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Effect of Planting Dates, Hill-spacings and Harvest Dates on Yield and Quality of the New Released Peanut Cultivar Giza 6

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TWO FIELD experiments were carried out at Abo-Rawash village, Giza Governorate, Egypt, during 2002 and 2003 seasons. The objective of this research was to study the effects of six planting dates (27 March, 17 April, 8 May, 29 May, 19 June and 10 July), three hill-spacings (10, 15 and 20 cm) and three harvesting dates (110,120 and 130 days after all sowing dates) on yield and yield components of peanut (Giza 6, cultivar). A split-split plot design with three replications was used. The main plots consisted of planting dates, sub-plots were allocated to hill-spacings, while sub-sub plots were devoted to harvest dates. Planting peanut on May 8 at 20 cm hill spacing and harvesting at 130 days after sowing recorded the highest values of number of pods, weight of pods and weight of seeds per plant, as well as, shelling percentage, pod and seed index. While the highest values of pod, seed and oil yields were obtained from planting on 8 May at 10 cm between hills and harvesting at 130 days from planting. This superiority may be due to the increase in number of plants per feddan.

Keywords: *Arachis hypogaea*, Groundnut, Sowing date, Plant density, Population.

Peanut (*Arachis hypogeae* L.) is one of the most important annual crops in the world grown for edible oil. It can play an important part in increasing edible oil production and decreasing the gap (86.87%) between production and consumption in Egypt.

Increasing the growing area of oil seed crops out of the Nile valley is considered as a good way to reduce the competition with other main summer crops (maize, rice, sugar cane, cotton and others). Peanut can be grown successfully in newly reclaimed sandy soil; this approach needs much research in order to improve the agricultural practices, which play an important role for increasing seed and oil production. It has been clearly established that planting date, plant population density and harvest time are major factors affecting peanut yield and quality.

Peanut as a summer crop is usually grown after some major winter crops in the rotation. Therefore, peanut may be grown early or late according to the

harvest time of preceding crop. Azab (1993) reported that, number of pods, as well as, weight of pods and seeds per plant were decreased with late sowing dates. Also, Ali *et al.* (1995 a) and Rinjumoni *et al.* (2000) stated the same result and cleared that delaying planting dates decreased peanut yields of seeds and oil per feddan. Ali *et al.* (1995 b) recorded that, the values of quality characteristics of peanut pods, seed index, shelling percentage and seed oil percentage were increased with early sowing dates.

Besides, there is a tendency to use higher plant density because of the present stand (35000 plant/fed) may not be sufficient to produce high yield for Giza 6. Closer plant spacing may be suitable to insure higher yield. El-far & Ramadan (2000) concluded that number and weight of pods per plant increased with increasing hill-spacing, while El-sessy & Asoub (1994), as well as, Shams El-din & Ali (1996) reported that increasing hill-spacing increased pod and seed index, shelling percentage, seed oil percentage, seed and oil yields per feddan.

Harvesting time may has a considerable effect on yield and quality of peanut. Kasai *et al.* (1998), Rossetto *et al.* (1998) and Sungwoo *et al.* (1999) pointed out that delaying harvesting time increased seed oil percentage, seed and oil yields per feddan.

It has been clearly established that, time of planting, plant population density and time of harvest are major factors affecting peanut yield and quality. Thus, the present research was carried out to study the effect of planting date, plant-spacing, harvest times and their interactions on yield, yield components, pods and seeds quality of peanut Giza 6 cv.

Materials and Methods

Two field experiments were carried out at Abo-Rawash village, Giza Governorate, Egypt, during the two summer seasons of 2002 and 2003. The soil type of the experimental area was loamy sand.

Planting dates *viz.*, 27 March, 17 April, 8 May, 29 May, 19 June and 10 July, plant-spacing, *i.e.*, 10, 15 and 20 cm. (70000, 44444 and 35000 plant/feddan, respectively) and harvesting dates, *i.e.*, 110,120 and 130 days after sowing were the treatments for studying their effect on yield and yield components, as well as, quality characteristics of pods and seeds of peanut using the new released Egyptian cultivar, Giza 6.

