣ – بيانات الطالب :

الاسم : فايزه أحمد محمد　　　الجنسية : مصرية　　　النوع : أنثى

العنوان :٢١ش عبدالعزيز عابدين　　　تليفون :٢٣٩٠٥٥٢٥

جهة العمل : مركز البحوث الزرعية　　　رقم الفاكس :　　　البريد الإلكترونى :

٤ – المشرفون على الرسالة :

الاسم	القسم	الكلية	الجامع
١.د/سهير عليان دسوقى	محاصيل	الزراعة	
٢.د/أمانى محمد عبدالله	محاصيل	الزراعة	
٣.د/نفيسة طه أحمد	الغزل	مركز البحوث الزراعية	

٥ ــ مستخلص الرسالة (Abstract)

٥ ــ ١ باللغة العربية : بشرط ألا يزيد عن ٧ أسطر

أجريت هذه الدراسة بمعامل بحوث تكنولوجيا القطن التابعة لمعهد بحوث القطن مركز البحوث الزراعية بالجيزة على عينات محصول ٢٠٠٥ و أخذت كمية تعادل ١٠ كجم من كل صنف لقياس أختبارات صفات التيلة والخيط بهدف دراسة العلاقة بين صفات التيلة وصفات الغزل للخيط المغزول وأيضاً مساهمة صفات التيلة فى صفات الغزل لبعض أصناف القطن المصري ، استخدمت لهذه الدراسة أربعة أصناف من القطن المصري تمثل أصناف فائقة الطول تزرع فى شمال الدلتا وهى جيزة ٤٥، جيزة ٧٠ ، جيزة ٨٧، جيزة ٨٨ وستة أصناف تمثل أصناف طويلة التيلة منها أصناف تزرع فى الوجه القبلى وهى جيزة ٨٠، جيزة ٨٣، جيزة ٩٠ وأصناف تزرع فى الوجه البحرى وهى جيزة ٨٥ ، جيزة ٨٩ ، جيزة ٨٦ بالأضافة إلى الهجين(جيزة ٨٩ × جيزة ٨٦). ثم غزل هذه الأصناف باستخدام نظام الغزل الحلقى على نمرة ٦٠ بالترقيم الانجليزي بمعامل برم ٣٫٦.

أوضحت النتائج وجود فروق معنوية بين أصناف الأقطان فائقة الطول فى الصفات الميكانيكية و الصفات الطبيعية للتيلة فى معظم الحالات وبوجه عام اعطى الصنف جيزة ٤٥ اعلى القيم لصفات التيلةوالغزل.

كما أوضحت النتائج وجود فروق معنوية بين الأصناف تحت الدراسة في الصفات الميكانيكية والصفات الطبيعية للتيلة و بوجه عام فقد أعطى الصنف جيزة ٨٦ والهجين المباشر(جيزة ٨٩ × جيزة ٨٦) أعلى القيم لصفات التيلة والغزل فى طبقة الأقطان طويلة التيلة.

كما تبين أن طول ومتانة ونعومة التيلة والنضج معا هم أكثر الصفات مساهمة فى متانة الخيط بينما كانت أستطالة التيلة وعدد الألتواءات وعرض الشريط هم الأكثر مساهمة فى استطالة الخيط فى حين كانت نعومة التيلة والنضج وطول ومتانة التيلة هم الأكثر مساهمة فى متانة الغزل ومن اكثر الصفات مساهمة فى معامل أختلاف الخيط عدد المناطق السميكة وعدد المناطق الرفيعة وطول الالياف أما متانة واستطالة التيلة فكانا الأكثر مساهمة فى الشغل المبذول للقطع.

