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# OPTIMAL TIME OF TERMINAL IRRIGATION AND HARVESTING DATE OF SOME SESAME VARIETIES

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***Abstract***

This investigation was carried out at Mallawi Agric. Res. Station during 1994 and 1995 seasons to determine the optimal time of terminal irrigation and harvesting date of some sesame varieties. A split-split plot design with four replicats was used. It was concluded from results that higher growth measurements of sesame were recorded from 6 irrigations and harvesting after 105 days from sowing. Giza 32 and Hybrid 117 varieties surpassed N.A 652 and B51 in all characters of sesame. The interaction effect between termial irrigation xharvesting date and harvesting date x variety on seed yield/fed. and land use efficiency (LUE). It could be conluded that the highest values obtained from the treatment given irrigations and delaying harvest date of 105 days from sowing. The highest seed yield and LUE were recorded from harvest Giza 32 variety at 105 days from sowing. Water use efficiency was increased by 6 irrigations, delaying harvest date from 90 to 105 days after sowing and sowing Giza 32 variety in both seasons.

## INTRODUCTION

Irrigation management is very important in sesame crop, due to the shortage in water resources as well as the expansion of agriculture in the newly reclaimed area. Furthermore, adding much more or much less water causes serious crop damages. Therefore, it is necessary to detemine the optimum water requirement and planning the best irrigation schedule for maximumum crop production. Ghosh and Biswas (1984) Chaudhari *et al* (1991) Prakasha and Thimmegowoda (1992) and Mathew and keenju (1993) concluded that seed yield of sesame increased by increasing the number of irrigations.

It is very important to harvest the seed crop in proper time to get both good yield and best quality seeds Harvesting at early stages will cause damage to the seeds in threshing and cleaning. Similarly, harvesting at a late stage may result in increased weather damage to seeds and loss due to shattering. Ghanem

(1989) Charinee (1991) and Yebio *et al* (1993) observed that delaying harvest time decreased seed yield of sesame.

Recently some improved sesame cultivars the nonbranched type were introduced to Egyption agriculture to increase yielding capacity. Bakheit and Mahady (1988), El-Sherbeeny (1991), El-Serogy (1992) and El-Karamity *et al.* (1992) reported that sesame varieties differed significantly in growth and yield parameters.

The aim of this investingation is to determine the optimal time of terminal irrigation and harvesting date of some sesame varieties.

## MATERIALS AND METHODS

This investigation was carried out at Mallawi Agric. Res. Station ARC, Egypt during 1994 and 1995 sesons to study the effect of terminal irrigation time and harvesting dates on some sesame varieties. A split-split plot design with four replicates was used Seeds were planted on 15th and 10th May in 1994 and 1995 seasons, respectively. The experimental plot area contained 6 ridges 4 meters long and 50cm. apart, occupying an area of 12m. To eliminate the possbility of water leachage from one plot to another, a border of 1.5 meter was left between sub plots. The soil of the experimental field was clay with a pH 7.55 and 7.6, bulk density 1.55 and 1.3 field capacity 44.25% and 37.15%, wilting 21.6% and 19.1%, available water 22.65 and 18.05 in the first and second season, respectively. The first irrigation took place at sowing and the other irrigations were applied at 12-15 days intervals. The recommended practices for sesame growing were followed. The experimental treatments were as follows:

1. Main plots (terminal irrigation)
T1- After 5 irrigations (60 days from sowing).
T2-After 6 irrigations (75 days from sowing).

2. Sub plots (Harvesting dates)
H1-90 days (Harvesting dates)
H2-105 days after sowing.
H2-120 days after sowing.

3- Sub sub plot (unbranched varieties).
V1-Giza 32 (local check variety).
V2-Hybrid 117.

V3-N.A. 652.
V4-B 51.

At harvest time, ten plants from each sub-sub plot were randomly chosen to estimate: plant height, first capsule height, fruiting zone length, number of capsules/plant, seed yield/plant, 1000-seed weight, percentage of immature seeds and seed yield. Seed yield was determined on all plants of three ridges for each plot, while land use efficiency (LUE) was calculated according to the following equation:-

$$\text{LUE (kg seeds/fed./day)} = \frac{\text{Seed yield / feddan (kg.)}}{\text{No. of days from sowing to harvesting (day)}}$$

Water use efficincy (WUE) was calculated according to Vites (1965) as follows:-

$$\text{WUE} = \frac{\text{Yield of seeds, kg / fed.}}{\text{Total consumptive use, m3/fed.}}$$

Total consmptive use was calculated as described by Israelsom and Hansen (1962).

