**ABSTRACT**

Two field experiments were carried out at the Experimental Station, Faculty of Agriculture, Mansoura University, Dakhia Governorate during the two summer seasons of 2006 and 2007. The main objectives of these experiments were to identify some morphological characteristics of five soybean (Glycine max, L.) varieties i.e. Giza 21, Giza 22, Giza 35, Giza 111 and Crawford, three peanut (Arachis hypogaea, L.) varieties i.e. Giza 4, Giza 5 and Giza 6, three sesame (Sesamum indicm, L.) varieties i.e. Giza 32, Shandwell 3 and Taka 2 and two sunflower (Helianthus annuus, L.) varieties i.e. Genotype102 and Genotype 53 are used in this experiments. Complete Block Design in four replications was used.

1- The results on soybean varieties indicated that Giza 21 variety was identified by tallest plants, highest number of branches/plant and pod length compared with other varieties. Giza 22 variety was characterized with heaviest seed weight. Giza 35 variety was identified by higher in number of internodes/stem, number of leaves/plant, number of days to 50% flowering and number of pods/plant compared with other soybean varieties. Giza 111 variety was characterized with highest number of seeds/pod, stem diameter and seed length. In addition, Crawford variety was identified by more seed width only compared with other varieties.

2- The results on peanut varieties indicated that Giza 4 variety was identified by tallest plants, more in seed length, leave width, leave length, pod length, highest number of branches/plant, number of days to 50% flowering and heaviest seed weight compared with other studied varieties. In addition, Giza 6 variety characterized with more seed width only compared with other varieties.

3- The results on sesame varieties indicated that Taka 2 variety was identified by more in seed length, seed width, number of days to 50% flowering and Shedding percentage compared with other studied varieties. Giza 32 variety characterized with heaviest seed weight, tallest plants, highest number of branches/plant, number of flowers/ plant, number of capsules/ main stem and number of seeds/ capsule compared with other varieties. In addition, Shandwell 3 variety was identified by more height of capsule length only compared with other studied varieties.

4- The results on sunflower varieties indicated that Genotype102 variety was identified by tallest seed and more in seed width, leaf shape, number of bracts on the back head, anthocynin coloration of bracts, color of ray flower, disk flower color, number of days to 50% flowering, number of seeds/head, head diameter and heaviest seed weight compared with Genotype53. In addition, Genotype 53 variety characterized with tallest plants, stem diameter, stem harness at the top, number of internodes/stem, internodes length/ stem, number of leaves/plant, leaf hight of the tip of tabled to insertion of petiole, bract shape, number of ray flower and head attitude (at maturity) only compared with Genotype 102.

It could be summarized that morphological identification of Soybean, Peanut, Sesame and Sunflower varieties very important in breeding program of new varieties for higher production of these crops per unit area.

Key words: Soybean, Peanut, Sesame, Sunflower, Varieties, Identification, Morphological characteristics.
INTRODUCTION

Soybean, peanut, sesame and sunflower varieties differed widely in productivity and response to management practices. Characterization of morphological variability will allow breeders to identify accessions with desirable characterization such as earliness and improved morphological characters. Characterization and grouping of germplasm will allow breeders to avoid duplication in sampling populations.

Soybean genotypes differed greatly in their maturity therefore many investigators studied this phenomenon. Scott and Aldrich (1970) reported that there are ten maturity classes of soybean varieties from 00 up to VIII. Fontes and Ohlrogge (1972) concluded that where separated large (220 mg/seed) and small (140 mg/seed) seeds from a lot of "Amsoy" and found that large seeds represented 22% of the total number of seeds in the lot versus 34% for small seeds. Burris et al. (1973) separated seeds for a seed four varieties into four size classes, with sizes ranging from approximately 80 to 210 mg/seed. Similar variations in seed size within a seed lot have been reported by Johnson and leudders (1974), Hopper et al., (1979). Payne and kozykowski (1979 and Inouye and Jin (1981). El-Emery et al. (1998) investigated soybean plant parameters which could be used to differentiate between cultivars. Plant height and stem determinations were useful tools for identifying soybean genotypes. Abd-Alla et al. (2004) evaluated some morphological and biochemical characteristics of commercially released soybean cultivars, namely Giza/21, Giza/35, Giza/111 and Crawford, and some promising genotypes, namely Hybrid 1/10, Hybrid 1/12, Hybrid/85, Hybrid 88/1, Hybrid 88/3, Hybrid 93, Giza/30 and Giza/32. Twelve soyabean (Glycine max L. Merr) genotypes were identified based on morphological differences in seed, agronomic characters such as days from planting to flowering and maturity, yield and its components, and seed chemical composition and biochemical variability. Field observations indicated that some genotypes were indistinguishable from each other by using phenotypic and agronomic characteristics.