الكلمات الدالة : القطن، الأصناف،أصناف طويلة، أصناف طويلة، التيلة، الغزل، الصفات الطبيعية والميكانيكية

The present study was carried out in the Laboratories of Cotton Research Technology, Research Division, Cotton Research Institute, Agricultural Research Center, Giza. The objective of the present investigation was concurred with the quantification of the contribution of fiber physical properties to yarn properties in Extra Long and Long Stable Egyptian cotton varieties. Four Extra- Long Staple commercial cotton varieties namely, Delta cottons Giza 45, Giza 70, Giza 87 and Giza 88, six Long-Staple commercial cotton varieties namely, Giza 85, Giza 89 and Giza 86 (Delta cottons) and the promising cross (Giza 89 x Giza 86), Giza 80, Giza 83, Giza 90 (Upper Egypt cottons), were used as experimental materials. Row cotton was measured for fiber characteristics. Each variety was carried out in spinning mill. Each cotton fiber material was spun into 60's yarn count and 3.6 twist multiplier for tests of single yarn properties.

Significant differences for fiber mechanical and physical properties fiber and yarn were observed among cotton varieties. Giza45, Giza 86 and (Giza 89 x Giza 86) gave the highest fiber quality. The best characters effecting yarn strength in Egyptian Extra Long Staple cotton varieties were maturity, fiber length, fiber strength and fineness. Fiber elongation, number of convolutions and ribbon width were the most contributions to yarn elongation.   Fiber length, maturity and fineness were the most contributors to lea count strength. Uniformity Index and fiber length was the most contributions to yarn CV%.

Key words: Cotton, Varieties, Extra Long , Long Stable, Fiber, Yarn,
Physical properties, Mechanical properties

6 – أهم النتائج التطبيقية التى تم التوصل إليها :

(لا تزيد عن سطرين لكل منها)

٦ – ١

أوضحت النتائج وجود فروق معنوية بين أصناف الأقطان فائقة الطول فى الصفات الميكانيكية و الصفات الطبيعية للتيلة

٦ – ٢

أتضح من النتائج وجود فروق معنوية بين الأصناف   الطويلة تحت الدراسة فى الصفات الميكانيكية والصفات الطبيعيـــة للتيلة

٦ – ٣

تبين أن طول ومتانة ونعومة التيلة والنضج معا تمثل أكثر الصفات مساهمة فى متانة الخيط

٦ – ٤

أستطالة التيلة وعدد الألتواءات وعرض الشريط الصفات الأكثر مساهمة فى استطالة الخيط

٧ – ما هى الجهات التى يمكن أن تستفيد من هذا البحث :

(اذكر هذه الجهات مع شرح أهمية البحث لهذه الجهة بما لا يزيد عن أربعة سطور لكل جهة

٧- ٢ مركز البحوث الزراعية

٧ – ٣

٧–٤

٨ – هل توجد علاقة قائمة بإحدى هذا الجهات :   نعم .   لا لا

فى حالة نعم اذكر هذه الجهات :

٨ – ١

٨ – ٢

٨ – ٣

ما هى طبيعة العلاقة :

مشروع بحثى   مشروع بحثى

تعاون أكاديمى   ☐

مشروع ممول من جهة ثالثة ☐   (اذكر ما هى :   )

أخرى   ☐ (تذكر   )

٩ – **هل توافق على التعاون مع جهات مستفيدة من خلال الجامعة :**

لا ‏ ☐ (لماذا ‏ ‏)

نعم ‏ ‏ نعم

(أ) لتطبيق البحث : ‏ ☐

(ب) ‏ لاستكمال البحث : ‏ ☐

(ج) ‏ أخرى ‏ ☐ (**تذكر** ‏ ‏)

١٠ – **هل تم نشر بحوث مستخرجة من الرسالة فى مجلات أو مؤتمرات علمية**

نعم تم النشر (تذكر مع جهة النشر و المكان و التاريخ)

١٠ – ١ ‏ جامعة المنصورة مجلة العلوم الزراعية

لا

١٠ – ٢

١٠ – ٣

١١ – **هل سبق التقدم لتسجيل براءات اختراع** (تذكر مع الجهة و المكان و التاريخ)

لا ‏ ‏ لا

١٢ – **هل توافق على إعطاء البيانات المذكورة فى هذه الاستمارة لجهات أخرى**

نعم ‏ ‏ نعم ‏ ‏ لا ‏ ☐

توقيع الطالب : فايزه أحمد محمد ‏ ‏ ‏ توقيع المشرفين :