All data in each season were statistically analyzed according according to Steel and Torrie, 1980 and the differences among tretment means were compared using Least Significant Difference Test (L.S.D.).

## RESULTS AND DISCUSSION

### I. Effect of terminal irrigation date

Data presented in Table (1) show that terminal irrigation date had significant effect on all studied traits in both growing seasons except length of fruiting zone in 1995 season only. All studied traits were increased by increasing number of irrigations from 5 to 6 irrigation while percentage of immature seed decreased in both growing seasons. These results were expected as more available minerals for plant nutrition. Mositure stress affected the length of internode, probably by inhibiting cell elongation. Mahmoud (1969), found that plant height, total number of capsules/plant, growth period, seed yield per plant, per feddan and weight of 1000-seed, were increased with increasing irrigation number, these results are in agreement with those obtained by Chaudhari *et al.* (1991) Prakasha and Thimmegowda (1992) and Mathew and Kunju (1993).

### 2. Effect of harvesting date

The results recorded in Table 1 indicate that delaying harvest time up to 120 days after sowing caused significant increases in plant height, number of capsules/

Table 1. Effect of terminal irrigation, harvesting date and variety on some sesame characters in 1994 and 1995 seasons.

| Characters / Treatments | plant height (cm.) | | Height of the first Capsule (cm.) | | Length of Fruiting zone (cm.) | | No. of capsules per plant | | Seed yield per plant (g) | | Weight of 1000-seed (g) | | percentage of immature seed | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1994 | 1995 | 1994 | 1995 | 1994 | 1995 | 1994 | 1995 | 1994 | 1995 | 1994 | 1995 | 1994 | 1995 |
| Terminal irrigations | | | | | | | | | | | | | | |
| after: 5 irrigations | 184.02 | 187.98 | 65.80 | 74.41 | 65.80 | 113.67 | 56.79 | 49.62 | 7.90 | 7,35 | 2.84 | 2.83 | 18.25 | 18.42 |
| : 6 irrigations | 198.91 | 202.44 | 73.93 | 83.39 | 73.93 | 119.14 | 63.57 | 68.44 | 9.18 | 9.42 | 3.79 | 3.99 | 15.78 | 16.10 |
| L.S.D. 5% | 5.19 | 2.29 | 2.42 | 8.47 | 2.42 | N.S | 6.58 | 4.52 | 1.21 | 0.70 | 0.12 | 0.14 | 1.73 | 1.103 |
| Harvesting dates | | | | | | | | | | | | | | |
| 90 days from sowing | 186.75 | 192.90 | 68.39 | 77.38 | 68.39 | 115.80 | 51.76 | 56.09 | 4.49 | 3.82 | 2.32 | 2.99 | 21.67 | 21.34 |
| 105 days from sowing | 192.50 | 193.60 | 68.77 | 79.48 | 68.77 | 114.12 | 63.63 | 57.87 | 9.70 | 8.27 | 3.83 | 3.68 | 15.00 | 15.56 |
| 120 daus from sowing | 195.13 | 199.12 | 72.44 | 79.84 | 72.44 | 119.28 | 65.15 | 63.13 | 11.43 | 13.08 | 3.80 | 3.56 | 14.38 | 14.87 |
| L.S.D. 5% | 6.21 | 2.34 | 2.15 | N.S | 2.15 | N.S | 3.75 | 4.68 | 0.61 | 0.69 | 0.11 | 0.25 | 2.53 | 2.05 |
| varieties | | | | | | | | | | | | | | |
| Giza 32 | 196.44 | 202.4 | 68.88 | 81.80 | 68.88 | 120.70 | 54.08 | 65.23 | 9.02 | 8.70 | 3.55 | 3.44 | 16.40 | 16.48 |
| Hybrid 117 | 197.19 | 197.0 | 71.86 | 80.14 | 71.86 | 117.52 | 52.96 | 57.42 | 7.24 | 8.40 | 3.23 | 3.25 | 16.79 | 17.33 |
| N.A. 632 | 184.16 | 191.9 | 68.71 | 77.86 | 68.71 | 114.05 | 70.46 | 61.01 | 9.18 | 8.73 | 3.26 | 3.55 | 16.79 | 17.73 |
| B51 | 188.05 | 189.6 | 70.02 | 75.80 | 70.02 | 113.83 | 63.30 | 52.47 | 8.73 | 7.72 | 3.22 | 3.40 | 17.73 | 17.50 |
| L.S.D 5% | 4.74 | 3.32 | N.S. | N.S. | 5.6 | N.S | 4.17 | 3.69 | 0.98 | N.S | 0.18 | 0.018 | 17.15 | N.S. |
| Interaction | | | | | | | | | | | | | | |
| T x II | ** | N.S | N.S | N.S | ** | N.S | N.S | N.S | ** | N.S | ** | N.S. | N.S | N.S |
| T X V | N.S | N.S | ** | N.S | N.S | N.S | ** | ** | N.S | N.S | N.S | ** | N.S | N.S |
| V x II | ** | ** | ** | ** | N.S | N.S | ** | ** | ** | ** | N.S | N.S | N.S | N.S |
| T x V x II | ** | ** | N.S | ** | ** | ** | ** | ** | ** | ** | N.S | ** | N.S | N.S |