Peanut genotypes differed greatly in their maturity, so many investigators studied in this respect. Salma (1985) observed that pod length was considered the most useful diagnostic character in cultivars identification in conjunction with the other morphological characters. Knauff et al. (1991) studied the variation in seed size uniformity among peanut genotypes. EL-Mandoh et al. (1996) studied the behavior and yield potentiality of 25 peanut varieties/plant, number of pods/plant and 100-seed weight. Nemat Naguib (2000) found that the genotype Giza 5 surpassed the other two genotypes for plant height, number of branches per plant, seed length, pod length, 100-seed weight and seed width. Abd-Alla and Sorour. (2004) found that. M.15, M.17 and M.25 had the highest values for seed length, thickness, size and weight, while M.30 recorded the highest values for seed width. Certain superior genotypes, such as M.32 and M.15, gave relatively positive results for most of the tests. Thus, they may be useful for plant breeders.
Yadava et al. (1980) found significant differences for the number of primary branches, number of capsules on the main shoot of sesame plants, total number of capsules as well as 1000-seed weight, plant height and days to first flowering and 50% flowering. Mahdy et al. (1988) reported that the differences among 25 cultivars and strains of sesame were significant for number of branches/plant and capsule length, but differences were not significant for number of capsules/plant. EL-Serogy (1992) found significant differences in plant height and 1000-seed weight among different varieties in both seasons. Guirguis et al. (1996) noticed significant differences among genotypes in number of capsules/plant, 1000-seed weight, plant height, number of branches/plant, first capsule height and fruiting zone length. EL-Serogy et al. (1997) showed significant differences between Giza 32 and Giza 35 varieties in seed yield/plant in both seasons. The differences between the two sesame varieties may be attributed to the differences in their genetically constitution for these traits and interaction between the genetically make-up and the environmental conditions prevailing during the experimentation period. EL-Serogy et al. (1998) found significant differences in number of capsules/plant and weight of 1000-seed in the first seasons only. Giza 32 and hybrid 117 surpassed New arrival 652 and b 51 in the above mentioned characters except number of capsules/plant and seed yield which showed a reverse trend. Nemat Naguip (2000) found that genotype Giza 32 surpassed the other three genotypes for plant height and days to 50% flowering, to maturity, height of the first capsule and number of capsules per plant. While the genotype Hybrid 55 had the lowest values.

Sunflower genotypes differed greatly in their maturity, so many investigators studied in this respect. Sharief and Said (1993) found that Majak cultivar significantly surpassed the other cultivars in plant height, stem diameter, and head diameter. Concerning 1000-seed weight, it was found that Roadio cultivar was the best among other cultivars under test. El-Kalla et al. (1998) reported that sunflower hybrids markedly varied in most estimated characteristics. Vidoc cultivar markedly exceeded both Pioneer and G 101 cultivars in plant height, weight of 1000-seed and head diameter. Ali et al. (2000) found that Hysun-33 performed better for all parameters such as leaf area per plant and number of leaves per plant. Esmail (2000) found that Maijak cultivar significantly surpassed Elya, Euroflor and Pioneer 6480 cultivars in the vegetative growth and LAI at all sampling dates. Monotti et al. (2001) showed that plant height was affected by adverse weather conditions. There is no differences in 1000-seed weight, while seed production varied between sites. The aim of this research to identify of some soybean, peanut, sesame and sunflower varities in morphological.

The objectives of this research was to identify morphological characters of some oil crop i.e. Soybean, Peanut, Sesame and Sunflower varities.