د/ سهير عليان دسوقى

د/ أمانى محمد عبدالله

د/ نفيسة طه أحمد

–

_____

وكيل الكلية (المعهد) للدراسات العليا و البحوث : ‏ ‏ التاريخ

٦/٦

Name of Candidate: Hassan Saleh Suleiman   **Degree:** M.Sc.
Title of Thesis: Heterosis and Combining Ability in Wheat
Supervisors: Dr. Fawzy Fathy Saad
                  Dr. Samir Rabie El-Sayed Abo-Hegazy
                  Dr. Ezz El-Dein Abdel-Rahman Mohamed El-Sayed
Department: Agronomy   **Approval: 8/5/2011**

ABSTRACT

This investigation was carried out at El-Giza Agricultural Research Station of the Agricultural Research Center (ARC) during two successive seasons 2008-2009 and 2009-2010. The main objective was to study performance, heterosis, combining ability and interrelationships among traits for earliness, grain filling and grain yield and its attributes in bread wheat (*Triticum aestivum* L.). Seven bread wheat genotypes *viz.*, Sids 12(P_1), Giza 168(P_2), Sakha 93(P_3), Gemmeiza 9(P_4), Line 109(P_5), Line 147(P_6) and Line 172(P_7) were crossed in a half diallel mating design to produce 21 F_1 hybrids in 2008-2009. Parents and 21 F_1 hybrids were evaluated in 2009-2010. Significant mean squares due to genotypes, parents and crosses were detected for all traits. The parents *vs.* crosses mean squares as indication average of heterosis were highly significant for all characters. Average desirable heterotic effects relative to better-parent across all studied hybrids were detected for all traits, except grain filling period and harvest index. Significant positive heterobeltiosis for grain yield/plant was recorded for 10 crosses where the highest cross $P_3 \times P_6$ (37.83%). Analysis showed that both general combining ability (GCA) and specific combining ability (SCA) variances were highly significant for all studied traits except the mean square of GCA for number of spikelets/spike. The ratio of GCA/SCA mean squares was more than unity for all traits except number of spikelets/spike, number of kernels/spike and grain filling rate. Additive gene effects were more important and played a major role in the inheritance of all studied traits. However, non-additive gene effects played a major role in the inheritance of number of spikelets/spike, number of kernels/spike and grain filling rate. Line 147 was the best general combiner for grain yield/plant, grain filling rate and number of spikes/plant. The cross $P_1 \times P_3$ showed superiority in SCA effects for number of kernels/spike, grain filling rate and grain yield/plant. Grain yield/plant showed highly significant phenotypic correlation with all studied traits except plant height.

Key words: Bread wheat, *Triticum aestivum*, Heterosis, Combining ability, Phenotypic and genotypic correlations.

Name of Candidate: Mohammad Nabi Hashimi   **Degree:** M.Sc.
Title of Thesis: Evaluation of Some Maize Genotypes Under Water Stress Conditions
Supervisors: Dr. Ahmed Medhat Mohamed Al-Naggar
                Dr. Salwa Al- Moursi Soliman
                Dr. Hamdy Yossuf El- Sherbeiny
Department: Agronomy
                                            Approval: 29 / 5 /2011

