




ICAC Research Associate Program

## COTTON RESEARCH IN TURKEY

**Dr. Sema BASBAG**  
Dicle University Agricultural Faculty  
Diyarbakir-Turkey

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### Beginning of The Cotton Farming in Turkey

Cotton is one of the most strategic crops in Turkey.

Cotton farming in Anatolia go back to 330 year Before Christ (B.C). However, the main developments started during the period of Selcuk Turks in 11<sup>th</sup> and Ottoman Turks in 13<sup>th</sup> century.

### Beginning of The Cotton Farming in Turkey

- The most important developments in cotton farming have taken place as result of institutional regulations at beginning Turkish Republic (1920's).
- Cotton improvement studies started in 1924 and it was focused on the introduction and selection studies with 40 genotypes which were brought from USA in 1927.

### Beginning of The Cotton Farming in Turkey

- The registration and certification processes for cotton seeds at started in 1960's.
- Today there are many studies on the development of cotton varieties by governmental and private sectors in the responsibility of Agriculture Rural Affairs Ministry.
- Institutes of ministry, universities and private sectors are carrying out various improvement and growing techniques studies for new cotton cultivars.

### The Cotton Farming in Turkey

- The cultivated cotton varieties in Turkey are the *Gossypium hirsutum* L. species.
- During the 1964-2008 years, 84 cotton varieties have been registered by the authorized office of the Ministry of Agriculture and Rural Affairs.



### Names, Dates of Registration and Owners of The Varieties belong to Public Research Institutes and Universities

Variety Name	Registered	Owner
Maydos Yerlisi	1964	Cotton Res. Inst. Nazilli
Sealand 542	1964	Cotton Res. Inst. Nazilli
Coker 100/A-2	1964	Cotton Res. Inst. Nazilli
Carolina Queen	1968	Cukurova Res. Inst.
Nazilli 66-100	1975	Cotton Res. Inst. Nazilli
Ege-69	1977	Cotton Res. Inst. Nazilli
Delcerro	1977-2003	Cotton Res. Inst. Nazilli
Gospipolsuz-86	1986	Ege University
Nazilli-87	1987	Cotton Res. Inst. Nazilli

**Names, Dates of Registration and Owners of The Varieties  
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Variety Name	Registered	Owner
Ersan-92	1992	K. Maraş Res. Inst.
Maraş-92	1992	K. Maraş Res. Inst.
Nazilli M-503	1992	Cotton Res. Inst. Nazilli
Nazilli M-39	1992	Cotton Res. Inst. Nazilli
Nazilli 84 S	1998	Cotton Res. Inst. Nazilli
Nazilli 143	1998	Cotton Res. Inst. Nazilli
Nazilli M-342	1998	Cotton Res. Inst. Nazilli
Adana 98	1998	Cukurova Res. Inst.
GÜN S2	1999	Akdeniz Res. Inst.
Sahin-2000	2001	Cotton Res. Inst. Nazilli
Aydın-110	2001	Cotton Res. Inst. Nazilli

**Names, Dates of Registration and Owners of The Varieties  
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Variety Name	Registered	Owner
Eksi-911	2002	Cotton Res. Inst. Nazilli
Gümbey	2002	Cotton Res. Inst. Nazilli
Ozbek-142	2002	Cotton Res. Inst. Nazilli
Dicle 2002	2002	South East Anat. Res. Inst.
Gossypolsuz Nazilli	2002	Cotton Res. Inst. Nazilli
Nazilli 342	2003	Cotton Res. Inst. Nazilli
Nazilli 663	2003	Cotton Res. Inst. Nazilli
Nazilli 303	2003	Cotton Res. Inst. Nazilli
Nazilli 954	2003	Cotton Res. Inst. Nazilli
Sayar 314	1980-2003	Cukurova Res. Inst.
Cukurova 1518	1982-2003	Cukurova Res. Inst.
Nazilli 84	1984-2004	Cotton Res. Inst. Nazilli

**Names, Dates of Registration and Owners of The Varieties  
belong to Public Research Institutes and Universities**

Variety Name	Registered	Owner
Nazilli DT15	2005	Cotton Res. Inst. Nazilli
Banıt 2005	2005	Cotton Res. Inst. Nazilli
Menderes 2005	2005	Cotton Res. Inst. Nazilli
Nazilli DT 15	2005	Cotton Res. Inst. Nazilli
Coşkun-1	2006	Cotton Res. Inst. Nazilli
GAPEYAM-1	2006	GAPEYAM
Berke	2007	Dicle University
GSN-12	2007	Cotton Res. Inst. Nazilli
Napa 122	2007	Cotton Res. Inst. Nazilli
Ayhan 107	2007	Cotton Res. Inst. Nazilli