A split-split plot design with three replications was used. The main plots were devoted to the planting dates. Sub-plots were allocated to the hill-spacings, while sub-sub plots to the harvesting times. Each experimental plot consisted of five ridges 60 cm apart and 4 meter long. The sub-sub plot area was 12 m^2 (3.0 × 4.0 m). All cultural practices were conducted according to the recommendation of Agricultural Research Centre, Ministry of Agriculture.

Recorded data

Yield components

Five guarded plants were randomly taken from the three central ridges of each sub-sub plot at harvest to record the following yield components: number of mature pods/plant; weight of pods/plant, in grams; weight of seeds/plant, in grams.

Quality characteristics of pods and seeds

About 250 g of pods were randomly taken from each sub-sub plot and the following quality characteristics were determined:

- Pod index (100-pod weight).
- Seed index (100-seed weight).
- Shelling percentage: it is a measurement of dry matter partitioning between kernel and shell and it is expressed as following:

$$\text{Shelling percentage} = \frac{\text{weight of pods} - \text{weight of thier shell}}{\text{weight of pods}} \times 100$$

- Seed (kernel) oil percentage: Soxhelt continuous extraction apparatus with petroleum ether (40-60°C) as an organic solvent was used to determine the oil percentage according to A.O.A.C. (2000).

Peanut yields per feddan

- Pod yield per feddan: it was determined from the three middle ridges of each sub-sub plot and converted to pod yield, in ardabs (ardab = 75 kilograms) per feddan (4200 m^2).
- Seed yield in kilograms per feddan: it was obtained from the yield of pods after separation of shell.
- Oil yield in kilograms per feddan: it was calculated by multiplying oil percentage by seed yield/feddan, in kilograms.

The obtained data were statistically analyzed according to procedures outlined by Gomez & Gomez (1984) using MSTAT-C computer program (Freed *et al.*, 1989). The differences among treatment means were compared by Least Significant Differences test (LSD) at 0.05 level of probability.

Results and Discussion

Data in Table 1 revealed that pods number/plant, weight of pods/plant, weight of seeds/plant, pod index, seed index, shelling percentage and seed oil percentage were significantly affected by planting date in both seasons. Number of pods and seed weight/plant were increased when time of planting was delayed up to 8 May, and then decreased up to 10 July, while pod weight was increased up to 29 May in both seasons. This reflects the favorable climatic condition during pod filling when peanut was planted in early or late May.

TABLE 1. Some yield components and quality characteristics of peanut as affected by planting date in 2002 and 2003 seasons.

Characters	Pods number/ plant		Weight of pods/ plant (g)		Weight of seeds/ plant (g)		Pod index (g)		Seed index (g)		Shelling (%)		Seed oil (%)	
Season / Planting date	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
27 March	25.9	24.3	39.4	37.1	24.6	26.7	138.1	141.2	59.2	49.6	56.8	61.9	44.2	48.2
17 April	27.9	27.9	39.4	39.9	24.3	28.5	143.5	138.8	61.9	55.9	60.4	66.8	48.0	50.1
8 May	33.8	32.2	41.8	40.6	29.8	29.4	148.5	145.7	63.7	56.1	71.4	72.7	49.0	50.1
29 May	30.7	30.4	41.0	41.3	26.4	27.5	145.5	143.0	49.8	43.3	62.7	63.5	50.8	52.8
19 June	29.5	27.9	40.5	37.3	25.2	25.7	138.7	137.9	49.1	46.6	67.0	61.8	46.2	49.0
10 July	18.0	16.6	31.1	28.6	22.4	20.3	144.8	139.6	42.2	40.1	56.4	62.8	45.4	47.7
LSD	3.06	1.5	4.1	1.0	2.4	0.4	6.7	3.1	2.7	1.1	2.6	0.5	1.4	1.1

The increase in seed yield/plant may be due to the increase in pods number and pods yield per plant in both seasons. These results were in general agreements with those obtained by Azab (1993), Basha (1994), Ali *et al.* (1995 a), Rinjumoni *et al.* (2000), as well as, Huang & Huang (2001).