plant and seed yield/plant, while 1000-seed weight increased for the 105 days in both seasons. No significant differences could be seen among the three harvesting dates in height of the first capsule in 1995 season and length of fruiting zone in both seasons. Moreover, percentage of immature seed decreased with delaying harvest date. These results indicated that the late harvesting dates gave the highest values of these of these traits. This might be attributed to an increase in the metabolites synthesized with sesame plants owing to prolonged growth period which increased plant dry matter accumulation in plant organs till it reached the full maturity stage. The decreased percentage of immature seed at delayed harvest time was rather expected since such time was accompained by an increase in both setting and development of seeds. Ghanem (1989) found that sesame plants harvested after 110 or those harvested after 120 days from planting gave significant higher values of seed weight/capsule as well as number of capsules/plant and 1000-seed weight. These results are in harmony with those obtained by Charinee (1991) and Yebio *et al.* (1993).

Table 2. Interaction effect between terminal irrigation and harvesting date and terminal irrigation X varieties on some sesame characters in 1994 and 1995 seasons.

| Terminal Irrigation | Harvesting dates (days from sowing) | | | Varieties | | | |
|---|---|---|---|---|---|---|---|
| | 90 | 105 | 120 | Giza 32 | H117 | N.A 652 | B51 |
| | plant height 1994 | | | height of the first capsule 1994 | | | |
| 5 irrigations | 176.01 | 189.67 | 186.35 | 65.78 | 69.89 | 60.74 | 66.80 |
| 6 irrigations | 124.41 | 195.31 | 203.91 | 71.98 | 73.83 | 76.68 | 73.23 |
| L.S.D. 5% | | 8.73 | | | 4.90 | | |
| | fruiting zone length 1994 | | | Number of capsules/plant 1994 | | | |
| 5 irrigations | 112.94 | 125.46 | 117.13 | 51.83 | 48.20 | 64.43 | 62.70 |
| 6 irrigations | 124.41 | 121.99 | 128.56 | 56.19 | 56.72 | 76.49 | 63.89 |
| L.S.D. 5% | | 7.74 | | | 7.74 | | |
| | seed yield per plant (g) 1994 | | | seed yield per plant (g) 1994 | | | |
| 5 irrigations | 3.40 | 9.30 | 10.95 | 50.50 | 54.03 | 48.05 | 45.92 |
| 6 irrigations | 5.58 | 10.05 | 11.92 | 79.97 | 60.81 | 73.97 | 59.02 |
| L.S.D. 5% | | 1.38 | | | 1.38 | | |
| | weight of 1000 seeds (g) 1994 | | | weight of 1000 seeds (g) 1994 | | | |
| 5 irrigations | 2.03 | 3.30 | 3.18 | 2.73 | 2.63 | 3.13 | 2.85 |
| 6 irrigations | 2.61 | 4.36 | 4.41 | 4.16 | 3.88 | 3.98 | 3.94 |
| L.S.D. 5% | | 0.17 | | | 0.17 | | |

### 3. Effect of varieties

Data in Table 1 show that significant differences between varieties were noticed in plant height, number of capsules/plant weight of 1000-seed in both seasons in addition to length of fruiting zone and seed yield/plant in the first seasons only. No significant differences in height of the first capsule and percentage of immature seed in both growing seasons were observed. Giza 32 and Hybrid 117 varieties surpassed N.A. 652 and B 51 in the above- mentioned characters except number of capsules/plant and seed yield/plant which showed a reverse trend.