ABSTRACT

In order to identify genotypes of high water efficiency and responsiveness, this study was conducted to determine the differential performance under drought stress and non-stress conditions at flowering stage among 3 groups of maize genotypes of narrow- (single crosses), medium- (3-way crosses) and broad- (populations) genetic base backgrounds in two seasons, i.e. 2009 and 2010. Performance of genotypes varied with water supply and season. Water stress caused significant decreases in grain yield/plant (GYPP), grain yield/fed (GYPF), ears/plant (EPP), kernels/plant (KPP), and 100-kernel weight (100KW) and significant increases in anthesis-silking interval (ASI), barren stalks (BS), leaf rolling (LR) and leaf senescence (LS). The largest reduction was reached by GYPP ($\approx$ 38 %), but the largest increase was reached by LR ($\approx$ 311 %) as a result of water stress. Narrow genetic base genotypes exhibited the highest means for GYPP and GYPF. Medium- and broad- genetic base genotypes came in the 2nd and 3rd rank, respectively for same traits. Superiority of tolerant (T) over sensitive (S) genotypes under drought in GYPP (118.3 %) was due to superiority in all yield components, i.e. KPP (25.78 %), EPP (24.71 %) and 100KW (3.89 %) as well as in drought adaptive traits, i.e. lower values in BS, LR, LS, ASI, days to anthesis and to silking and plant and ear height. Single crosses SC 128, SC Ageeb, SC 101, SC 124, followed by SC 30D80, SC 3062, SC 30K08, and SC 10 were considered water efficient and responsive, while most of populations were considered non-efficient and non-responsive. The superiority of SC 128, SC 101 and SC 3062 in GYPP could be attributed to superiority in EPP, KPP, ASI and LS while superiority in GYPP of SC D80 and SC 30K08 could be due to superiority in ASI and LS and that of SC 10 due to superiority in EPP and KPP. Estimates of heritability (h^2_b) and expected genetic advance (GA) from selection were higher under well watering than under water stress in most studied traits. The highest GA estimates were shown by grain yield traits. Further studies should be conducted to determine the underlying plant mechanisms contributing to the water efficient selected hybrids of maize.

Key words: *Zea mays*, drought tolerance, anthesis-silking interval; water- use efficiency, responsiveness, genotypic differences.

Name of Candidate: Fouz Fotouh Mohamad Abo El-Enen   **Degree:** M.Sc.

Title of thesis: Heterosis and Combining Ability for Forage Yield Components in Pearl Millet (*Pennisetum glaucum*).

Supervisors: Dr. Adel Abd El-Moniem Hob Allah
           Dr. Mohamed Ibrahem Masri
           Dr. Mohamed Abo Zed El-Nahrawy

Department: Agronomy   **Approval:**   /   /

ABSTRACT

Ten pollen parents of pearl millet were crossed with four male-sterile lines using line x tester mating design. The fourteen parents, 40 F_1's and 40 F_2's were grown to evaluate heterosis and combining ability in F_1 generation as well as inbreeding depression in F_2 generation for forage yield and its related traits. Results showed significant differences among the evaluated genotypes for all studied traits of both cuts. Variable and significant magnitude of heterosis and heterobeltiosis was observed for all studied characters. The highest heterosis was expressed by plant height, number of tillers plant, fresh and dry forage yields at both cuts as well as total fresh and dry forage yields over the two cuts. The highest heterobeltiosis was observed for forage yield in the cross 861A **x** 87/059IPCNo293 at both cuts. Estimates of variance component for general GCA and specific SCA combining abilities cleared the predominance of variance due to SCA over GCA, indicating non-additive type of gene action involved for the control of plant height, number of leaves/plant, stem diameter, leaf length, leaf width, number of tillers/plant, fresh and dry forage yields at both cuts as well as total fresh and dry yields over the two cuts. Seventeen of the crosses showed significant and favorable positive SCA effects for forage yield and its related traits. The crosses 861A **x** 87/059IPCNo293, ICMA98777 x ICMV05111 and 14A x PE00205 expressed significant positive SCA effects for total forage yield. Further 14A x PE00205 and 17A x ICMV05333 exhibited the best combinations for total dry forage yield. F_2 crosses varied significantly for forage yield and its components. Some of evaluated F_2 crosses showed close agreement between actual and predicted F_2 yields indicating no epistasis, while other F_2 crosses showed notable deviation between actual and predicted F_2 yields indicating epistasis gene effects. For most studied characters, a large number of hybrids showed a significant positive and negative inbreeding depression.

Key words: Pearl millet (*Pennisetum glaucum*), general combining ability, specific combining ability, heterosis, heterobeltiosis**,** inbreeding depression, epistasis.

ABSTRACT

Two field experiments were carried out at the Agric. Exp. Sta., Fac. Agric., Cairo Univ., Giza, during 2009 and 2010 seasons to study the response of three hybrids of maize, *Zea mays L.* (S.C. 10, S.C. 122 and T.W.C. 321) to four plant densities (4.76, 5.56, 6.67 and 8.33 plants/m^2) on grain yield and yield components. Significant differences were found in both seasons between maize hybrids in plant height, number of ears/plant, barren plant, LAI, number of kernels/row, grain weight/ear and grain yield/plant.