In addition, the highest values of pod index, seed index, and shelling percentage were observed by planting peanut in 8 May. Increasing shelling percentage was generally associated with increased 100–seed weight. While, the highest value of seed oil percentage was obtained from planting date of 29 May in both seasons. Such increase in seed oil percentage may be attributed to the favorable climatic conditions during oil formation period. In general peanut oil content was lower when peanut grown very early on 27 March or very late on 10 July than those obtained from other planting dates.

Similar results were obtained by Donga *et al.* (1990), Padma *et al.* (1992), Rao & Reedy (1993), Ali *et al.* (1995 b). While, Barik *et al.* (1995) , Deka *et al.* (1997), Ntare *et al.* (1998), Patel *et al.* (1998) , Reddy & Reddy (2000), as well as, Huang & Huang (2001) who found that early sowing increased the previous quality characteristics of peanut.

The results in Table 2 also cleared that hill-spacing significantly affected pods number and pods weight, as well as, seed weight per plant in both seasons. The highest values were recorded at 20 cm between hills in both seasons. The superiority of seed yield/plant at 20 cm may be due to the increase in pods number and yield/plant. Similar results were obtained by Basha (1994), Hanna *et al.* (1994), El-far & Ramadan (2000), as well as, Bellettini & Endo (2001), who mentioned that pods number, pods and seed yield/plant were decreased with decreasing hill spacing.

The results in the same table indicate that hill-spacing had non significant effect on shelling percentage in both seasons and seed index in the second season only. These results are in harmony with those obtained by Madkour *et al.* (1992) and Hanna *et al.* (1994), who found that hill-spacing, had no significant effect on 100-seed weight and shelling percentage. Seed oil percentage was increased significantly with increasing the space between hills from 10 to 20 cm in both seasons. These results are not in general agreement with those of Yilmz (1999), who reported that seed oil percentage was increased by deceasing the space between hills, meanwhile, Madkour *et al.* (1992), found that seed oil % was unaffected by hill-spacing.

Data in Table 3 indicate that delaying time of harvest from 110 days to 130 days significantly affected yield components and quality characteristics of peanut in both seasons. The highest values of all traits were recorded at 130 days during both seasons. These results are in general accordance with those obtained by Court *et al.* (1984) and Nagaraj *et al.* (1987) on seed oil percentage. On the other hand, Langrong & Lr (1999) found that harvesting dates had no significant effect on seed oil percentage.

TABLE 2. Some yield components and quality characteristics of peanut as affected by hill-spacing, in 2002 and 2003 seasons.

Characters	Pods number/plant		Weight of pods/plant (g)		Weight of seeds/plant (g)		Pod index (g)		Seed index (g)		Shelling (%)		Seed oil (%)	
Season / Hill-spacing	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
10 cm	26.5	24.4	36.8	35.6	23.9	25.0	137.7	137.6	52.8	49.6	62.0	64.5	44.2	47.8
15 cm	26.6	26.1	38.8	37.4	25.5	26.2	145.1	141.4	55.1	48.1	62.1	64.7	48.1	50.3
20 cm	29.8	30.0	40.9	39.4	27.0	27.9	146.8	144.1	55.0	49.3	63.3	65.5	49.4	50.9
LSD	2.6	1.0	2.9	0.7	1.7	0.3	4.7	2.2	1.9	N.S	N.S	N.S	1.0	0.8

TABLE 3. Some yield components and quality characteristics of peanut as affected by harvest day in 2002 and 2003 seasons.

