SUMMARY

A STUDY ON THE OPTIMAL AGRONOMIC PRACTICES FOR LATE PLANTED EGYPTIAN COTTON

Two field experiments were carried out and repeated during 1989 and 1990 seasons at Bahtim Agricultural Research Station, Agricultural Research. Center, located in Kalubia Governorate in South Delta.

The first experiment: aimed to investigate the effects of seeding rate, thinning date and their interaction on growth, yield and its components, earliness and fiber properties of the late planted cotton.

The experiment included 12 treatments which were the combination of 3 seeding rates and 4 thinning dates. Seeding rates were 5,10 and 15 seeds per hill. These numbers indicate the need of about 16.7, 33.3 and 50kg seed/fed., respectively.

Thinning dates were 20, 25, 30 and 35 days from planting.Planting date was 1st of May in the first season and 25th of April in the second one. A split plot design was used with 4 replications. The main plots were devoted to number of seeds per hill and sub-plots to thinning date. The sub-plot area was 12.6$m^2$and cotton was planted on ridges 60cm apart and seeds were placed in hills 20cm apart.

The second experiment: aimed to investigate the effects of distance between hills, nitrogen fertilization level and their interaction on growth, yield and its components, earliness and fiber properties of late planted cotton. It included 16 treatments which were the combination of four distances between hills (15, 20, 25 and 30cm or 93333, 70000, 56000 and 46666 plants/fed., respectively) and four nitrogen levels (20, 40, 60 and 80kg N/fed.) A split plot design was used with 4 replications. The main plots devoted to distance between hills and sub-plots to nitrogen levels. The sub-plot area was 12.6m^2. Ridges were 60cm apart and 4.2 m in length.

The new cotton cultivar Giza 83 (Giza 67 X Giza 72 hybrid) was used in both experiments. Planting date was similar to that of the first experiment.

The soil of the experiments was clay loam in texture with a pH value of 8.1 and has 0.85% organic matter content and 0.095% total nitrogen. The normal cultural practices for growing cotton were followed.

Results could be summarized as follows:

FIRST EXPERIMENT

EFFECT OF NUMBER OF SEEDS PER HILL AND THINNING DATE ON GROWTH, YIELD AND ITS COMPONENTS, EARLINESS AND FIBER CHARACTERS OF LATE PLANTED COTTON

1- Number of emergened hills per feddan was significantly increased with increasing seeding rate. The highest number of emergened hills/fed. was obtained by using 15 seeds per hill.

2- Plant height at harvest, node number of first sympodia and number of fruiting branches/plant were not significantly affected by seeding rates.

3- Number of total bolls/plant, number of open bolls/plant and seed cotton yield/boll were not significantly affected by seeding rates.

4- Seed cotton yield/plant was significantly increased by decreasing seeding rate in the first season only, where the highest seed cotton yield was obtained by sowing 5 seeds per hill.

5- Lint percentage and seed index were not significantly affected by seeding rate.

6- Plant stand at picking expressed as percentage of surviving plants was significantly affected by number of seeds per hill. The highest percentage of surviving plants at picking was obtained by sowing 15 seeds/hill in the first season (80. 64%), and 10 seeds per hill in the second one (78. 76%). Planting 5 seeds/hill markedly reduced plant stand at picking where 33.39 and 34.50% of the plants were lost in the first and second season, respectively.

7- Seed cotton yield/fed. as well as lint cotton yield/fed. were not significantly affected by seeding rate. The highest seed cotton yield/fed. was obtained by sowing 15 seeds/hill (5.11 and 7.25 kentars/fed. in 1989 and 1990seasons, respectively). The highest lint yield was obtained by sowing 15 seeds/hill (6.14 and 8.41 kentars/fed. in 1989 and 1990

seasons, respectively).

8- Number of days to first flower or boll opening and percentage of first picking yield to total seed cotton yield were not significantly affected by seeding rate.

9- Length parameters, fiber strength and fiber fineness were not significantly affected by seeding rate.

10- Plant height at harvest, node number of first sympodia and number of fruiting branches/plant were not significantly affected by thinning date.

11- Thinning date had no significant effect on number of total and open bolls/plant.

12- Seed cotton yield per boll was significantly affected by thinning date in the second season only. The highest boll weight was obtained by thinning after 35 days from planting (2.33gm).

13- Seed cotton yield per plant significantly increased with early thinning in the second season only. Thinning after 20 days from planting gave the highest yield/plant (25.36gm/plant).

14- Lint percentage and seed index were not significantly affected by thinning date.

15- Plant stand at picking expressed as percentage of suriviving plants significantly increased as a result of early thinning in the first season only. The highest percentage was obtained by thinning after 20 days from planting (80.04 and 78.24% in 1989 and 1990, respectively).

The lowest percentage was recorded with thinning late after 35 days, being 59.14 and 68.14% in the first and second season, respectively.

16- Seed cotton yield as well as lint cotton yield per feddan significantly increased as a result of early thinning in the first season only. The highest seed cotton yield/fed. was obtained with cotton thinned after 20 days from planting in both seasons (5.26 and 7.16 kentars/fed. in 1989 and 1990 season, respectively). Also, the highest lint yield per feddan was obtained with cotton thinned after 20 days from planting in both seasons (6.87 and8.77 kentars/fed. in 1989 and 1990 season, respectively).

