



Minia J. of Agric. Res. & Develop.
Vol. (30) No. 3 pp 443 -456,
2010.

FACULTY OF AGRICULTURE

PERFORMANCE OF SEVERAL NEWLY FABA BEAN LINES UNDER ASSIUT CONDITIONS

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Received 10 August 2010 Accepted 30 Dec. 2010

ABSTRACT

This investigation was carried out at the experimental farm of the faculty of Agriculture, Assiut University, in the two successive growing seasons of 2007/2008 and 2008/2009, respectively. The purpose of this investigation was to study the performance of five breeding lines of faba bean produced in general research program of Prof. Dr. Esmat A. Waly and Prof. Dr. Sayed A. Abdel-Aal (Dept. of Horticulture, Faculty of Agriculture, Assiut University).

A randomized complete block design with five replicates was used, each breeding line of faba bean was planted in 6 plots of the lines. Each experimental plot consisted of 6 rows, 3.0 m long and 60 cm wide. Seeds of each line were planted in hills at 30 cm apart. Data revealed that line Romy 80 gave the highest number of tillers/plant with highest green pod length (cm), green pod width (cm) and the highest value of green pod weight (g) in both seasons. Assiut 120 had the highest number of dry pods/plant and total dry seed yield (4 ton/fed.)

INTRODUCTION

Faba bean (*Vicia faba*, L.) is important for human diet, which provides consumers with cheap and high quality protein. In Egypt during the past several years, faba bean cultivation showed considerable decrease in both area and production. During 2004, its

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area was 202008 fedden, it reached 210808 fedden in 2007 (14.9% less). The total production was 2173101 ardab and decreased to 1946924 ardab* in the same respective years (10.4%). Besides, 23430 fed. were grown for green consumption (fool akhdar). Large seeded (major) cultivars are grown to very limited extent.

In Egypt, the major problem of faba bean crop is its low and unstable yield from season to season and from farm to farm, This problem may be due to the number of cultivated cultivars of faba bean is very limited and characterized with its low potential yield. The objective of this study was to investigate the performance of some faba bean genotypes under Assiut conditions.

* Ardab= 170 Kg.

MATERIAL AND METHODS

The present investigation was carried out on a clay soil at the Experimental Farm of the Agriculture College, Assiut University, Assiut Governorate, Egypt during two successive seasons, 2007/2008 and 2008/2009. Seeds were sown on October 23rd and 24th for the 1st and 2nd year, respectively, to study the performance of five faba bean breeding lines namely:

- 1- (Assiut 104/2) 2- (Assiut 80/37) 3- (Assiut 120)
 4- (Romy 80) 5- (Romy 3)

Table 1: General characteristics of five faba bean breeding lines which used in this investigation

Lines	Time to flowering	Plant height (cm)	No. of tillers/plant	Green pod length (cm)	Seed (size)
Assiut 104/2	Late	Medium	Small	Medium	Small (minor)
Assiut 80/37	Medium	Medium	Small	Medium	Small (minor)
Assiut 120	Medium	Medium	Medium	Medium	Small (minor)
Romy 80	Medium	Short	Large	Long	Large (major)
Romy 3	Medium	Short	Large	Long	Large (major)

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A randomized complete block design with five replicates was used, each represented by 5 plots of the lines. Each experimental plot consisted of five rows, 3.0 m long and 70 cm wide. All plots were planted by hand with two seeds/hill along both southern and northern side of each ridges. Hills were spaced 30 cm apart. The normal cultural practices of cultivation, irrigation, fertilization, weed and pest control of faba bean were followed as recommended for the region. Harvesting was done manually on April 10th and 14th in the two growing seasons, respectively.

Experimental procedures:

Data were collected for the following characters:

Vegetative growth parameters:

- Time to flowering, recorded as number of days from planting date to flowering i.e., when 50% of the plants were in the bloom stage.
- Plant height (cm) was measured from the soil surface to the terminal pod at harvest.
- Number of tillers/plant, counted also at harvest.
- Green pod length (cm) at the time of green harvest.
- Green pod width (cm) at the time of green harvest.
- Weight of green pods/plant (g), as average weight of pods from random 10 plants at the time of green harvest.