Characters	Pods number/plant		Weight of pods/ plant (g)		Weight of seeds/ plant (g)		Pod index (g)		Seed index (g)		Shelling (%)		Seed oil (%)	
Season / Harvest date	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
110 days	22.9	23.3	35.9	35.7	23.6	25.0	136.1	135.3	49.3	46.5	60.7	64.0	45.8	48.7
120 days	25.0	26.3	38.1	37.6	25.4	26.4	141.1	140.1	56.3	47.5	62.2	64.9	47.6	49.8
130 days	29.7	30.0	42.6	39.1	27.3	27.7	152.4	147.0	57.3	50.1	64.2	65.7	48.5	50.5
LSD	1.7	0.7	5.0	0.7	2.9	0.3	4.8	1.7	1.9	0.6	1.9	0.2	0.9	0.9

Results in Table 4 show the effect of planting date, hill-spacing, harvesting date and their interactions on pod yield per feddan in 2002 and 2003 seasons. Results show that planting date had a significant effect on pod yield/feddan in both seasons. Pod yield was increased by delaying planting date from 27 March up to 8 May and then decreased up to 10 July in both seasons. Such increase in pod yield on 8 May may be attributed to the considerable increase in number of pods, pods yield/plant, seed weight/plant, pod index, seed index in both seasons. Attrade *et al.* (2002) found that the delay in planting date significantly decreased pods yield. In contrast, Suresha & Reddy (2000) found that pods yield was increased by the delay in planting dates. Such reduction in pod yield is surprising since early planting encourages pegging and pods production.

Results in Table 4 also, revealed that pods yield/feddan was significantly increased with decreasing the space between hills from 20 to 10 cm in both seasons. Such increase in pod yield at dens planting (10 cm hill-spacing) indicated that the increase in plant number per feddan may compensate the reduction in pod yield/plant. Similar results were obtained by El-far & Ramadan (2000), who reported that pods yield increased by decreasing hill- spacing.

Data in Table 4 also indicate that pod yield was significantly increased by the delay in harvesting date from 110 to 130 days in both seasons. Such increase may be due to the increase in number and weight of pods/plant, as well as, seed and pod index. Shorter & Simpson (1987) and Mozingo *et al.* (1991) stated that, pod yield was increased by delaying harvest date. Results in the same table also revealed that the interaction among planting date, hill-spacing and harvesting date had a significant effect on pod yield/feddan in both seasons. In general, planting peanut on 8 May at 10 cm between hills and harvesting at 130 days after sowing produced highest yield.

The effect of planting date, hill-spacing, harvesting date and their interactions on seed yield per feddan during 2002 and 2003 seasons are presented in Table 5. Data indicate that the three factors under this research had significant effects on seed yield/feddan in both seasons. The highest yield of seed/feddan was obtained from 8 May followed by 29 May in the first season and 17 April in the second season. Such increase in seeds yield/feddan may be attributed to the increase in number of pods, pods and seeds yield / plant, as well as, 100 seed weight, pod yield/ feddan and shelling percentage in both seasons. These results agreed with those obtained by Akimalive (1999) who found that seed yield was increased by delaying planting dates. Present results indicate that hill-spacing had a significant effect on seed yield. The differences among all plant spacing were significant except that between 15 and 20 cm in the first season, the highest seed yield was obtained from 10 cm.

These results may be due to the increase in pod yield/feddan. Similar results were obtained by Hanna *et al.* (1994) who reported that seed yield increased by increasing the space between hills.

TABLE 4. Pod yield (ardab per feddan) of groundnut as affected by planting date, hill-spacing, harvest date and their interactions in 2002 and 2003 seasons.