Likewise, number of rows per ear, number of ears/plant, number of kernels per row, grains weight/ear, seed index, shilling percentage and grain yield/plant significantly decreased by increasing plant density [Plant height, barren plant, LAI and grain yield per hectare significantly increased by increasing plant density from 4.76 plants/m^2 to 8.33 plants/m^2]. The highest grain yield/ha (9.96 and 10.32 ton/ha) were obtained by planting 8.33 plants/m^2 in 2009 and 2010 seasons respectively. The lowest 7.88 and 8.28 tons/ha were recorded by planting 4.76 plants/m^2 in 2009 and 2010 seasons respectively, while planting 6.67 plants/m^2 and 5.56 plants/m^2 were intermediate in grain yield/ha. Increasing plant density from 4.76 plants/m^2 to 8.33 plants/m^2 increased grain yield/ha by 25.70 and 24.98 % in 2009 and 2010, respectively, while this increase reached 11.09 and 8.05 % for plant density of 6.67 plants/m^2 in 2009 and 2010 seasons. The effect of the interaction between hybrids and plant density on yield and yield components were not significant for all characters except number of ears/plant, LAI and grain yield/plant.

Keywords: Maize (*Zea mays* L), hybrids, plant densities, grain yield, ear
              Attributes, growth.

Name of Candidate: Sayed Abdulwaheed Ferozy	Degree: M.Sc.

Name of Candidate: Sayed Abdulwaheed Ferozy   **Degree**: M.Sc.
Title of Thesis: Effect of Environmental Conditions on Productivity and Seed Quality of Soybean
Supervisors: Dr. Nabil Ali Khalil
                 Dr. Darwish Saleh Darwish
Department: Agronomy   **Approval: 19 / 6/ 2011**

ABSTRACT

Two field experiments were conducted at the Agricultural Experiments and Researches Station, Faculty of Agriculture, Cairo University, Giza, Egypt during 2009 and 2010 seasons. The objectives of this study were to investigate the response of some recent local soybean cultivars to seasonal changes, cropping systems and seeding rates and the effects of these factors on soybean growth, grain yield and its components. Two cropping systems, as solid soybean and intercropping of 4 soybean ridges alternated with 2 corn ridges, were adopted. Giza 21, Giza 35 and Giza 111 soybean Egyptian cultivars were used. The seeding rates were 210 000, 175 000 and 140 000 seeds/ per Feddan (Fed =4200 m^2).

Out of ten studied soybean yield and yield component traits, 7 traits were significantly affected by seasonal (S) variations. Air temperature and relative humidity (RH) during the growing periods indicated that the 2010 season was characterized by higher temperatures and RH.

Cropping systems (CS) significantly affected soybean plant height (PlHt), seed yield / plant (SY/P) and harvest index (HI). However, the (S x CS) interaction was insignificant for all traits. Seeding rates (PD) significantly affected seed yield/ plot (SY /plot) and seed index (SI). The interaction of PD with other studied factors, recorded significant variances due to CS x PD interaction for days to flowering onset (DF) and seed index (SI). Mean squares due to soybean cultivars varied significantly for DF, days to maturity (DMAT), HI, and SI. Such cultivars performed differently from season to another for DF, DMAT, pods and seed yield / plant (SY/P). The studied soybean cultivars varied for stability in performance only for environmentally highly and moderately affected traits. It may be concluded that performance of soybean traits is differently influenced by the environmental conditions and could be classified in this respect to sensitive, moderate and tolerant to environmental conditions. This variation in performance of soybean traits should be taken into considerations in soybean yield trials in attempting to improve the level of stability of soybeans. Seasons (S) is a significant (or highly) source of variation for all studied soybean traits, except days to flowering onset (DF), branches / plant and seed index (SI). Seasonal (unpredictable effects) plus cultural practices changes (predictable environmental effects) greatly affected the soybean traits. However, genotypic differences were significant for DF, HI and SI.