Dry yield and its components.

- Number of dry pods/plant, as total harvested pods/plant.
- Number of dry seeds/pod, as average number of seeds from 20 pods at dry harvest stage.
- 100-dry seed weight (g) at dry harvest stage, as average of 100 seeds weight from 10 plants taken randomly at dry harvest stage
- Weight of dry seeds/plant (g), as average weight of seeds taken randomly from 10 plants at dry harvest stage.
- Total dry seed yield (ton/fed.)

Quality characteristics:

- Percentage of hulls weight (g), obtained by the following formula:

$$\frac{\text{Coats of 10 dry seeds weight}}{\text{Weight of whole seeds}} \times 100$$

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where, the seeds are naturally dried and used from three replicates for each plant.

- Hard seed percentage, after 24 hour, Random triplicate samples of 100 seeds, each weighted and soaked in tap water for 24 hours, after which, the hard seed (non-hydrated) were separated, counted and calculated as percentage:

$$\text{Hard seed \%} = \frac{\text{Number of non-hydrated seeds}}{\text{Number of total seeds}} \times 100$$

- The hydration coefficient (H.C.), the soaked seed were weighted after 24; the hydration coefficient was calculated as following formula:

$$\text{Hydration Coefficient} = \frac{\text{Weight of soaked seeds}}{\text{Initial weight of seeds}}$$

- Protein percentage was determined in dry seeds by micro-kjeldahl method according to A.O.A.C (1990) directly after harvesting.
- Total Soluble Solids (T.S.S) measured in green seeds by hand refractometer.

Statistical analysis:

All data were subjected to statistical analysis using F test and means were compared using Duncan's test.

RESULTS

Time to flowering

Number of days to flowering was markedly affected by breeding lines (Table 1). The breeding lines of faba bean showed significant differences in number of days to flowering, in both seasons. Among the various lines, Assiut 120 showed the only significant differences as compared with the other lines, in both seasons. In the first season, time to flowering of the breeding lines ranged from 48.5 days for Assiut 120 to 66.8 days for Assiut 104/2. In the second season, time

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to flowering of the breeding lines ranged from ٤٥.٨ days to Romy ٣ to ٥٦.٤ days for Assiut ١٠٤/٢ .line Assiut ١٠٤/٢ was the latest in both seasons (٥٥.٨ days, ٥٦.٤ days, respectively). These results were in agreement with the general characteristics of the studied breeding lines.

Plant height (cm)

Plant height was significantly affected by faba bean breeding lines and ranged from ١٢١.٥ (cm) for Romy ٣ to ١٣٩.٩ (cm) for Assiut ٨٥/٣٧ in the first season (Table ٢), while, in the second season the breeding lines ranged from ١١٥.١٠ (cm) for Romy ٣ to ١٣٧.٠٠ (cm) for Assiut ٨٥/٣٧. Line Assiut ٨٥/٣٧ was the tallest line in both seasons (١٣٩.٩ cm, ١٣٧.٠٠ cm, respectively). However, insignificant differences between the mean plant height of line Assiut ٨٥/٣٧ and Assiut ١٢٥ in both seasons. In the second season, line Assiut ١٠٤/٢ showed insignificant differences for this parameter as compared with lines Assiut ٨٥/٣٧ and Assiut ١٢٥. On the other hand line Romy ٣ was the shortest line in both seasons (١٢١.٥٠ cm, ١١٥.١٠ cm, respectively).

Number of tillers/plant

The variations in number of tillers/plant between the breeding lines were significant in both seasons (Table ٢).

Table ٢: Time to flowering, plant height (cm) and no. of tillers/plant of *Vicia faba*, L. as affected by five breeding lines during ٢٠٠٧/٢٠٠٨ and ٢٠٠٨/٢٠٠٩ seasons.