**Names, Dates of Registration and Owners of the Varieties  
Belong to Private Sectors**

Variety Name	Registered	Owner
Stemline-453	1995	Tekfen
BG 125	1999	Ozbugday Seed Inc.
BG 404	1999	Ozbugday Seed Inc.
BG 502	1999	Ozbugday Seed Inc.
BG 1001	1999	Ozbugday Seed Inc.
DP 20	1999	Türk Deltapine
DP 50	1999	Ozbugday Seed Inc.
DP 5409	1999	Ozbugday Seed Inc.
DP 5614	1999	Ozbugday Seed Inc.
DP 5690	1999	Ozbugday Seed Inc.
Deltaopal	1999	Ozbugday Seed Inc.
Nata	1999	May Seed Group
Lachata	1999	May Seed Group

**Names, Dates of Registration and Owners of the Varieties  
Belong to Private Sectors**

Variety Name	Registered	Owner
DP-5111	2001	Deltapine Turk
DP-388	2001	Deltapine Turk
Clamen	2001	Bayer Crop Science
Sivon	2001	Hazera-Toros
Elna	2001	Hazera-Toros
Europa	2001	Hazera-Toros
Teka	2002	Ozbugday Seed Inc.
Sure-Grow 96	2003	Deltapine Turk
Penta (Golda)	2004	Ozbugday Seed Inc.
Beyaz Altın	2005	Ozbugday Seed Inc.
Beyaz Altın	2005	Ozbugday Seed Inc.

**Names, Dates Of Registration And Owners Of The Varieties  
Belong to Private Sectors**

Variety Name	Registered	Owner
Beyaz Altın 151	2005	Ozbugday Seed Inc
Beyaz Altın 320	2005	Ozbugday Seed Inc
BA 525	2006	Ozbugday Seed Inc
BA GOLD	2006	Ozbugday Seed Inc
ST 373	2006	May Seed Group
ST 468	2006	May Seed Group
Celia	2007	Bayer Crop Science
DP 419	2007	Monsanto
ST 488	2007	May-Agro
Flora	2007	Bayer Crop Science

**Names, Dates of Registration and Owners of the Varieties Belong to Private Sectors**

Variety Name	Registered	Owner
Assos	2008	Birik Seed Comp.
Aksel	2008	Ozbugday Seed Inc
Flash	2008	Ozbugday Seed Inc
Fantom	2008	Golden West
DP 466	2008	Monsanto
ST 474	2008	Monsanto
Julia	2008	Bayer Crop Science
Candia	2008	Bayer Crop Science

**Improvements of Cotton Yield and Quality Traits**

The cotton cultivars produced in our country by breeding studies have developed as following:

**The Cotton Seed yield**  
from 2000-2500 kg ha<sup>-1</sup> to 4000-5000 kg ha<sup>-1</sup>

**The ginning percentages**  
from 33% to 40-42%

**Fiber Length**  
from 22-26 mm to 30mm

**Fiber strength**  
from 18-20 g/tex to 28-30 g/tex

**Fiber fineness**  
from 5.5 mic to 3.5-4.5 mic

**WHY THE ORGANIC COTTON FARMING???**

**Conventional cotton practices**

- Use of synthetic fertilizers
- Use of pesticides (herbicides, insecticides and fungicides)

Negative biological and environmental consequences  
Degradation of farms and water sources  
Contamination of soil and water  
Residues remaining on foods Serious problems in public health



**ORGANIC COTTON IN TURKEY**

- ✓ First organic agricultural practices were employed in Turkey during middle of 1980's on growing organic dried fruits.
- ✓ Favourable climatic conditions also for many other products, varieties have gone up over 180 different items within 20 years; cotton, dried fruits and nuts leading others by far.



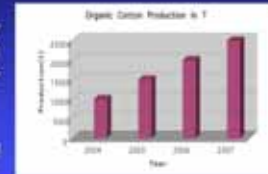
## ORGANIC COTTON IN TURKEY

- The first official regulation on organic farming in Turkey came into force on 29.06.1995 following European Union's Organic regulation EEC 2092/91.
- This was in force until Organic Farm Law became effective on 03.12.2004.
- Currently there are 13 independent Control and Inspection Companies who are operating under Organic Farm Law.
- Plant nutrients, weed control and irrigation are to be arranged in ways to be in compliance with rules and regulation of organic cotton practices.
- All these practices are controlled and certified by independent Certification companies in Turkey.