The differences between the four sesame varieties may be attributed to the differences in their genetic constitution for these traits and the interaction between the genetic make-up and the environmental conditions which prevailed during the experimention period. These results and conclusions are in agreement with those reported by Bakheit and Mahdy (1988) El-Sherbeeny (1991) El-Karamity *et al.* (1992) and Itnal *et al.* (1993).

### 4. Effect of interaction

Data included in Table 3 show that terminal irrigation x harvesting dates had significant effect on plant height, fruiting zone length, seed yield/plant and weight of 1000-seed in the first season. It was noticed that the maximum value of plant height, fruiting zone length, seed yield/plant and weight of 1000-seed were reached with irrigation terminated after 6 irrigations and harvesting plants after 120 days. While the lowest values in these traits were recorded with terminal irrigation after 5 irrigations and harvesting after 90 days from sowing.

Concerning the effect of terminal irrigation x varieties interaction in Table 3, it was concluded that terminal irrigation after 6 irrigations with N.A. 652 variety gave the highest value of the first capsule height and number of capsules/plant in 1994 season. While the highest value for number of capsules/plant and 1000-seed weight were obtained from planting Giza 32 variety with terminal irrigation after 6 irrigations in 1995 season.

With regard to the effect of interaction between harvesting dates and varieties, it was found that plant height, height of the first capsules, number of capsules/plant and seed yield/plant were significantly by affected in both growing seasons. The tallest plants were of Giza 32 and Hybrid 117 at different dates of harvesting and plant height of varieties was increased with delayed harvesting in both seasons.

Table 3. Interaction effect between harvesting dates and varieties on some sesame characters in 1994 and 1995 seasons.

| Harvesting dates (days from sowing) | 1994 | | | | 1994 | | | |
|---|---|---|---|---|---|---|---|---|
| Varieties | Giza 32 | Hybrid 117 | N.A. 652 | B 51 | Giza 32 | Hybrid 117 | N.A. 652 | B 51 |
| plant beight | 9.44 | | | | 9.44 | | | |
| 90 days | 200.40 | 190.40 | 171.30 | 185.0 | 206.50 | 195.60 | 178.96 | 190.55 |
| 105 days | 196.04 | 199.80 | 186.50 | 187.70 | 199.18 | 195.60 | 198.96 | 180.63 |
| 120 days | 192.90 | 201.40 | 194.80 | 191.50 | 201.50 | 199.60 | 197.70 | 197.71 |
| L.S.D. 5% | 5.62 | | | | 5.50 | | | |
| height of the 1st capsule (cm) | | | | | | | | |
| 90 days | 66.50 | 70.85 | 67.79 | 68.75 | 80.45 | 80.95 | 70.01 | 78.13 |
| 105 days | 72.39 | 67.44 | 58.43 | 67.14 | 82.71 | 79.59 | 85.59 | 70.01 |
| 120 days | 67.75 | 77.30 | 83.16 | 74.16 | 82.25 | 79.88 | 77.99 | 79.25 |
| L.S.D. 5% | 5.62 | | | | 8.95 | | | |
| No. of capsules/plant | | | | | | | | |
| 90 days | 48.13 | 49.95 | 69.79 | 39.18 | 67.13 | 53.39 | 61.45 | 42.41 |
| 105 days | 58.66 | 47.93 | 58.43 | 89.50 | 63.66 | 54.04 | 61.04 | 52.73 |
| 120 days | 55.24 | 61.00 | 83.16 | 61.21 | 64.91 | 64.83 | 60.54 | 62.26 |
| L.S.D. 5% | 7.29 | | | | 7.24 | | | |
| seed yield /plant | | | | | | | | |
| 90 days | 6.29 | 4.00 | 4.24 | 3.44 | 4.84 | 3.43 | 3.61 | 3.39 |
| 105 days | 10.78 | 7.59 | 8.60 | 11.84 | 8.75 | 7.75 | 9.79 | 7.49 |
| 120 days | 10.00 | 10.13 | 14.70 | 10.91 | 12.50 | 14.73 | 12.80 | 12.29 |
| L.S.D. 5% | 1.59 | | | | 1.41 | | | |

While the lowest height to the first capsule was recorded in plants of B 51 variety harvested at 105 days in both seasons and gave maximum number of capsules/plant in 1994 season, but the maximum no. of capsules in 1995 season was obtained from Giza 32 variety harvested at 90 days age. The heaviest seed yield/plant was recorded in N.A. 652 and Hybrid 117 with harvesting at 120 days in 1994 and 1995 seasons, respectively.