Hill spacings	Harvesting dates	Season 2002						Mean	Season 2003						Mean
		Planting dates							Planting dates						
		27 March	17 April	8 May	29 May	19 June	10 July		27 March	17 April	8 May	29 May	19 June	10 July	
10 cm	110	6.3	16.5	18.1	11.6	9.9	10.0	12.1	7.5	12.1	11.6	11.6	8.5	9.1	10.1
	120	7.5	17.6	17.2	14.4	18.0	7.1	13.6	8.8	13.5	15.5	13.9	12.9	6.4	11.8
	130	14.3	18.4	18.2	17.9	12.8	7.6	14.9	14.1	14.9	17.8	17.3	13.5	7.0	14.1
Mean		9.4	17.5	17.8	14.6	13.5	8.2	13.5	10.1	13.5	15.0	14.3	11.6	7.5	12.0
15 cm	110	5.3	16.3	16.4	8.3	13.2	7.2	11.1	6.8	12.0	11.4	9.7	9.0	6.6	9.2
	120	8.3	14.2	14.8	13.6	14.6	7.2	12.1	7.9	13.2	13.8	12.1	13.1	6.6	11.1
	130	9.3	16.6	14.0	13.3	9.0	6.4	11.5	9.9	14.5	17.2	15.6	15.3	5.8	13.0
Mean		7.6	15.7	15.1	11.8	12.3	6.9	11.6	8.2	13.2	14.1	12.5	12.5	6.3	11.1
20 cm	110	5.4	10.5	12.3	10.3	11.7	4.5	9.1	6.0	12.0	10.0	7.2	9.1	4.1	8.1
	120	9.3	12.6	16.5	11.9	10.0	5.2	10.9	7.6	12.5	13.3	9.3	12.9	4.8	10.1
	130	9.0	12.8	10.4	14.9	9.6	5.8	10.4	10.6	13.7	16.5	12.9	13.7	5.3	12.1
Mean		7.9	12.0	13.1	12.4	10.4	5.2	10.1	8.1	12.7	13.3	9.8	11.9	4.7	10.1
Harvesting dates	110	5.6	14.4	16.0	10.1	11.6	7.2	10.8	6.8	12.0	11.0	9.5	8.9	6.6	9.1
	120	8.4	14.8	16.2	13.3	14.2	6.5	12.2	7.7	13.1	14.2	11.8	13.0	5.9	11.0
	130	10.9	16.0	14.2	15.4	10.5	6.6	12.3	11.5	14.4	17.2	15.3	14.2	6.0	13.1
Mean		8.3	15.1	15.3	12.9	12.1	6.8	11.7	8.8	13.1	14.1	12.2	12.0	6.2	11.1
LSD at 5% level for:															
Planting dates (A)								2.0							1.0
Hill spacings (B)								1.4							0.7
Harvesting dates (C)								0.8							0.5
A × B								3.5							1.3
A × C								N.S							0.9
B × C								1.4							1.2
A × B × C								3.4							2.2

TABLE 5. Seed yield per feddan (kg) of groundnut as affected by planting date, hill-spacing, harvest date and their interactions in 2002 and 2003 seasons.

Hill spacings	Harvesting dates	Season 2002						Mean	Season 2003						Mean
		Planting dates							Planting dates						
		27 March	17 April	8 May	29 May	19 June	10 July		27 March	17 April	8 May	29 May	19 June	10 July	
10 cm	110	249.6	486.1	811.3	722.4	387.8	538.1	532.6	337.2	548.8	553.6	531.7	388.0	482.7	473.7
	120	312.1	634.1	764.2	778.2	866.8	376.7	622.0	406.8	620.6	775.3	643.9	606.9	351.3	567.5
	130	670.9	874.2	864.4	903.5	672.3	408.1	732.2	666.0	690.9	900.7	818.7	645.0	384.2	684.3
Mean		410.9	664.8	813.3	801.4	642.3	440.9	628.9	470.0	620.1	743.2	664.8	546.7	406.1	575.1
15 cm	110	207.6	361.1	805.8	637.9	657.8	385.6	509.3	311.9	557.7	556.9	459.0	408.6	351.3	440.9
	120	353.2	638.9	686.6	565.2	746.6	375.1	561.0	364.6	617.5	692.8	580.9	611.5	355.1	537.1
	130	426.2	610.6	656.5	741.3	438.9	343.8	536.2	464.1	683.8	866.8	756.5	716.4	320.2	634.6
Mean		329.0	536.8	716.3	648.1	614.4	368.2	535.5	380.2	619.7	705.5	598.8	578.8	342.2	537.5
20 cm	110	220.9	434.8	578.7	439.0	583.2	243.4	416.6	276.7	575.7	498.1	341.7	411.9	223.8	387.9
	120	395.2	545.0	763.3	545.0	500.4	278.8	504.6	356.6	596.4	674.2	448.2	591.9	261.8	488.2
	130	407.1	633.4	520.6	588.4	508.2	317.4	495.8	497.6	674.5	846.7	629.3	629.7	294.3	595.2
Mean		341.1	537.7	620.9	524.1	530.6	279.9	472.4	376.9	615.6	672.8	473.1	544.4	259.9	490.5
Harvesting dates	110	226.0	427.3	731.9	599.8	542.9	389.0	486.2	308.6	560.7	536.2	444.1	402.8	352.6	434.2
	120	353.5	606.0	738.0	629.5	704.6	343.6	562.5	376.0	611.5	714.1	557.7	603.4	322.7	530.9
	130	501.4	706.0	680.5	744.4	539.8	356.4	588.9	542.6	683.1	871.2	734.9	663.7	332.9	638.0
Mean		360.3	579.8	716.8	657.9	595.8	363.0	545.6	409.1	618.4	707.2	578.9	556.6	336.1	534.9