Breeding lines	Time to flowering		Plant height (cm)		No. of tillers/plant	
	٢٠٠٧/ ٢٠٠٨	٢٠٠٨/ ٢٠٠٩	٢٠٠٧/ ٢٠٠٨	٢٠٠٨/ ٢٠٠٩	٢٠٠٧/ ٢٠٠٨	٢٠٠٨/ ٢٠٠٩
Ast.١٠٤/٢	٥٥.٨	٥٦.٤	١٢٣.٢٦	١٣٥.٠٠	٣.١٦	٢.٨٨٠
Ast.٨٥/٣٧	٤٩.٢	٤٩.٠	١٣٩.٩٠	١٣٧.٠٠	٣.٦٢	٢.٥٦٠
Ast.١٢٥	٤٨.٤	٤٨.٦	١٣٩.٥٠	١٣٦.٣٦	٣.٦٦	٣.١٠٠
Romy ٨٠	٤٨.٦	٤٦.٦	١٢٦.٦٠	١٢١.٨٠	٤.٤٦	٤.٢٨٠
Romy ٣	٤٨.٦	٤٥.٨	١٢١.٥٠	١١٥.١٠	٤.١٢	٣.٣٦٠
LSD (٠.٠٥)	١.٣٦	١.٨٣	٥.٠٣	٢.٧٩	٠.٢٢	٠.٤٢

Among the various lines, Romy Λ showed the most highest values for this character i.e.; $\xi. \xi \bar{\nu}$ and $\xi. \nu \wedge$ in the first and second seasons, respectively, followed by Romy Υ in both seasons. Line Assiut $\nu. \xi / \nu$ recorded the lowest value of tillers i.e.; $\Upsilon. \nu \bar{\nu}$ in the first season. However, line Assiut $\wedge \circ / \Upsilon \nu$ the lowest value in the second season, but with insignificant difference as compared with line Assiut $\nu. \xi / \nu$

Green pod length (cm)

Data presented in Table (Υ) showed that green pod length was significantly affected by breeding lines in both seasons. The pod length of line Romy Λ was significantly the longest and followed by line Romy Υ with insignificant differences between their mean values of this parameter, in both seasons. Assiut $\nu. \xi / \nu$ recorded the lowest value for pod length, in both season.

Green pod width (cm)

Results revealed that green pod width was significantly different among faba bean breeding lines (Table Υ). Romy Λ recorded the highest value ($\nu. \nu \nu \bar{\nu}$ and $\nu. \nu \bar{\nu} \xi$ cm) followed by Romy Υ ($\nu. \nu \circ \bar{\nu}$ and $\nu. \nu \wedge \nu$ cm) with insignificant differences in the second season. In the other hand, Assiut $\nu. \xi / \nu$ showed the lowest values i.e., $\nu. \Upsilon \bar{\nu} \wedge$ and $\nu. \xi \nu \circ$ in both seasons respectively.

Weight of green pods/plant (g)

Faba bean breeding lines were differed significantly for this trait in both seasons (Table Υ) and ranged from $\nu \nu \Upsilon. \bar{\nu} \circ \wedge$ g to $\nu \nu \nu. \nu \xi \wedge$ g and from $\nu \nu \wedge. \nu \nu \xi$ g to $\nu \bar{\nu} \nu. \xi \Upsilon \circ$ g in $\nu \circ \circ \nu / \nu \circ \circ \wedge$ and $\nu \circ \circ \wedge / \nu \circ \circ \nu$ seasons, respectively. In the first season, Romy Λ ($\nu \nu \nu. \nu \xi \wedge$ g) had the highest weight in all faba bean breeding lines under study followed by Romy Υ ($\nu \nu \circ. \circ \nu \xi$ g), while line Assiut $\nu. \xi / \nu$ gave the lowest weight of green pod ($\nu \nu \Upsilon. \bar{\nu} \circ \wedge$ g). In the second season, line Romy Λ recorded the highest value of green pods weight ($\nu \bar{\nu} \nu. \xi \Upsilon \circ$ gm). The lines Romy Υ ($\nu \circ \xi. \Upsilon \nu \wedge$ g), Assiut $\nu \nu \circ$ ($\nu \nu \nu. \circ \wedge \wedge$ g) and Assiut $\wedge \circ / \Upsilon \nu$ ($\nu \nu \circ. \nu \nu \wedge$ g) were intermediate, while line Assiut $\nu. \xi / \nu$ gave the lowest weight of green pods ($\nu \nu \wedge. \nu \nu \xi$ g).

