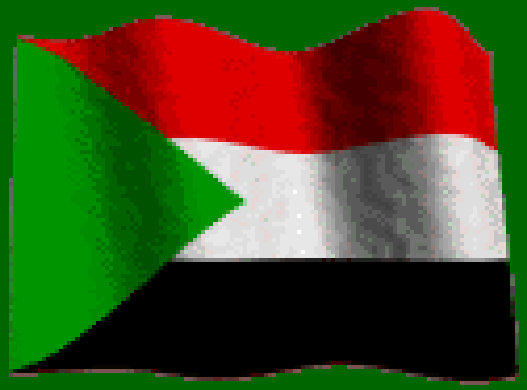

The 12th Meeting of the Inter-regional Cooperative Research Network on cotton for the Mediterranean and Middle East region

Sharm El -Sheikh, Egypt ,October 6-9, 2015

Sudan

Introduction

- **The present commercial variety of long staple cotton (*Gossypium barbadense*) in Sudan is Barakat-90. This variety is susceptible to the new race of bacterial blight disease. Attempts were made to incorporate resistance to the three main cotton diseases; leaf cruel, fusarium wilt and bacterial blight. Yields have been stagnant since no other new genes influencing yield components have been brought into the germplasm from outside.**

Introduction

- **Breeding improved cotton varieties should proceed from material with adequate genetic variability. New genetic pool that created by hybridization is being exploited. Extra-fine cotton improvement should involve earliness of maturity, GOT and bigger bolls. It is the object of this paper to look at some changes that have taken place in the Sudan extra-fine cotton and to consider what these changes mean in regard to future improvement.**

Materials and Methods

- **The plant material used in this study included nine cotton experimental lines: A1/05, B2/05, C2/015, A1/016, B8/05, A9/05, B17/05, B3/05 and A9/05 belonging to *G. barbadense* L. which developed by hybridization using local germplasm, spontaneous and induced mutants and the commercial cotton variety Barakat-90 as a check**

Materials and Methods

- **Yield evaluation was carried at Gezira Research Station. Genotypes were grown in a randomized complete block design with five replications. The plot size was 6-m ridges spaced 0.8 m apart. Seeds were sown in hills 0.5 m apart and thinned to three plants per hill six weeks after planting.**

Materials and Methods

- **Inorganic fertilizers were applied at recommended rates, with chemical pest control and hand weed-control. The trials were sown between first to mid-July. Agronomic characters, earliness of maturity and bacterial blight disease assessment were evaluated.**

Materials and Methods

- **Data were collected on the following characters:**
- **Plant height: Measured at harvest, on five plants in each plot, from the ground surface to the highest point of the main stem**
- **Earliness of maturity**
- **Disease incidence (DI).**
- **Disease severity (DS).**
- **Seed cotton yields: Seed cotton per harvested area, weighed and adjusted to kg ha^{-1}**

Materials and Methods

- **The bacteria were isolated from infected leaves of the variety Barakat-90 in Petri dishes containing nutrient agar. Forty-eight hours old purified cultures were used. The inoculum was diluted using sterilized distilled water and the inoculum concentration was adjusted approximately to $1x10^6$ bacterial cells/ml. Cotton plants at the six leaves stage were inoculated using the pressure inoculation method.**

Materials and Methods

- **After an incubation period of 2-3 weeks, leaf disease severity was graded on 0-5 scale, where 0 represents immunity, 1 resistant, 2 moderately resistant, 3 moderately susceptible, 4 susceptible and 5 highly susceptible.**

Materials and Methods

- **Fiber tests were carried out at the Fiber Testing and Spinning Laboratory of the Cotton Research Program, ARC, Sudan, according to fiber testing standards under standard testing conditions.**

Results

Table 1. Means of seed cotton yield and agronomic traits for ten genotypes evaluated at Gezira Research Station (2011)

Genotype	Sc (kg/ha^{-1})	DS	Earliness (%)	Yield as % Barakat
Barakat-90	**1868**	5.0	43.5	100
A1/05	**2387**	2.0	52.0	128
B2/05	2353	4.0	54.0	126
C2/015	2321	5.0	61.2	124
A1/016	2213	5.0	48.0	118
B8/05	2125	2.0	45.6	114
A9/05	1982	5.0	48.6	106
B17/05	2164	2.0	48.3	116
B3/05	1938	5.0	45.9	104
A9/05	1984	5.0	58.7	106
Mean	2134	5.0	48.6	
CV%	17	19	23.9	
SE	66	0.8	2.9	
Lsd	23	0.8	1.03	

Table 2. fiber characteristic of tested genotypes

Genotype	F. Length (mm)	U.I (%)	Micronaire	Strength (g/tex)
Barakat-90	37.0	88	3.7	40
A1/05	36.8	90	3.7	44
B2/05	36.4	87	3.0	42
C2/015	36.3	86	3.9	40
A1/016	36.2	88	3.9	42
B8/05	35.8	88	3.9	40
A9/05	35.6	86	4.4	41
B17/05	35.5	87	3.3	40
B3/05	35.4	87	3.7	41
A9/05	35.0	84	4.0	36

conclusion

- **Genetic variability and new traits added to *Gossypium barbadense* in Sudan: earliness of maturity, bacterial blight resistance compared to Barakat-90 would be used for genetic variability in the breeding programs in the Sudan in the future.**
- **.**

conclusion

- **The most significant superiority of the new lines is in the fiber quality. They had a substantial increase in fiber length and strength that make them as suitable candidates coping with the new spinning and textile industry standards. According to the international fiber classification, A1/05, B2/05, A9/05, C2/015 and A1/016 lines fit well in the extra long staple cotton category, hence being a credit to world market and industry.**

conclusion

- **The newly developed lines would certainly represent a significant genetic improvement in fiber length and strength, that will contribute to productivity gains in the textile industry and make a significant change in cotton quality parameters. Likewise, this will significantly enhance the marketing position of Sudan cotton.**

Thank you