LSD at 5% level for:		
Planting dates (A)	97.0	49.2
Hill spacings (B)	68.6	34.8
Harvesting dates (C)	43.7	24.6
A × B	168.0	85.2
A × C	107.1	60.2
B × C	75.75	42.6
A × B × C	185.5	104.3

The third harvest date gave the highest seed yield in both seasons. This result may be attributed to the increase in pod number/plant, pods and seed yield/plant, as well as, pod and seed index, shelling percentage and pod yield/feddan. Rossetto *et al.* (1998) stated that seed yield was increased by delaying harvesting date. It could be concluded form the previous results in Table 5 that, planting peanut on May at 10 cm between hills and harvesting after 130 days from planting gave the highest seeds yield.

Data in Table 6 show that oil yield/feddan was significantly affected by planting date, hills spacing, harvesting date and their interactions during 2002 and 2003 seasons. The highest oil yield/feddan was obtained from 8 May in both seasons. Such increase in oil yield may be due to the increase in seed yield/plant, as well as, pod and seed yield/feddan in both seasons. These results agreed with those obtained by Ali *et al.* (1995b) and Barik *et al.* (1995) who found that oil yield was increased by early planting. Differences among oil yields due to all hill-spacing were significant in both seasons, except that between 10 and 15 cm in both seasons. The highest oil yield/feddan was obtained from 10 cm between hills in both seasons. The increasing in oil yield may be due to the increase in pod and seed yield/feddan. Similar results were obtained by Shams El-din & Ali (1996) who reported that oil yield increased by decreasing the space between hills. Oil yield increased significantly by delaying harvesting dates from 110 to 130 days. These results may be due to the increase in seed oil percentage, as well as. pod and seed yield/feddan. Nagaraj *et al.* (1987) stated that oil yield increased by delaying harvesting dates.

The results indicate that there was a significant effect of the interaction among planting date, hill-spacing and harvesting date on oil yield in both seasons. The highest values were recorded from 8 May × 10cm × 130 days.

Conclusion

From the previous results, it is concluded that planting peanut on May 8 at 20cm hill spacing and harvesting at 130 days after sowing recorded the highest values of number of pods, pods weight and seeds weight per plant, as well as, shelling percentage, pod and seed index. While the highest values of pod, seed and oil yields were obtained from 8 May planting date at 10 cm between hills and harvesting at 130 days from planting. This superiority may be due to the increase in number of plants per feddan.

TABLE 6. Oil yield (kg) per feddan of groundnut as affected by planting date, hill-spacing, harvest date and their interactions in 2002 and 2003 seasons.

