Determination of Some Agricultural and Technological Properties of Cotton Planted as Second-Crop in Wheat-Cotton Cultivation System

Sema BASBAG

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- ✓ **Cotton is one of the most important raw materials for textile industry in Turkey.**
- ✓ **Directly 3 million and indirectly 12 million citizens of Turkey live off cotton.**
- ✓ **Ginning, spinning, weaving, textile, oil and feed industry are the other main business operations employ people of country.**

- ✓ Thus, cotton market is one of the leading sectors in Turkey.
- ✓ Turkey is the seventh largest producer in the world, the fourth largest consumer, and the second largest in imports.

However, cotton production, begin to decline significantly because of some resons such as

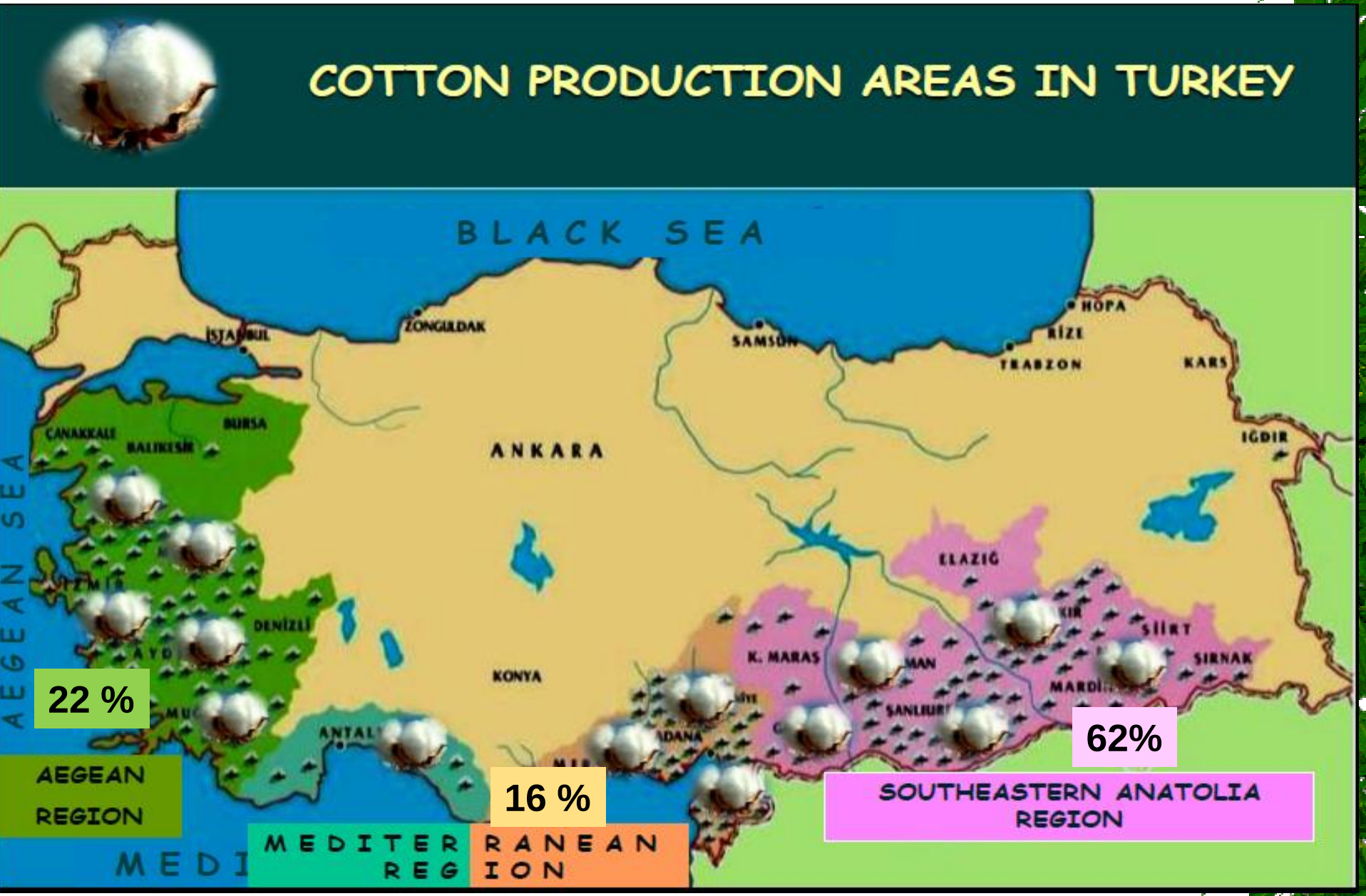
- ✓ the high costs,
- ✓ weak cotton prices,
- ✓ harvesting problem,
- ✓ climate change
- ✓ not enough supporting etc...