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Table ٣: Green pod length (cm), green pod width (cm) and weight of green pods/ plant (g) of *Vicia faba*, L. as affected by five breeding lines during ٢٠٠٧/٢٠٠٨ and ٢٠٠٨/٢٠٠٩ seasons.

Breeding lines	Green pod length(cm)		Green pod width (cm)		Weight of green pod/ plant (g)	
	٢٠٠٧/ ٠٨	٢٠٠٨/ ٠٩	٢٠٠٧/ ٠٨	٢٠٠٨/ ٠٩	٢٠٠٨/ ٠٩	٢٠٠٨/ ٠٩
Ast.١٠٤/٢	٧.٦٦٠	٨.٠٧٨	١.٣٦٨	١.٤٧٠	١٧٣.٦٥ ٨	١٩٨.٢٢ ٤
Ast.٨٥/٣٧	٨.٣٤٦	٨.٢٣٦	١.٤٢٩	١.٥١٠	١٩٧.٣٩ ٢	٢١٥.٩١ ٨
Ast.١٢٥	٨.٢٩٤	٨.٢٣٢	١.٤٤٤	١.٤٩٤	١٩١.٢٠ ٨	٢٢٧.٥٨ ٨
Romy ٨٠	٩.٩٨٨	٩.٧٥٦	١.٧٧٦	١.٧٦٤	٢٢٢.٢٤ ٨	٢٦٢.٤٣ ٠
Romy ٣	٩.٨٤١	٩.٥٨٢	١.٧٠٦	١.٧٨٢	٢١٠.٥٧ ٤	٢٥٤.٣٧ ٨
LSD (٠.٠٥)	٠.٢٥	٠.٣٨	٠.٠٣	٠.٠٣	٩.٧٠	١٨.٠٧

Number of dry

Pods/plant

Data in (Table ٤) revealed clearly that there were significant differences between faba bean breeding lines in number of dry pods/plant in both growing seasons. Line Assiut ١٢٥ produced the highest number of dry pods/plant (٣١.١٢ and ٣٦.٠٢ pods) followed by Assiut ٨٥/٣٧ i.c; (٢٧.١٨ and ٣١.٧٠ pods), in the first and second seasons, respectively. Line Assiut ١٠٤/٢ produced the lowest number of dry pods/plant (١٥.١٤ pods) in the first season. In the second season, line Assiut ١٠٤/٢ showed an intermediate effect on this character and Romy ٣ showed to be the last in the second season.

Number of dry seeds/pod

The behavior of this character was differed significantly among faba bean breeding lines, in the two seasons, (Table ٤). Romy ٣ gave the highest value (٣.٤٠٦ and ٣.٣٨٢ seeds) followed by Romy ٨٠ with insignificantly different between their mean values in both seasons. Assiut ١٠٤/٢ gave the lowest value i.e., ٣.٠٥٦ and ٣.٠٧٦ which was

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not significantly different from Assiut ٨٥/٣٧ and Assiut ١٢٥ in the second season.

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Table 4: Number of dry pods /plant, No. of dry seeds/pod and 100-dry seed weight (g) of *Vicia faba*, L. as affected by five breeding lines during 2007/2008 and 2008/2009 seasons.

Breeding lines	No. of dry pods /plant		No. of dry seeds/pod		100-dry seed weight (g)	
	2007/08	2008/09	2007/08	2008/09	2007/08	2008/09
Ass.104/2	10.14	27.720	3.06	3.76	68.220	60.784
Ass.80/37	27.18	31.700	3.190	3.128	60.160	62.248
Ass.120	31.12	36.020	3.230	3.236	70.200	60.986
Romy 80	22.68	20.640	3.302	3.260	100.420	94.100
Romy 3	18.34	23.000	3.406	3.382	110.022	90.770
LSD (0.05)	2.91	2.08	0.11	0.18	4.14	4.81

100-dry seed weight (g)

The variations in the values of 100 dry seeds weight as shown by the breeding lines are significantly confirmed the genetic variation among them (Table 4). Romy 3 recorded the highest values (110.022 and 90.77 g) followed by Romy 80 (100.420 and 94.18 g). Assiut 104/2 recorded the lowest values (68.220 and 60.784 g). However, insignificant different were obtained from Assiut 104/2 as compared by Assiut 80/37 in both seasons