## 5. Seed yield/feddan and land use efficiency (LUE)

Data presented in Table 4 indicate that seed yield/feddan and land use efficiency were increased by (13.2 and 9.9%) and (13.5 and 9.5%) when given 6 irrigations compared to 5 irrigations in 1994 and 1995 seasons, respectively.

The reduction in seed yield by exposing sesame to drought at pod devlopment stage might be directly attributed to the reduction in dry matter accumulation, plant height, fruiting zone, number of capsules/plant and seed index. The increase in LUE is mainly due to the increase in the seed yield of the same area. These results are in agreement with those reported by El-Wakil and Gaafer (1986) Chaudhari *et al* (1991) and Majumdar and Roy (1992). Also, data given in the same table reveal that seed yield per feddan and LUE were significantly with delaying harvest date from 90 to 105 days after sowing in both seasons. It could be inferred that delaying harvest date to 105 days remarkably increased seed yield/feddan by (34 and 7.3%) and (27.5 and 3.8%) while LUE by (22.8 and 18.5%) and (15.4 and 15.6%) compared to 90 and 120 days harvesting date in 1994 and 1995 seasons, respectively. These results show that the highest values of 105 harvesting date may be attributed to the prolonged growth period and more accumlated metabolites and resalting in significant increase in yield and its component charaters. Moreover, delayed harvest up to 120 days after sowing exposed sesame plants to over maturity which is often accompanied by a decrease in moisture content in sesame plants and seed shattering from capsules. These results are in hormony with those obtained by Ghanen (1989) and Yebio *et al.* (1993). Results shown in table (3) show that Giza 32 and Hybrid 117 varieties producsed the highest seed yield/fed. and LUE, while B51 variety gave the lowest values in both seasons. Similar results were obtained by Ibrahim *et al.* (1987) Bakheit and Mahdy (1988) and El-Serogy (1992).

Regarding the interaction effect between terminal irrigation x harvesting date and harvesting date x variety on seed yield/fed. and LUE, it could be conluded that the highest values were obtained from treatment given 6 irrigations with delaying

Table 4. Effect of terninal irrigation, harvesting dates and variety on seed yield (kg)/feddan, land use efficiency and their interaction in 1994 and 1995 seasons.