Key Words: Soybean, Glycine max, Cultivars, Climatic changes, Seasonal variation,Cropping systems, Planting densities, Stability.

Name of Candidate: Mahmoud Abd EL-Salam Abd EL-Aziz

Degree: M.Sc.

Title of Thesis: Effect of Bio and Mineral Fertilization on Naked Barley under Rainfed and Supplemental Irrigation in Matrouh area, Egypt

Supervisors: Dr. EL- Metwally Abd-Alla EL- Metwally
Dr. Emad Abdel-Gawad Esmael
Late Dr. Mohamed Osama Mohamed Salem
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Department: Agronomy

Approval: 12 / 7 / 2011

ABSTRACT

Two experiments were carried out during the 2006/07 and 2007/08 winter seasons at El- Hammam area, Matrouh, Egypt to investigate the influences of supplemental irrigation (SI) and fertilization packages under rainfed conditions on productivity of naked barley (*Hordeum vulgare* L.). Each experiment included 28 treatments which were; four amounts of supplemental irrigation: 252; 378 and 504 m^3/ fad. and seven fertilization packages:$N_0P_0K_0$, 400 g Microbein (Bio-N), $N_{20}P_{7.5}K_{12}$, $N_{20}P_{7.5}K_{12}$ + Bio-N/ fad., $N_{40}P_{15}K_{24}$, $N_{40}P_{15}K_{24}$+Bio-N/ fad. and $N_{80}P_{30}K_{48}$. Results showed significant differences among supplemental irrigation treatments in all the studied traits in both seasons. Also, results clearly showed that grain, straw and biological yields were increased by each increment in amount of water supply from 252 to 378 then to 504 m^3/ fad. in the two seasons. It is evident that grain yield increased by 23.0, 82.7 and 111.1 % and by 22.9, 81.7 and 110.8 % in the first and the second seasons, respectively. Results indicated that application of 20 Kg N + 7.5 Kg P_2O_5 + 12 Kg K_2O/fad. + Bio-N gave the tallest plants, longest spikes, heaviest 1000-grain weight, as well as, the highest values of grain, straw, biological and protein yields, as well as, highest values of water use efficiency compared to the other tried fertilization packages in both seasons. Under rainfed conditions at El-Hammam area, NWC of Egypt, it could be obtained high gain productivity of naked barley economically, by adding 504 m^3/ fad as a supplemental irrigation and 20 kg N +7.5 kg P_2O_5 +12 kg K_2O + 400 g Microbein (Bio-N)/ fad.

Key words: naked barley, supplemental irrigation, NPK fertilization, Bio-N fertilization, rainfall precipitation, grain yield and protein yield

Name of Candidate: Deyaa El-Din Mohamed Abdel-Rahman	Degree: M.Sc.

Name of Candidate: Deyaa El-Din Mohamed Abdel-Rahman   **Degree:** M.Sc.
Title of Thesis: Variation among Some Mungbean Germplasm for Late Summer Planting.
Supervisors: Dr. Darwish Saleh Darwish
               Dr. Rafea Ibrahim Ahmed El-Zanaty
               Dr. Aziza Abd El-Aziz Faraag
Department: Agronomy   **Approval:** 2 / 7 / 2011

ABSTRACT

Nineteen mungbean genotypes were evaluated under Giza conditions, in three sowing dates (1 st, 15 th and end of August), in three separate experiments during 2006 and 2007 seasons. The objectives were to explore the performance and stability of mungbean genotypes across kharif sowing environments.

The results showed that sowing dates (SD) significantly affected mungbean traits except seed Index (SI) during both seasons. moreover, genotypes (G) significantly affected all studied traits during both seasons. The interaction of G × SD was highly significant in both seasons except for 50 flowering date (50 FD) (significant) in 2006 season and SI (non significant) in 2007 season.The magnitude of variances due to sowing dates were much higher than those of genotypes followed by G × SD interaction for all traits except no. of branches, SI and Protein % (P %) for both seasons and plant height in the second one**.**

Interaction of genotypes with seasons and sowing dates [G × SD × (S)] recorded highly significant mean squares and exhibited lower mean squares than genotypes for all traits.