MATERIALS AN METHODS
Two field experiments were carried out at the Experimental Station, Faculty of Agriculture, Mansoura University, Dakhla Governorate during the summer seasons of 2006 and 2007. The main objectives of these experiments was to determine morphological identifying of five of soybean varieties (Glycine max (Merr.) L.) at different growth stages. Five soybean varieties i.e. GIZA 21, GIZA 22, GIZA 35, GIZA 111 and Crawford, three peanut (Arachis hypogaea, L.) varieties i.e. GIZA 4, GIZA 5 and GIZA 6, three sesame (Sesamum indicum, L.) varieties i.e. GIZA 32, Shandwell 3 and Taka 2 and two sunflower (Helianthus annuus, L.) varieties i.e. Genotype 102 and Genotype 53 are used in this experiments. In both seasons, soybean, peanut, sesame and sunflower were preceded by Egyptian clover (Trifolium alexandrinum, L.). Plots were arranged in a randomized complete block design in four replications. The experimental unit area occupied an area of 10.5m² consisted of five rows each of 3.5 meters in length and 60 cm in width. Seeds of studied soybean, peanut, sesame and sunflower varieties were grown on April 1st and June 5th in 2006 and 2007 seasons, respectively. Plants were thinned after 21 days from sowing to one plant per hill and 10cm apart in soybean. Hills were spaced at 20 cm apart within the row spaced at 60 cm between rows and plants were thinned to one plant per hill before the first irrigation. Other cultural practices were followed as recommendation of Ministry of Agriculture and Land Reclamation in peanut. One plant per hill was left at thinning when the plant was arrived the height 15-20cm or when the plant was carried 4-6 leaf stage in sesame. The distance between hills was 20cm and plants were thinned before the first watering to secure one plant per hill. Sunflower plants were hoed twice, the first was practiced before the second irrigation and the second one was performed before the third irrigation in sunflower. The morphological identification was conducted usually using the descriptors is sued by International Union for the Protection of New Varieties of Plants (UPOV, 1994). All data were statistically analyzed according to the technique of analysis of variance (ANOVA) for the randomized complete block design. Least significant differences (LSD) method was used to test the differences between treatment means at 5% (in case of significant differences (*) and 1% in case of highly significant differences (**) level of probability. While, in case of no significant differences (N.S.) there is no LSD as published by Gomez and Gomes (1984). All statistical analysis were carried out using analysis of variance technique (ANOVA) by means of “MSTAT – C” Computer software package.

RESULTS AND DISCUSSION

1- Soybean morphological characters.

Results in Tables 1 clearly indicated that studied soybean varieties significantly differed in both 2006 and 2007 season. It could be stated that Giza 21 variety had tallest plants, pod length and higher number of branches per plant. Giza 22 variety had significant increases in 100 seed weight compared with other studied varieties in both seasons. Giza 35 variety had
more number of internodes per stem, number of pods per plant, number of leaves per plant and number of days to 50% flowering. Giza 111 variety had more in seed length, number of seeds per pod and stem diameter. In addition, Crawford variety had more seed width compared with other studied varieties in both seasons compared with other studied varieties in both seasons. The differences between soybean genotypes in all presented results might be reflect to the genetical factors and maturity group varieties. Similar results were reported by Scott and Aldrich (1970), Fontes and Ohlrogge(1972), Burris et al. (1973), Johnson and leudders (1974), Hopper et al., (1979). Payne and kozykowski (1979 and Inouye and Jin (1981), Elemery et al. (1998) and Abd-Alla et al.(2004).

2- Peanut morphological characters.
Results in Table 2 clearly indicated that studied peanut varieties significantly differed in both 2006 and 2007 season. It could be noticed that Giza 4 variety had more seed length, plant height, number of branches, leave width, leave length, number of days to 50% flowering, pod length and 100 seed weight compared with other studied varieties in both seasons. Giza 6 variety had more seed width compared with other studied varieties in both seasons. While, Giza5 variety had the lowest values of all studied traits. The differences between peanut genotypes in all presented results might be reflect to the genetical factors. Similar results were reported by Salma (1985), Knauft et al. (1991), EL-Mandoh et al (1996), Nemat Naguib (2000) and Abd-Alla and Sorour (2004).

3- Sesame morphological characters.
Results in Table 3 clearly indicated that studied soybean varieties significantly differed in both 2006 and 2007 season. It could be showed that Taka 2variety had more seed length, seed width, shedding percentage and number of days to 50% flowering compared with other studied varieties in both seasons. Giza 32 variety had tallest plants and more in number of branches per plant, number of leaves per branch, number of flowers per plant, number of capsules per main stem, number of seeds per capsule and 100 seed weight compared with other studied varieties in both seasons. Shandwell 3 variety had more significant increases in the capsule length compared with other studied varieties in both seasons. The differences between the two sesame varieties may be attributed to the differences in their genetically constitution for these traits and interaction between the genetically constitution for these traits and interaction between the genetically make-up and the environmental conditions prevailing during the experimentation period. Similar results were reported by Yadava et al, (1980), Mahdy et al. (1988), EL-Serogy (1992), Guirguis et al. (1996), EL-Serogy et al. (1997), EL-Serogy et al. (1998) and Nemat Naguip (2000).

4- Sunflower morphological characters.
Results in Table 4 and 5 clearly indicated that studied sunflower varieties significantly differed in both 2006 and 2007 season. It could be noticed Genotyp102 variety had more seed length, seed width, number of bracts on the back head, disk flower color, number of days to 50% flowering, number of
seeds per head, head diameter and 100 seed weight compared Genotype 53 in both seasons. Genotyp53 variety had more plant height, stem diameter, stem harness at the top, number of internodes per stem, internodes length per stem, number of leaves per plant, leaf height of the tip of petiole, bract shape, number of ray flowers compared with Genotyp102 in both seasons. The differences between soybean genotypes in all presented results might be reflect to the genetical factors. Similar results were reported by Sharief and Said (1993), El-Kalla et al. (1998), Ali et al. (2000), Esmail (2000) and Monotti et al. (2001).