| Treatments | | Seed yield kg/feddan | | | | | | | | | Land Use efficiency (kg seeds/feddan/day) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1994 | | | | Mean | 1994 | | | | Mean | 1994 | | | | Mean | 1994 | | | | Mean |
| Terninal Irrigation | Harv. days | Giza 32 | Hyb. 117 | NA 652 | B51 | | Giza 32 | Hyb. 117 | NA 652 | B51 | | Giza 32 | Hyb. 117 | NA 652 | B51 | | Giza 32 | Hyb. 117 | NA 652 | B51 | |
| 5-irrigation | 90 | 408 | 302 | 308 | 281 | 325 | 435 | 354 | 382 | 370 | 385 | 4.53 | 3.38 | 3.45 | 3.13 | 3.62 | 4.88 | 3.93 | 4.25 | 4.03 | 4.27 |
| | 105 | 531 | 545 | 474 | 457 | 502 | 539 | 515 | 476 | 459 | 497 | 5.05 | 5.18 | 4.53 | 4.38 | 4.79 | 5.15 | 4.93 | 4.55 | 4.35 | 4.75 |
| | 120 | 523 | 452 | 453 | 442 | 468 | 494 | 536 | 442 | 472 | 486 | 4.38 | 3.75 | 3.78 | 3.65 | 3.89 | 4.13 | 4.45 | 3.75 | 3.93 | 4.07 |
| Mean | | 487 | 433 | 412 | 393 | 432 | 489 | 468 | 433 | 434 | 456 | 4.65 | 4.10 | 3.92 | 3.72 | 4.10 | 4.72 | 4.44 | 4.18 | 4.10 | 4.36 |
| 6- Irrigation | 90 | 442 | 401 | 381 | 319 | 386 | 443 | 404 | 376 | 351 | 394 | 4.93 | 4.45 | 4.25 | 3.55 | 4.30 | 4.93 | 4.53 | 4.23 | 3.90 | 4.40 |
| | 105 | 611 | 582 | 555 | 546 | 574 | 624 | 591 | 571 | 523 | 577 | 5.83 | 5.55 | 5.30 | 5.20 | 5.47 | 5.95 | 5.63 | 5.45 | 4.95 | 5.50 |
| | 120 | 604 | 496 | 518 | 505 | 531 | 590 | 552 | 517 | 532 | 548 | 5.05 | 4.35 | 4.33 | 4.15 | 4.47 | 4.95 | 4.60 | 4.33 | 4.45 | 4.58 |
| Mean | | 552 | 493 | 485 | 457 | 497 | 552 | 516 | 488 | 469 | 506 | 5.27 | 4.78 | 4.63 | 4.30 | 4.75 | 5.28 | 4.92 | 4.67 | 4.43 | 4.83 |
| Mean | 90 | 425 | 352 | 345 | 300 | 356 | 439 | 379 | 379 | 361 | 390 | 4.73 | 3.92 | 4.00 | 3.34 | 3.96 | 4.91 | 4.23 | 4.24 | 3.97 | 4.34 |
| | 105 | 571 | 564 | 515 | 502 | 538 | 582 | 553 | 524 | 491 | 537 | 5.44 | 5.37 | 4.92 | 4.79 | 5.13 | 5.55 | 5.28 | 5.00 | 4.65 | 5.13 |
| | 120 | 564 | 474 | 486 | 474 | 500 | 542 | 544 | 480 | 502 | 517 | 4.72 | 4.05 | 4.06 | 3.90 | 4.18 | 4.54 | 4.53 | 4.04 | 4.19 | 4.33 |
| Mean | | 520 | 463 | 449 | 425 | 465 | 521 | 492 | 461 | 452 | 481 | 4.96 | 4.45 | 4.33 | 4.01 | 4.42 | 5.00 | 4.68 | 4.43 | 4.27 | 4.60 |
| Interaction TxH | | 33.17 | | | | | N.S | | | | | N.S | | | | | 0.33 | | | | |
| L.S.D. 5% TxV | | N.S | | | | | N.S | | | | | N.S | | | | | N.S | | | | |
| VxH | | 29.17 | | | | | 32.5 | | | | | 0.29 | | | | | 0.32 | | | | |

harvest date to 105 days from sowing. The highest seed yield and LUE were recorded from harvest Giza 32 variety at 105 days from sowing, while the lowest vaule resulted from harvesting B51 at 90 days from sowing. These results are expected since seed yield of the 105 harvest date was almost similar to harvesting at 120 days with less number of days to harvest. So, harvesting sesame plants after 105 days from sowing could be recommended because most of studied genotypes are early maturlty.

## 6. Water use efficiency (WUE)

The average values of water use efficiency by sesame are presented in Table (5). It could be inferred from the data that WUE was increased by 6 irrigations compared with 5 irrigations and increased with delaying harvest date from 90 to 105 days after sowing in both growing seasons. Giza 32 variety produced the highest value WUE, while B51 variety gave the lowest value in both seasons. Regarding the interaction effect between harvesting dates and varieties on WUE. The highest value WUE. The highest value WUE was obtainded from sowing Giza 32 variety harvested at 105 days after sowing. Whereas, the lowest value was recorded from B51 variety withe harvesting at 90 days after sowing.

Table 5. Effect of terminal irrigation, harvesting date and varieties on water use efficiency (WUE) in 1994 and 1995 seasons.