The three sources of variation, *viz.* Environments (E), Genotypes (G) and G × E were highly significant for all traits except for SI (significant) with (E).
The mean squares of environmental effects recorded huge compared to these genotypes for onset of flowering date (OFD), (50 FD), onset podding date (OPD), 90 % podding date (90 PD), pod filling duration (PFD), number of seeds /pod (S/P), seed yield (SY), biological yield (BY) and protein yield (PY). Contradicting higher variances due to genotypes than environments were recorded for the rest traits; plant height (PHT), branches, pods, HI, P % and SI.

Seeding mungbean at the beginning of August (SD1) significantly produced taller plants with more branches, pods/plant seeds/pod, SY, BY and HI with shortened flowering and maturity days during both seasons. Medium-sowing date (SD2) during both seasons affected mungbean yield and yield components intermediately between both early and late ones.

The calculated measurements of stability indicated that variable performance among genotypes and parameters for SY and BY.

Overall, the results can be of great benefit in the development and recommendation of mungbean genotypes during the late summer in Egypt.

Key words: Mungbean (*Vigna radiata* (L.) Wilczek), Genotypes, Sowing or seeding dates, Genotypic variation, Stability of performance.

Name of Candidate: Ramadan Abd El-Wahed Badawy   **Degree:** M.Sc.
Title of Thesis: Effect of Planting Date and Plant Density on Growth and Yield of Some Faba Bean Varieties
Supervisors: Dr. Nabil Ali Khalil
            Dr. Wageih Abd El-Azeem El-Murshedy
            Dr. Maamoun Omar Khaity
Department: Agronomy   **Approval:** 30 / 6 / 2011

ABSTRACT

Two field experiments were carried out at the Agricultural Experiments and Researches Station, Faculty of Agriculture, Cairo University, Giza, Egypt, during 2005/06 and 2006/07 seasons to study the effect of three planting dates (1, 15 and 30 November), three plant densities (22, 33 and 44 plant/m^2), two varieties (Giza 843 and Giza 40) and their interactions on growth, yield and yield components of faba bean.

The objectives of this research were to find out the best planting date and to determine the optimum plant density for two varieties. A spilt-split plot design in a randomized block arrangement was used. The main plot was devoted to the planting dates. Sub-plots were allocated to the varieties, while, sub-sub plots to the plant densities.

The most important results obtained could be summarized as follow: Early planting date (1st November) recorded the highest biological yield/feddan. While, The highest seed yield and harvest index were recorded from planting on 15 November. Biological and seed yields were significantly increased with increasing plant density from 22 to 44 plant/m^2. Cultivars had a non- significant effect on biological yield and harvest index. But Giza-843 surpassed Giza-40 in seed yield/feddan. The interaction between planting date and varieties had a significant effect on seed yield/feddan in the second seasons only. The highest seed yield was obtained from second planting date on 15 November combined with Giza-843. The highest weight of seeds/plant was recorded from the combination of 15 November $\times$ Giza-843 $\times$ 22 plant/m2. Meanwhile, Giza 843 variety gave the highest seed yield/feddan when planted in November 15 using 44 plant/m^2 density.

Key words: Faba bean, *Vicia faba*, Sowing, Planting date, Density, Population, Variety.

Name of Candidate: Hend Abo El-Fetouh Ramadan Ghannam   **Degree:** M.Sc   .
Title of Thesis: Performance of Some Faba Bean Genotypes and Their Diallel Crosses for Earliness, Yield and its Components
Supervisors: Dr. Mazhar Mohamed Fawzy Abdalla
             Dr. Magdy Mohamed Shafik
             Dr. Sabah Mahmoud Attia
Department: Agronomy   **Approval**:   /   / 2011

ABSTRACT

The present investigation was carried out under the insect free cage at Giza Research Station during 2008/09 and 2009/10 growing seasons. A diallel cross including reciprocals among five faba bean genotypes (Giza 40, Giza 843, Nubaria 1, Triple White and ICARUS) was utilized to estimate different sources of genetic variability and other derived parameters for earliness, seed yield and its components i.e.,. pods, seeds and 100-seed weight.