REFERENCES


التمييز المورفولوجي لبعض أصناف محاصيل الزيت
أحمد أبو النجا قنديل ومحمود سليمان سلطان وعلي السيد شريف ولاء البطراوي
قسم المحاصيل – كلية الزراعة – جامعة المنصورة.

أقيمت تجربتين حقليتين خلال الموسمين الصيفيين 6002 و 6002 بمزرعة كلية الزراعة جامعة المنصورة بمحافظة الدقهلية لتمييز الصفات المورفولوجية لخمسة أصناف فول الصويا (جيزة 62، جيزة 66، جيزة 53، جيزة 222، كراو فورد) وثلاثة أصناف سمسم (جيزة 4، جيزة 3، جيزة 2) وثلاثة أصناف البذور السودانية (جيزة 44، جيزة 45، جيزة 56) وثلاثة أصناف عبر الشم (جيزة 206، جيزة 35، جيزة 206). أُستخدم توصيف UPOV للتصنيف الأصناف النباتية الجديدة لسنة 1994. وتم إجراء التمييز المورفولوجي بالحقل باستخدام توصيف UPOV (الاتحاد الدولي لحماية الأصناف النباتية الجديدة).

1. أظهرت نتائج الفول الصويا أن يمكن تمييز الصنف جيزة 62 بزيادة كل من طول القرن وطول النبات وعدد الفروع على النبات. ويمكن تمييز الصنف جيزة 22 بزيادة وزن البررة والبررة وعدد الأيام حتى ظهور 50% أزهار. يمكن تمييز الصنف جيزة 111 بزيادة عدد بذور القرن وطول البررة وقطر الساق. يمكن تمييز الصنف كراو فورد بزيادة عرض البررة.

2. أوضحت نتائج الفول السوداني أن يمكن تمييز الصنف جيزة 4 بزيادة كل من طول النبات وطول البررة وعدد أفرع النبات وعرض البررة وطول الورقة وطول القرن وزن ال100 بذرة. ويمكن تمييز الصنف جيزة 32 بزيادة كل من طول النبات وعدد أفرع النبات وعدد الأزهار وعدد كبسولات النبات وعدد بذور الكبسولة وزن ال100 بذرة. يمكن تمييز الصنف شندويل بزيادة طول الكبسولة.

3. أوضحت نتائج عباد الشم أن يمكن تمييز السلالة 102 بزيادة كل من طول النبات وعرض البررة وعدد الأيام حتى ظهور 50% أزهار وعدد الأزهار الواحدة وعرض الفرع وزن البررة وحفرية في طور الأزهار التفاعلية ولون الأزهار الشعاعية. ويمكن تمييز السلالة 53 بزيادة كل من طول النبات وطول الساق وعدد الأيام حتى ظهور 30% أزهار. ويمكن تمييز الورقة الشعراوية على الساق وعدد أوراق الساق وطول الساق وعدد الأزهار الشعاعية وعدد أوراق الفرع والأزهار المتوسطة لحافة الورقة وشكل الطول بصورة الفرع وردهة الساق. وتوصى هذه الدراسة بأن يمكن الاستفادة من تمييز أصناف كل من فول الصويا والفوائل السوداني والسمسم وعباد الشمس مورفولوجياً واستخدامها خلال برامج التربية ورناقة الأصناف الجديدة وتعزيز المحافظة عليها من التدهور وزراعة الأصناف عالية الأناجية المميزة لزيادة الإنتاجية وحدة المساحة.

Table 3 : Means of seed length (mm), seed width (mm), plant height (cm), number of branches/ plant, number of leaves/branch, number of days to 50% flowering,
number of flowers/plant, number of capsules/main stem, Shedding percentage, capsule length (cm), number of seeds/capsule and 100 seed weight (g) as affected by sesame varieties in 2006 and 2007 seasons.

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<th>2007 cm</th>
<th>s/plant</th>
<th>branch</th>
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<td>0.1</td>
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<td>1.3</td>
<td>2.5</td>
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Table 1: Means of seed length (mm), seed width (mm), plant height (cm), stem diameter (cm), number of internodes/stem, number of branches/plant, leaves/plant, number of days to 50% flowering, pods/plant, pod length (cm), number of seeds/pod and 100 seed weight (g) as affected by soybean varieties in 2006 and 2007 seasons.

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Table 2: Means of seed length (cm), seed width (cm), plant height (cm), number of branches/plant, leave width (cm), leave length (cm), number of days to 50% flowering, pod length (cm), number of seeds/pod and 100 seed weight (g) as affected by peanut varieties in 2006 and 2007 seasons.

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