| | | 1994 | | | | Mean | 1994 | | | | Mean |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Terminal Irrigation | Harv. days | Giza 32 | Hyb. 117 | NA 652 | B 51 | | Giza 32 | Hyb. 117 | NA 652 | B51 | |
| 5-irrigation | 90 | 0.26 | 0.20 | 0.20 | 0.10 | 0.21 | 0.27 | 0.23 | 0.25 | 0.25 | 0.25 |
| | 105 | 0.35 | 0.35 | 0.31 | 0.30 | 0.33 | 0.34 | 0.33 | 0.30 | 0.30 | 0.32 |
| | 120 | 0.33 | 0.30 | 0.30 | 0.29 | 0.31 | 0.31 | 0.34 | 0.29 | 0.30 | 0.31 |
| Mean | | 0.31 | 0.28 | 0.27 | 0.26 | 0.28 | 0.31 | 0.30 | 0.31 | 0.28 | 0.29 |
| 6- Irrigation | 90 | 0.26 | 0.24 | 0.24 | 0.20 | 0.24 | 0.27 | 0.24 | 0.23 | 0.21 | 0.24 |
| | 105 | 0.38 | 0.36 | 0.33 | 0.34 | 0.35 | 0.38 | 0.37 | 0.34 | 0.32 | 0.35 |
| | 120 | 0.37 | 0.30 | 0.32 | 0.31 | 0.33 | 0.37 | 0.34 | 0.32 | 0.33 | 0.34 |
| Mean | | 0.34 | 0.30 | 0.30 | 0.28 | 0.31 | 0.34 | 0.32 | 0.30 | 0.29 | 0.31 |
| Mean | 90 | 0.26 | 0.22 | 0.22 | 0.20 | 0.23 | 0.27 | 0.24 | 0.24 | 0.23 | 0.25 |
| | 105 | 0.37 | 0.36 | 0.32 | 0.32 | 0.34 | 0.36 | 0.35 | 0.32 | 0.31 | 0.34 |
| | 120 | 0.35 | 0.30 | 0.31 | 0.30 | 0.32 | 0.34 | 0.34 | 0.31 | 0.32 | 0.33 |
| Mean | | 0.33 | 0.29 | 0.29 | 0.27 | 0.30 | 0.32 | 0.31 | 0.29 | 0.29 | 0.31 |

From an economical point view, it could be concluded that the best irrigation scheduling for water use efficiency and saving irrigation water, as well as high sesame yield production. It could be recommended to irrigate sesame plants 5 irriga-

tions to obtain the highest seed yield with good quality. These results are in agreement with those obtained by El-Wakil (1983), Chandrakor *et al.* (1994) and Mokadem *et al* (1994).

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# أنسب ميعاد لإيقاف الرى والحصاد لبعض أصناف السمسم

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اجريت هذه التجربه بمحطه البحوث الزراعيه بملوى (محافظة المنيا) - مركز البحوث الزراعية خلال موسمى النمو ١٩٩٤ - ١٩٩٥ لدراسه انسب ميعاد لإيقاف الرى وكذلك الميعاد المناسب للحصاد على المحصول ومكوناته لبعض أصناف السمسم. واستخدم تصميم القطع المنشقه مرتين حيث تم توزيع معاملات الرى (٥ ، ٦ ريات) عشوائيا على القطع الرئيسيه ومواعيد الحصاد (٩٠ - ١٠٥ - ١٢٠ يوم بعد الزراعه) عشوائيا على القطع المنشقه بينما تم توزيع الأصناف (جيزه ٣٢ - هجين ١١٧ - مستورد ٦٥٢ - ب ٥١) عشوائيا على القطع الفرعيه. أوضحت نتائج الدراسه مايلى:-

١) اظهرت النباتات التيتم عندما ريت ٦ ريات تفوقا واضحا فى المحصول ومكوناته عن النباتات التى تم ايقاف الرى بعد ٥ ريات.

٢) زاد المحصول ومكوناته فى النباتات التى تم حصادها بعد ١٠٥ يوم من الزراعه بالمقارنه بالنباتات التى تم حصادها فى المواعيد الاخرى.

٣) تفوق الصنفين جيزه ٣٢ وهجين ١١٧ فى محصول البذور للفدان بينما سجل الصنف ب ٥١ اقل محصول.

٤) كانت اعلى قيمه فى كفاءة استخدام الأرض وكذلك كفاءة استخدام الماء للمعامله ٦ ريات والحصاد على ١٠٥ يوم للصنف جيزه ٣٢ ,

٥) اظهر التفاعل بين العوامل تحت الدراسه انه لاعطاء اعلى قيمه اقتصاديه للمحصول يفضل زراعه الصنف جيزه ٣٢ وهجين ١١٧ مع ايقاف الرى بعد ٥ ريات وتاخير الحصاد الى ١٠٥ يوم من الزراعه.