17- Number of days to first flower appearance as well as number of days to first boll opening were not significantly affected by thinning date.

18- Percentage of first picking yield to total seed cotton yield was significantly increased by early thinning in the first season only.

19- Fiber length (2.5% and 50% s.L.) was not significantly affected by thinning date, whereas, fiber length (50% S.L.) increased by early thinning in the second season only. Uniformity ratio increased as a result of early thinning in the first season only.

20 Fiber strength as well as fiber fineness were not significantly affected by thinning date.

21- All effects of the interaction between seeding rate and

thinning date on the different characters studied were not significant except those on seed cotton yield per feddan and fiber strength in the first season only. The highest seed cotton yield/fed. in 1989 was 7.71 kentars resulting from the combination of 5 seeds/hills and thinning after 20 days.

SECOND EXPERIMENT

EFFECT OF DISTANCE BETWEEN HILLS AND NITROGEN FERTILIZATION LEVEL ON GROWTH,YIELD AND ITS COMPONENTS, EARLINESS AND FIBER CHARACTERS OF LATE PLANTED COTTON

1- Plant height at harvest significantly increased with increasing distance between hills up to 25cm in the second season only.

2- Node number of first sympodia significantly decreased by increasing distance between hills in the second season only.

3- Number of fruiting branches/plant significantly increased as a result of increasing distance between hills. The highest number of fruiting branches/plant was obtained by planting at 30cm (10.31 and 9.95 branches/plant in 1989 and 1990 season, respectively).

4- Number of total bolls/plant significantly increased as a result of increasing distance between hills in the second season only.

5- Number of open bolls/plant significantly increased with increasing distance between hills.

6- Seed cotton yield per boll significantly increased with

increasing distance between hills in the first season only.

7- Seed cotton yield per plant significantly increased as a result of increasing distance between hills, where the highest seed cotton yield was obtained by planting at 30cm between hills (18.91 and 23.32gm/plant in 1989 and 1990 season, respectively).

8- Lint percentage significantly decreased with increasing distance between hills in the second season only.

9- Seed index significantly increased with increasing distance between hills up to 30cm in the first season only.

10- Plant stand at picking expressed as percentage of surviving plants significantly decreased as a result of decreasing distance between hills. The highest percentage was 94.1% obtained by 25cm distance in the first season being 94.0% in the second one obtained by planting at 30cm between hills.

11- Seed cotton yield as well as lint cotton yield per feddan were not significantly affected by distance between hills. Cotton grown at 20cm between hills gave the highest seed cotton yield per feddan (5.69 and 6.67 kentars /fed . in 1989 and 1990 seasons, respectively).

12- Earliness characters (number of days to first flower appearance, number of days to first boll opening and percentage of first picking yield to total seed cotton yield) were not significantly affected by distance between hills.

13- Fiber length (2.5% S.L. and 50% S.L.) was not

significantly affected by distance between hills.

Uniformity ratio significantly increased with decreasing distance between hills in the second season only.

14- Fiber strength was not significantly affected by distance between hills.

15- Fiber fineness significantly increased with increasing distance between hills in the first season only.

16- Plant height at harvest significantly increased with increasing nitrogen level up to 60 kg N/fed.

17- Node number of first sympodia was significantly affected by nitrogen level, where the lowest node number was obtained with the lowest nitrogen level.

18- Nitrogen fertilization had no significant effect on number of fruiting branches per plant.

19- Total number of bolls/plant significantly increased at the higher nitrogen levels in the first season only, whereas total number of open bolls/plant was not significantly affected by nitrogen level in both seasons.

20- Boll weight increased significantly as the N level increased up to 60 kg N/fed.

21- Seed cotton yield/plant, lint percentage, seed index and percentage of surviving plants at picking were not significantly affected by nitrogen level.

22- Seed cotton yield was significantly increased as a result of increasing nitrogen level. Raising nitrogen level from 20 to 40, 60 and 80kg N/fed. increased seed cotton yield by

30.3, 37.6 and 43.5% in 1989 and by 14.6, 37.3 and 39.8% in 1990, respectively. Lint cotton yield followed a similar trend of response and increased by 30.5, 37.4 and 44.8% in 1989 and by 17.5, 37.2 and 44.2% in 1990, respectively.

23- Days to first flower appearance was significantly increased as a result of increasing nitrogen level in the first season only, whereas days to first boll opening was significantly increased as a result of increasing nitrogen level in both seaons indicating that higher N levels delayed flowering and maturity.

24- Percentage of first picking yield to total seed cotton yield was not significantly affected by nitrogen level.

25- Fiber lenght, uniformity ratio, fiber strength and fiber fineness were not significantly affected by nitrogen fertilization level.

26- Number of total bolls/plant was significantly affected by the interaction between distance between hills and nitrogen level in 1989 season only. The highest number of bolls/plant was obtained by planting at 30cm and 60kg N/fed.

27- Number of open bolls/plant was significantly affected by distance between hills X N level interaction, where the highest number of open bolls per plant was obtained by planting at 20cm and applying 20kg N/fed.