Weight of dry seeds/plant (g)

The five breeding lines of faba bean (Table 4) showed significant differences in weight of dry seeds/plant which ranged from 37.162 gm to 01.128 g and from 44.064 g to 04.360 g in the two seasons, respectively. Assiut 120 produced highest value of dry seed yield per plant in both seasons (01.128 g and 04.360 g, respectively), while Assiut 104/2 produced the lowest value in the first season (37.162 gm) and line Romy 3 produced the lowest value in the second season (44.064 g). The other lines were in between.

Total dry seed yield (ton/fed.)

The five breeding lines of faba bean showed (Table 4) significant differences in total dry seed yield in both seasons which ranged from 0.370 to 1.401 ton/fed. and from 0.794 to 1.066 ton/fed. in the two

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seasons, respectively. In the first season, the highest yield was obtained from Assiut ١٢٥ (١.٤٥١ ton/fed.) followed by Assiut ٨٥/٣٧ (١.٢٥٢ ton/fed., Romy ٨٠ (٠.٩١٨ ton/fed.), Romy ٣ (٠.٦٩١ ton/fed.), while Assiut ١٠٤/٢ gave the lowest yield (٠.٣٧٥ ton/fed.). In the second season, the highest yield obtained from Assiut ١٢٥ (١.٥٦٦ ton/fed.) followed by Assiut ٨٥/٣٧ (١.٣٤١ ton/fed.) which was not significant different from Assiut ١٠٤/٢ (١.٣٠٩ ton/fed.). Romy ٣ gave the lowest yield (٠.٧٩٤ ton/fed.), which was not significantly different from Romy ٨٠ (٠.٩٥٦ ton/fed.).

Table ٥: Dry seed weight/plant (g), total dry seed yield (ton/fed.), % hull weight and hard seed (٢٤ hour) of *Vicia faba*, L. as affected by five breeding lines during ٢٠٠٧/٢٠٠٨ and ٢٠٠٨/٢٠٠٩ seasons.

Breeding lines	Weight of dry seeds/plant (g)		Total dry seed yield (ton/fed.)		Hull weight (%)		Hard seed % (٢٤ hour)	
	٢٠٠٧/٠٨	٢٠٠٨/٠٩	٢٠٠٧/٠٨	٢٠٠٨/٠٩	٢٠٠٧/٠٨	٢٠٠٨/٠٩	٢٠٠٧/٠٨	٢٠٠٨/٠٩
Ast. ١٠٤/٢	٣٧.١٦٢	٥٠.٤٥٦	٠.٣٧٥	١.٣٠٩	١٣.٣٥٤	١٣.٩٧٨	٤.٠٠٨ (١٦)	٥.٤٥٤ (٣٠)
Ast. ٨٥/٣٧	٤٥.٥١٨	٤٧.٣٦١	١.٢٥٢	١.٣٤١	١٣.١٧٨	١٢.٧٨٤	٢.٩٨٨ (١٠)	٣.١٠٤ (١٤)
Ast. ١٢٥	٥١.١٢٨	٥٤.٣٦٥	١.٤٥١	١.٥٦٦	١٤.٣١٤	١٤.٠٨٠	٤.٠٠٨ (١٦)	٥.٨٦٤ (٣٦)
Romy ٨٠	٤٦.٥٢٢	٤٦.٢٧٨	٠.٩١٨	٠.٩٥٦	١٢.١٢٠	١٢.٣٥٨	٢.٢٢٤ (٦)	٣.٧٥٢ (١٤)
Romy ٣	٤٢.٣٤٢	٤٤.٥٦٤	٠.٦٩١	٠.٧٩٤	١٣.١١٨	١٢.٤٣٢	١.٢٠٨ (٢)	٢.٧٣٦ (١٠)
LSD (٠.٠٥)	٢.١٠	٢.٣٢	٠.٠٧	٠.١٣	٠.٣٠	٠.٤٠	١.٥١	٢.٤٩

Percentage of hull weight (g)

It is clear; hull weight percentage character (Table ٥) significantly differed with different lines, in both seasons. In the first and second season, the dry seeds of Assiut ١٢٥ had the highest hulls

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percentage, followed by Assiut ١٠٤/٢ and Assiut ٨٥/٣٧ in the two seasons respectively. Of all tested lines, Romy ٨٠ had the lowest hulls percentage.