The analysis of variance for earliness showed highly significant differences among genotypes, pointing to a wide genetic variability for flowering and maturity. The parental genotype Giza 843 had the earliest and tallest plants and exhibited significantly the highest seed yield/plant. Nubaria 1 had significantly the highest number of pods/plant and 100-seed weight. All crosses had highly significant heterosis and heterobeltiosis for seed yield/plant except the three crosses: Nubaria 1 x ICARUS, ICARUS x Nubaria 1 and ICARUS x Triple White.

The ratio of GCA/SCA exceeded the unity except for days to flowering, days to maturity, branches/plant and 100-seed weight. Low GCA/SCA ratios revealed the predominance of non-additive gene action in this cases.

Most of the genetic variation among the investigated genotypes appeared to be additive. Thus, selection could be favored for improving these traits. The additive genetic variance (D) was highly significant for days to flowering; pods/plant and 100-seed weight indicating that additive effect is important in the inheritance of these traits. Therefore, selection would be expected to be effective. The component of variation due to dominance effects (H1) was highly significant for all traits indicating the presence of dominance with asymmetrical gene distribution in the parental genotypes. All traits had high values of H1 and H2 than "D" except days to flowering and 100-seed weight (g) indicating the important role of dominance genetic variance.

Heritability estimates in broad sense were found to be high for all traits and ranged from 72% (days to maturity) to 98% (number of seeds/plant). Heritability in narrow sense was lower than in broad sense and ranged from 19% for seed yield/plant to 77% for days to flowering. This is indicator for the importance of both additive and non-additive genetic variance in the inheritance of these traits.

Key words: *Faba bean, Earliness, Heterosis, Combining ability, Heritability*

Name of Candidate: Hesham Mohamed Ali El-Sayed Elian   Degree: M. Sc.
Title of Thesis : Integrated weed management in peanut
Supervisors : Dr. Mahmoud Hussein Faraht El-Deek
                      Dr. Nagah Mohamed Abu-Hagaza
                      Dr. Moawad Fadl-Allah Ibrahim

Department : Agronomy

Branch :   Approval: 13 / 12   / 2011

ABSTRACT

Two field experiments were carried out at El- Ismailia Agricultural Research Station,ARC, during 2007 and 2008 successive summer seasons to study the effect of the integration between hand hoeing and chemical weed control treatments on associated weeds, growth,yield and yield components, of peanut *(Arachis hypogaea* L*)* as well as some economic criteria . Treatments were arranged in split plot design with four replicates. Hand hoeing treatments were arranged in the main plots, while chemical weed control treatments were arranged in the sub plots. All herbicides treatments were sprayed with a knapsack sprayer (C P 3) at a volume rate of 200 l water/ fed. peanut cv. Giza 5 seeds (35 kg/fed.) were inoculated with the specific strain of *Bradyrhizobium sp*., then sown in rows (60 cm apart and 10 cm between hills) . Sowing took place on the second week of April and harvest on the first week of October in both seasons . Plot area was $21m^{2.}$.

Results indicated that one or two hand hoeings were effective in reducing the dry weight of broad and narrow leaved weeds . One hand hoeing was sufficient for reducing the dry weight of total annual weeds. It was found that one hand hoeing was required for increasing the values of some peanut characters , while two hoeings were needed for increasing others. Peanut hoed once gave the heighest and significant yield, while it produced the highest straw and seed yields when hoed twice . Oil percentage was not affected by hoeing. In general , clethodim followed by butralin recorded the highest pod and seed yields in both seasons . Clethodim application gave the highest value of seed yield of 813.10 and 755.90 kg/fed. compared to 154.3 and 373.53 kg/fed. for the unweeded check in both seasons, respectively. Oil percentage was not significantly affected. Adding one hand hoeing to fluazifop-butyl in the first season or to clethodim in the second one recorded the highest   seed yield (976.06 and 902.03 kg/fed., respectively).

Key   words: Peanut,   grassy   weeds,   broad   leaved   weeds,   herbicides,   hoeing