Hill spacings	Harvesting dates	Season 2002							Season 2003						
		Planting dates						Mean	Planting dates						Mean
		27 March	17 April	8 May	29 May	19 June	10 July		27 March	17 April	8 May	29 May	19 June	10 July	
10 cm	110	95.8	211.7	359.4	311.4	157.9	234.2	228.8	144.6	267.8	277.4	264.3	184.4	194.9	222.2
	120	129.0	301.0	364.5	361.1	382.7	166.6	283.4	186.4	307.2	387.9	320.0	292.4	161.1	275.8
	130	274.0	403.6	425.3	419.2	286.1	186.6	332.6	308.0	347.5	451.8	413.4	314.2	178.6	334.1
Mean		166.3	305.1	383.1	263.0	275.6	195.8	264.8	210.6	307.6	372.4	331.7	263.6	178.2	277.4
15 cm	110	89.8	170.4	394.8	329.8	295.7	172.9	243.0	147.3	276.1	271.9	246.9	197.3	172.3	219.3
	120	159.7	310.7	341.2	299.6	351.9	171.0	273.2	179.5	310.6	341.9	319.5	299.1	170.1	270.7
	130	193.6	303.3	332.8	407.7	210.2	159.5	266.9	232.7	350.1	437.7	416.1	357.6	162.2	325.7
Mean		147.7	261.5	356.7	344.8	285.9	167.8	261.0	186.5	311.7	350.5	326.9	284.7	168.2	271.9
20 cm	110	103.6	212.4	283.6	223.5	285.7	106.7	203.0	141.4	286.7	247.3	177.7	201.4	109.9	194.9
	120	183.8	271.1	380.1	300.8	264.1	128.2	253.3	182.4	300.0	340.0	246.5	292.8	130.3	249.7
	130	200.7	318.1	269.2	327.7	252.2	154.4	252.8	257.0	344.0	438.5	344.9	320.3	146.4	309.0
Mean		162.7	267.2	311.7	282.5	261.4	129.8	236.4	193.6	310.3	341.9	255.0	271.5	128.9	251.2
Harvesting dates	110	96.4	198.2	346.9	291.5	246.5	171.3	224.7	144.4	277.0	265.5	230.0	194.4	159.0	212.1
	120	157.5	294.0	362.4	324.2	326.9	155.3	270.0	182.7	306.4	356.6	296.7	294.7	153.8	256.4
	130	222.8	341.7	343.7	389.3	249.5	166.8	285.6	263.5	347.0	442.7	392.4	330.7	162.4	322.9
Mean		158.9	277.9	351.2	334.2	274.3	164.5	259.6	196.9	309.8	354.9	305.7	273.3	158.4	266.8

LSD at 5% level for:		
Planting dates (A)	45.4	25.2
Hill spacings (B)	32.1	17.8
Harvesting dates (C)	21.7	12.7
A × B	43.6	43.6
A × C	53.2	31.1
B × C	37.6	22.0
A × B × C	92.2	53.9

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تأثير مواعيد الزراعة والمسافات بين الجور ومواعيد الحصاد على المحصول والجودة للصنف الجديد من الفول السودانى جيزة ٦

شعبان عبد الهادى شعبان ، نجاح محمد أبو حجازة ، نبيل محمد محروس و محمد حمزة عبد الحميد

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أجريت تجربتان حقليتان بمنطقة أبو رواش بمحافظة الجيزة خلال موسمى ٢٠٠٢،٢٠٠٣ وكان الهدف من هذه التجربة دراسة تأثير ٦ مواعيد للزراعة (٢٧ مارس، ١٧ أبريل، ٨ مايو، ٢٩ مايو، ١٩ يونيو، ١٠ يوليو) و٣ مسافات للزراعة (١٠، ١٥، ٢٠ سم بين الجور) و٣ مواعيد للحصاد (١١٠، ١٢٠، ١٣٠يوم من الزراعة) على محصول الفول السودانى (صنف جيزة ٦) ومكوناته. وكان التصميم المستخدم هو القطع المنشقة مرتين فى ثلاث مكررات، حيث وضعت معاملات مواعيد الزراعة فى القطع الرئيسية والكثافات النباتية فى القطع المنشقة ومواعيد الحصاد فى القطع المنشقة مرتين. أعطت زراعة الفول السودانى فى ٨ مايو وعلى مسافة ٢٠ سم بين الجور والحصاد على ١٣٠ يوم من الزراعة أعلى قيم للصفات التالية وهى عدد قرون النبات، وزن قرون النبات، وزن بذور النبات، نسبة التقشير، دليل القرون و دليل البذور. فى حين تحقق أعلى محصول للقـرون ، البذور والزيت عند الزراعة فى ٨ مايو على ١٠ سم بين الجور والحصاد على ١٣٠ يوم من الزراعة. يمكن أن يعزى هذا التفوق لزيادة عدد النباتات بالفدان .