Hard seed percentage (after ٢٤ hours)

Results showed that hard seed percentage was significantly affected by faba bean breeding lines in both seasons (Table ٥). Romy ٣ had the lowest hard seed percentage (٢.٠% and ١.٠%, respectively) which was significantly different from Romy ٨٠ (٦.٠% and ١٤.٠%, respectively). Assiut ١٢٥ had the highest hard seed percentage (١٦.٠% and ٣٦.٠%, respectively). The other lines were in an intermediate

The hydration coefficient after ٢٤ hours

Hydration coefficient was significantly affected by faba bean breeding lines. It ranged from ١٧٦.١٩٣ to ١٩١.١١١ and from ١٤١.٢٤٩ to ١٨٢.٨٢٧ in the two seasons respectively. Results in all seasons revealed that dry seeds of line Romy ٣ showed a tendency towards better soaking than other lines (١٩١.١١١ and ١٨٢.٨٢٧, respectively), followed by line Assiut ٨٥/٣٧ (١٩٠.١٤٣ and ١٨١.٤٦١, respectively). Of all tested lines, Assiut ١٢٥ had the lowest hydration coefficient (١٧٦.١٩٣ and ١٤١.٢٤٩, respectively) in both seasons. The other lines were in between.

Percentage protein in dry seeds:

Results indicated that faba bean breeding lines were differed significantly in protein percentage in dry seeds in the two seasons. Line Assiut ١٠٤/٢ recorded the highest value of protein percentage i.e, ٢٨.٥٤ and ٣١.١٦ followed by Assiut ٨٥/٣٧ i.e., ٢٩.٣٦ and ٢٨.٢٣ with insignificant differences in the first season. Line Assiut ١٢٥ gave the lowest value of protein content percentage i.e, ٢٤.٩٤ and ٢٣.٦٣ in the both seasons respectively.

Total soluble solids in green seeds (T.S.S.)

Data on total soluble solids in green seeds (T.S.S.) are presented in Table (٥). It showed that there were insignificant differences between faba bean breeding lines in T.S.S. of green seeds during the two seasons.

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Table 5: Hydration coefficient (24 hour), protein (%) and T.S.S. (%) of *Vicia faba*, L. as affected by five breeding lines during 2007/2008 and 2008/2009 seasons.

Breeding lines	Hydration coefficient (24 hour)		Protein (%)		T.S.S. (%)	
	2007/08	2008/09	2007/08	2008/09	2007/08	2008/09
Ass.104/2	181.120	140.670	28.04	31.16	17.31	17.43
Ass.80/37	190.143	181.461	29.36	28.23	17.09	18.62
Ass.120	176.193	141.249	24.94	23.63	18.17	18.13
Romy 80	188.808	169.700	20.06	27.98	17.12	16.08
Romy 3	191.111	182.827	20.76	24.39	17.20	17.19
LSD (0.05)	10.94	39.80	0.90	0.84	1.16	2.08

DISCUSSION

The growth and yield studies reported in this thesis were concerning with the performance of five breeding lines, among them two lines with major seed size. The used breeding lines of faba bean show significant variation of interest to the plant breeding breeder, the grower and consumers. Obtained results showed significantly differences among tested faba bean lines in most of the studied characters. Omar *et al.* (1998), Haridy (2001), Abdel-Rahim *et al.* (2003), Alghamdi and Ali (2004), Haridy (2005) and Abd Elrahman (2009) From our point of view, the total yield and its related components is very important to know the performance of these lines. For total dry seed yield in tons/fed, Assiut 120 was significantly better than all other lines, while Assiut 104/2 and Romy 3 gave the lowest yield in both seasons, respectively. In addition, Assiut 120 was significantly better than all other lines in number of dry pods per plant and dry seed weight/plant.

