Cotton fiber quality response to
Best management practices

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Yield is the most important factor to consider in developing a cotton production plan. However, in an effort to realize maximum profits from a cotton production system it is also important to recognize the significance of fiber quality.
• Egypt exclusively produces *Gossypium barbadense*, a type of Extra fine cotton.

• The current productivity is 3.45 bales/ha and the expected increase in yields to 4.4 bales/ha.

• Cotton was the main summer crop in Egypt, but nowadays it comes third, after maize and rice, regarding the cultivated area. However, because it occupies the land for about 6-7 months while maize occupies it for about four months.

• Cotton in Egypt is normally handpicked.
Best management practices (BMPs) go a long way to help farmers secure the best yields and return the revenue the farmer gets from cultivating cotton.

The value of higher quality, and accordingly higher price, is of special importance in Egyptian cottons.
Fiber properties such as length, strength, micronaire, and grade are all important to consider in terms of crop management. There are many crop management factors that have been associated with fiber quality.

Some of these factors include:

- Cotton variety
- weed control
- planting date
- insect control
- plant population
- uniform fruiting patterns
- Soil fertility
- irrigation
- harvesting
Cotton practices for requires much planning and timely action throughout the season. Best Practices are agricultural practices which optimize the three pillars of sustainability: social responsibility, environmental integrity and economic viability by binding together, the financial requirements for agriculture, such as high yield with environmental and social concerns, such as water and pesticide use.
• The largest proportion of cotton cultivated area is planted after temporary berseem, a sizeable proportion after broad beans, smaller areas after potatoes and other minor crops, and sometimes some farmers grow cotton after wheat.
• Delta and Nile valley are suitable for growing Extra long and long staple cotton.

• Growing cotton in these soils have the advantage of early maturity, however yield is relatively higher.

• In new lands, where the soils are generally sandy, cotton could be grown successfully only if modern irrigation systems, especially drip irrigation, are used.
• Land preparation and weed control is important to reach yield potential.

• There is magnitude of loss in cotton yield incurred by delayed sowing.

• Recent experiments carried out by the Cotton Research Institute, demonstrated the magnitude of loss in yield due to delaying sowing date in Middle and Delta Egypt. In Middle Egypt, one month delay in date of sowing resulted in about 30% loss in yield, while another one month delay in sowing brought yield down by about 50%.
In the Delta, when sowing was delayed further for another 30 days till 1st of June, the loss amounted to about 57%. It appears that varieties, and probably regions, differ in their response to delayed sowing because of difference in climatic conditions.
Because a large number of seeds per hole is usually used, when germination is normal, there will be a large number of seedlings per hill which makes thinning to a required number of 2-3 plants per hill a necessity.

CRI recommended 75 cm distance between ridges and 20 cm distance between hills. When leaving two or three plants per hill after thinning, these distances give approximately plant densities of 8-10 plants per square meter, i.e. 85,000-100,000 plants per Hectare.
The cotton plant daily water requirements start from the moment the seedlings emerge on soil surface and continues until shortly before picking the crop. However, it varies in quantity according to many factors but mainly growth stage and air temperature and humidity which affect transpiration.
NPK fertilization

- Nitrogen fertilization is the limiting nutritional factor for cotton production in Egypt. The increase in yield due to phosphorous fertilization is moderate but is economical when phosphorous is used at moderate rates, while potassium fertilization showed no sizeable effect in most of the experiments.
• On of the average, the optimum rate for nitrogen application is 140 Kg /ha, however some varieties respond positively to higher rates up to 180 Kg/ha.
• phosphorous fertilization is recommended at the rate of 36 Kg P2O5/ha.
• However, varieties differ substantially with regard to yield potential, their response to fertilization did not show similar wide difference.
WEED CONTROL

- Under Egyptian conditions, weed control in cotton fields is a must remove by hand, not by chemicals, otherwise a substantial proportion of the yield might be lost.

- Successful cotton production in Egypt relies, on the effectiveness of plant protection against the various insects and diseases that attack it throughout its lifetime and cause a good deal of losses.
Fiber quality: Length

- Besides variety, water management and maintaining good plant-water relations during fiber development is probably the most important factor affecting fiber length.

- This is one of the reasons we stress the importance of good water management in-season and minimizing or eliminating water stress. In-season irrigations should be scheduled so that no more than 50% of the plant-available soil-water is depleted between irrigations.
• Water stress can reduce not only crop vigor, fruit retention, and yield; but also fiber length.
• If harvesting is delayed and open bolls are exposed in the field for a long time fiber length could be affected.
Fiber quality: Strength

- Most varieties that have high yield potentials also have good fiber strength characteristics.

- Any factor that can cause physical or microbial damage to the fiber can reduce strength.

- Strength can also be reduced in cotton lint from over-ginning
Fiber quality: Micronaire

- Fiber fineness is determined primarily by variety. However, the maturity of cotton fibers can be affected substantially by environment and management.

- Management factors that lead to crop earliness and uniform fruit retention patterns are very important in terms of fiber Micronaire.
Thank you

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