## ORGANIC COTTON PRODUCTION IN TURKEY

Turkey is first country for organic cotton production over all the world until 2006.

In 2007, India and Syria passed Turkey.



## ORGANIC COTTON PRODUCT STAGES IN TURKEY



## BIOTECHNOLOGICAL COTTON IN TURKEY

There are any biotechnologically produced cotton cultivars yet on which biotechnological studies and field experiments have been carried out for cotton improvement since 1998 in Turkey.

Furthermore, there is no permission for commercial production of transgenic cotton and other plants.



## BIOTECHNOLOGICAL COTTON IN TURKEY

- The studies of transgenic cultivars in Turkey is practiced in the content of "Field Experiment Regulations" controlled by Agriculture and Rural Affairs Ministry.
- These experiments are being carried out for potato, corn and cotton in universities and agricultural research institutes.
- The purpose of these experiments is to observe the cultivar traits and to determine the effects on flora and fauna.

## BIOTECHNOLOGICAL COTTON IN TURKEY

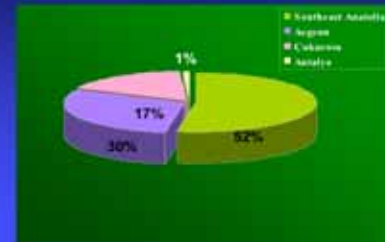
- Although the basic biotechnological studies are carried out research institutions and universities, it has not been developed transgenic cultivars.



- ✓ The cotton is grown in three major regions in our country:
- ✓ Southeast Anatolia,
- ✓ Aegean
- ✓ Çukurova
- ✓ and small amounts around Antalya



## Southeastern Anatolia Cotton Production



The Southeastern Anatolia Project (GAP) is Turkey's largest and the world's third the biggest agricultural and energy-based project. It is launched in 1976. The project comprises 22 dams and 19 hydroelectric power plants on the Tigris (Dicle) and Euphrates (Firat) rivers.

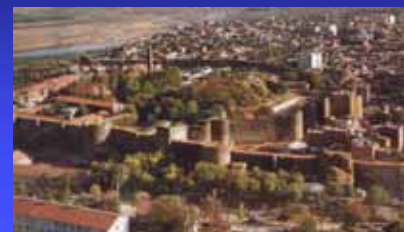
- ✓ My Faculty, Dicle University, Faculty of Agriculture, was founded in 1992 in Diyarbakır.



- ✓ Diyarbakır is located in the Southeastern Anatolia Region of Turkey.
- ✓ Climatic condition is semi-arid, mild, rainy winters and dry, hot summers.



- ✓ Dry farming were common in region, and only monoculture was applied. However, in last years, irrigated area go on increased by GAP Project, and began polyculture applications in diverse crops plant, such as especially cotton, following corn, sunflower, vegetable etc.



## Cotton Research in Dicle University Agricultural Faculty

Dicle University Agricultural Faculty studied to improve

- resistance cotton disease,
- earliness,
- high quality and high yielded cotton varieties by different breeding methods, such as introduction, hybridization etc.

Also, agronomic practise for:

- irrigation methods
- mechanize cotton harvest
- Physiological studies



## Cotton Research in Dicle University Agricultural Faculty

Berke cotton variety was improved by our Department, and **Berke** registered by Variety Registration and Seed Certification Center in 2007.



## BERKE COTTON VARIETY (*G. hirsutum* L.)



## Cotton Research in Dicle University Agricultural Faculty

- The commercial hybrid cottons (*G. barbadense* L. x *G. hirsutum* L.) obtained by interspecific crossing were tested at 3 locations (Diyarbakir, Tepe and Karabork) in Diyarbakir conditions between 2003-2004 and very good results in terms of fiber quality were obtained.



## Some Cotton Research in Dicle University Agricultural Faculty

- The Effect of Different irrigation Methods on Yield Components and *Verticillium dahliae* Kleb. On Different Cotton Cultivars



## Time of Hand Hoeing on Cotton Research



### Coloured Cotton x *G. barbadense* L. Crossing Studies



In this study, brown, light-brown, green fibered cotton and Giza 45, were crossed for improving fiber traits of natural coloured cotton, and this study goes on  $F_2$  generation.



### Studies of Cotton Harvesting



### Lines Selections of Earliness Cotton Breeding



### Sowing Time for Cotton Experiments



### Physio-Morphological Studies on Cotton (*G. hirsutum* L.)



**THANK YOU FOR YOUR ATTENTION**

Dr. Sema Basbag

