SUMMARY

Two experiments were carried out at Sids Agricultural Research Station, Beni- Suef Governorate, during 1987 and 1988 seasons to investigate the effect of intercropping cotton and maize, under different population densities as well as different planting dates, on growth, yield and yield components of cotton (cv. Giza 80) and maize (cv. Giza 2).

In each season two separate experiments were undertaken :

In the first experiment, cotton and maize were planted in the same date in both seasons. Planting date was on April 26th and 22nd in 1987 and 1988 seasons, respectively.

In the second experiment, cotton was planted 3 weeks earlier than maize. Cotton was planted on April 26th and maize on May 17th in the first season. In the second season cotton planting date was on April 22nd and maize planting was done on May 13th.

In each experiment eleven treatments were applied which were the combination of three cotton population densities (50 %, 75 %, and 100 % of the pure stand density) and three maize population densities (50 %, 75 %, and 100 % of the pure

stand density), in addition to the sole cropping of cotton and maize .

The standard population density of pure stand cotton was 70,000 plants/ fad., and for maize 23,333 plants/ fad.

Treatments in both experiments were therefore :

	Cotton density	:	Maize density
1	50 %	:	50 %
2	50 %	:	75 %
3	50 %	:	100 %
4	75 %	:	50 %
5	75 %	:	75 %
6	75 %	:	100 %
7	100 %	:	50 %
8	100 %	:	75 %
9	100 %	:	100 %
10	Sole cotton		
11	Sole maize		

Harvesting was done at maturity. Fertilizer application and irrigation and other cultural practices were similar either for intercropps or for pure stand.

The experiments were arranged in a completely randomized blocks design with four replications.

Data on growth, yield components and yield were collected.

Results could be summarized as follows :

I- Agronomic characters and yield components of cotton:

1- Cotton plant height was not significantly affected by intercropping in both experiments.

2- Number of fruiting branches/ plant as well as number of open bolls/ plant were significantly reduced by intercropping, particularly at higher population densities. The adverse effect of intercropping on these characters was more evident in the first experiment where cotton and maize were planted on the same date.

3- Boll weight, seed index and lint percentage were not significantly affected by intercropping in both experiments.

4- Seed cotton yield/ plant was significantly reduced as a result of intercropping, particularly at higher population densities. Planting cotton 3 weeks earlier than maize reduced markedly the adverse effects of intercropping.

II- Seed cotton yield and agronomic characters :

1- In both experiments, intercropping significantly reduced seed cotton yield estimated as the "actual" yield produced per plot. In the first experiment, yield reduction

due to intercropping reached 61 and 62 % in the first and second season, respectively, compared with sole cropping. Regarding the second experiment, yield reduction reached 56 and 52 % in 1987 and 1988, respectively.

2- "Adjusting" seed cotton yield according to unit area practically grown, indicated that intercropping showed no marked effect. In the first experiment, sole cropping slightly outyielded intercropping treatments, whereas in the second experiment intercropping in some cases insignificantly increased seed cotton yield "adjusted" per unit area.

3- Intercropping at higher cotton population densities significantly reduced the percentage of survival cotton plants at picking, in both experiments, compared with sole cropping.

4- Earliness percentage was significantly reduced by intercopping in both experiments.

III- Growth characters and yield components of maize :

1- Intercropping had no significant effect on plant height, area of the topmost ear leaf, ear weight and 100-kernel weight in both experiments. Lower values of these traits were observed when intercropping was done at higher densities.

2- Number of ears per plant significantly increased compared with sole cropping when intercropping was done at lower densities. But at higher maize densities, intercropping significantly decreased number of ears per plant in

both experiments.

IV- Maize grain yield and stand at harvest:

1- Intercropping at higher population densities significantly reduced maize grain yield/plant compared with sole cropping. But intercropping at the lowest density increased grain yield/ plant.

2- Maize grain yield estimated as "actual" yield was significantly reduced by intercropping in both experiments. Sole cropping outyielded intercropping with highly significant differences. The yield reduction in the first experiment reached 24-32 % in 1987 and 37-59 % in 1988 compared with pure stand. In the second experiment yield reduction was 23-39 % and 38-54 % in the first and second season, respectively.

3- "Adjusting" the yield in relation to unit area showed that intercropping had significant effect in 1987 season for both experiments. Intercropping significantly increased maize grain yield "adjusted" per unit area. Increases of 33-52% in the first experiment and from 24 to 56 % in the second one , were recorded over pure stand yield in 1987 season.

4- Intercropping at higher population density significantly reduced percentage of surviving plants in both experiments compared with sole cropping.

V- Agronomic characters of maize and weed density :

1- Intercropping had no significant effect on percentages of barren, and lodged and broken plants in both experiments.

2- The percentages of smut infested plants as well as late wilt diseased plants were not significantly affected by intercropping in both experiments.

3- Weed density in maize either after 35 or 50 days from planting was not significantly affected by intercropping in both experiments.

VI- Competitive relationships and yield advantage :

1- In the first experiment "LER" exceeded one in all treatments of 1987 season and in three treatments out of the nine in 1988 season, indicating no definite increase in land productivity. The best result was obtained with intercropping cotton and maize at 100 % : 50 % of pure stand density, respectively, in both seasons. "LER" was 1.19 and 1.04 in 1987 and 1988 season, respectively.

2- Maize contributed more than cotton in "LER" in both seasons in the first experiment.

3- With the second experiment, "LER" exceeded one in all systems in both seasons, showing promising result when cotton planting preceded maize planting by 3 weeks. Land equivalent ratio (LER) of 1.27 and 1.19 were obtained in the first and second season, respectively.

4- In the second experiment maize was the best contributer in all systems in the first season, but an

opposite treated was observed in the second season where cotton was the best contributer in five systems out of nine.

5- Relative crowding coefficient showed yield advantage with intercropping in all systems of the first experiment in 1987 season, but only in three systems in 1988 season.

6- Earlier cotton planting in the second experiment proved promising where yield advantage was recorded wtth all intercropping systems in both seasons.

7- Maize was the dominant component in all intercropping systems in the first experiment in both seasons, while cotton was the dominated component.

With the second experiment, maize was the dominant component in all systems in 1987 and in four systems in 1988 season.