Quality characteristics are very important to the Egyptian consumers. Therefore, the study comprised five characters i.e. hull weight percentage, hard seed percentage, hydration coefficient, protein

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content, and total soluble solid. It can be seen from the results that two of the breeding lines i.e. Romy 1 and Romy 2 have low hard seed which is very important to the Egyptian consumers. Assiut 120 and Assiut 10/37 were the highest in T.S.S. (as an average of two seasons); same results were obtained by Abd Elrahman (2009) Also, two breeding lines i.e. Assiut 10/37 and Assiut 104/2 were high in protein content percentage which is very important to the consumers (Singh and Awasthi, 2001)

It is very important to mention that, the obtained low values for the coefficient of variability emphasize the relative stability of these variety characteristics.

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أداء مجموعة جديدة من سلالات الفول تحت ظروف أسيوط

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أجريت هذه الدراسة بمزرعة كلية الزراعة - جامعة أسيوط خلال المواسم الزراعية ٢٠٠٧/٢٠٠٨ و ٢٠٠٨/٢٠٠٩ وذلك بهدف دراسة أداء خمسة تراكيب وراثية من الفول الرومي والبلدي المستنبطة بمعرفة الأستاذ الدكتور / عصمت عبد العظيم والى - أستاذ تربية الخضر بقسم البساتين - كلية الزراعة - جامعة أسيوط والأستاذ الدكتور / سيد عباس عبد

Evaluation of some faba bean lines

العال - أستاذ تداول وتخزين الخضر بقسم البساتين - كلية الزراعة - جامعة أسيوط .
وكانت السلالات المستخدمة هي رومي ٨٠ ، رومي ٣ ، أسيوط ٢/١٠٤ ، أسيوط ٣٧/٨٥ وأسيوط ١٢٥ .

وذلك بزراعتهم فى خمس مكررات فى قطاعات كاملة العشوائية وتم دراسة الصفات

الآتية:

وزن ١٠٠ بذرة جافة (جم)	ميعاد التزهير .
وزن البذور الجافة / نبات (جم)	ارتفاع النبات (سم) .
محصول البذور الكلى الجاف (طن/فدان)	عدد الفروع / نبات
النسبة المئوية لوزن القصرة	طول القرن الأخضر (سم) .
النسبة المئوية للبذور الصلدة بعد ٢٤ ساعة	قطر القرن الأخضر (سم) .
معامل التشرب بعد ٢٤ ساعة	وزن القرون الخضراء / نبات (جم)
النسبة المئوية للبروتين	عدد القرون الجافة / نبات
المواد الصلبة الذائبة الكلية	عدد البذور الجافة/ قرن

وقد أظهرت النتائج ما يلى:

- ١) ان السلالة رومي ٣ ورمي ٨٠ من اعلى السلالات تبكيرا فى موعد التزهير .
- ٢) اعطت السلالة أسيوط ٣٧ / ٨٥ أعلى ارتفاع للنبات فى الموسمين .
- ٣) اعطت السلالة رومي ٨٠ اكبر قيم لعدد الفروع / نبات، طول وعرض القرن الأخضر وكذلك وزن قرون النبات الخضراء فى كلا الموسمين .
- ٤) أعطت السلالة ١٢٥ أعلى قيم بالنسبة لعدد القرون الجافة/النبات ووزن قرون النبات الواحد الجافة وكذلك بالنسبة لوزن المحصول الكلى البذرى الجاف ونسبة المواد الصلبة الذائبة الكلية ومن هذه الدراسة تتضح إمكانية استخدام السلالة أسيوط ١٢٥ لزيادة المحصول البذرى الجاف (طن/ فدان) .

وبناء على النتائج السابقة فانه يلزم لمواجهة الظروف البيئية الصعبة وفرق درجات الحرارة بين الليل والنهار فى صعيد مصر والتي تمثل عائق كبير فى إنتاج الفول اقتصاديا نوصى باستخدام السلالات: رومي ٣، رومي ٨٠ ، أسيوط ٣٧/٨٥ وأسيوط ٢/١٠٤ فى برامج تربية متقدمة لتحسين الفول من حيث الإنتاجية والجودة، أو استخدام السلالة أسيوط ١٢٥ فى الإنتاج العالى للفول تحت ظروف أسيوط.