COTTON PRODUCTION

Crop Year	Harv. Area (1000 ha)	Production (1000 ton)	Yield (kg/ha)
2005/06	600	800	1.333
2006/07	630	750	1.190
2007/08	500	625	1.250
2008/09	330	440	1.333
2009/10	280	380	1.357
2010/11	480	816	1.700
2011/12	542	954	1.760
2012/13	488	858	1.760
2013/14	450	877	1.846

Reasons of the Increase per unit yield

- ✓ Developed high potential new varieties
- ✓ The investment of modern equipment,
- ✓ Availability water (irrigation) during the growing season,
- ✓ Improvement in plant protection and agronomical, applications, and fertilizers,
- ✓ Increased use of certificated seeds.


COTTON PRODUCTION AREAS IN TURKEY
BLACK SEA
ZONGULDAK
SAMSUN
HOPA
RIZE
TRABZON
KARS
IGDIR
ISTANBUL
CANAKKALE
BALIKESIR
BURSA
ANKARA
AEGEAN SEA
ELAZIG
DENIZLI
KONYA
K. MARAS
SIIRT
SIRNAK
ANTALYA
ADANA
SANLIURFA
22 %
62%
16 %
AEGEAN REGION
SOUTHEASTERN ANATOLIA REGION
MEDITERRANEAN REGION

- Cotton is grown in Turkey generally as main crop, wheat-cotton rotation in coastal and south eastern region.

- Since there is a gap of 5-6 months in the fields during summer period in traditional wheat-cotton rotation

- there are possibilities as second crop cotton production.

- However In Turkey, second crop cotton farming areas made up about 3-4% of the main crop cotton areas.

- Increasing agricultural productivity may be possible increasing production areas or by obtaining more production per unit area.

WHY THE DOUBLE CROPPING???

Because double cropping offers more production options to growers, they can be more responsive to changes in market signals and growing conditions throughout the production year.

WHY DOUBLE CROPPING???

But there is greater risk and expense compared with single-crop production.

Continued development of shorter season varieties,

pest and disease control practices,

and improved management will allow farmers to expand double cropping.

length of growing season and availability of soil moisture are currently limiting second-cropping possibilities.

WHY DOUBLE CROPPING???

- The opportunity to increase agricultural areas is limited so that increasing demands can be achieved by producing more products from existent agricultural areas.

- Double cropping helps to naturally control pests, weeds and diseases while encouraging healthy soil.

- Second crop cotton cultivation must be made to get wheat harvested the cotton seeded as early as possible.
- The first and most important consideration is to achieve an even emergence of cotton seedlings.

- The goal of planting should be good seed-soil contact with minimal seedbed disruption to preserve soil moisture.

- This combination can be challenging because of the wheat straw residue.

- Furthermore, wheat harvest occurs during the end of the recommended cotton planting window, and it is essential to plant as soon as possible.

- ✓ Several options are available for planting cotton in this environment, including no-till and burning the wheat straw.
- ✓ Although burning removes the residue, it should be remembered that the benefits of this residue,
  - such as increased organic matter,
  - greater rainfall infiltration,
  - moisture conservation

  -- and lower soil erosion potential will be lost.
- ✓ Thus, growers should be encouraged to plant cotton directly into the stubble without burning.

Aim of the Research

This study was carried out to determine to some agricultural and fibre technological properties as second crop growing some early cotton varieties on stubble of ridge planted wheat.

Material and Method

The study was conducted experimental area of Dicle University in 2012.

- **Berke,**
- **Lachata,**
- **BA 119,**
- **STV 468,**
- **STV 373,**
- **Ozbek 100,**
- **Fantom**
- **DP 396 were used as material.**

Material andth. Method

- With ridge planting wheat is harvested approximately 10 cm above the soil surface June 12th.

- than stems were removed from the experimental area after the harvest. Same date cotton varieties were planted.

Material and Method

- The experiment was conducted as a randomized complete block design with three replications.

- Parcels were composed of rows in 12 m length.

- Plots were consisted of 4 rows and during harvesting two out of four rows in the middle were sampled.

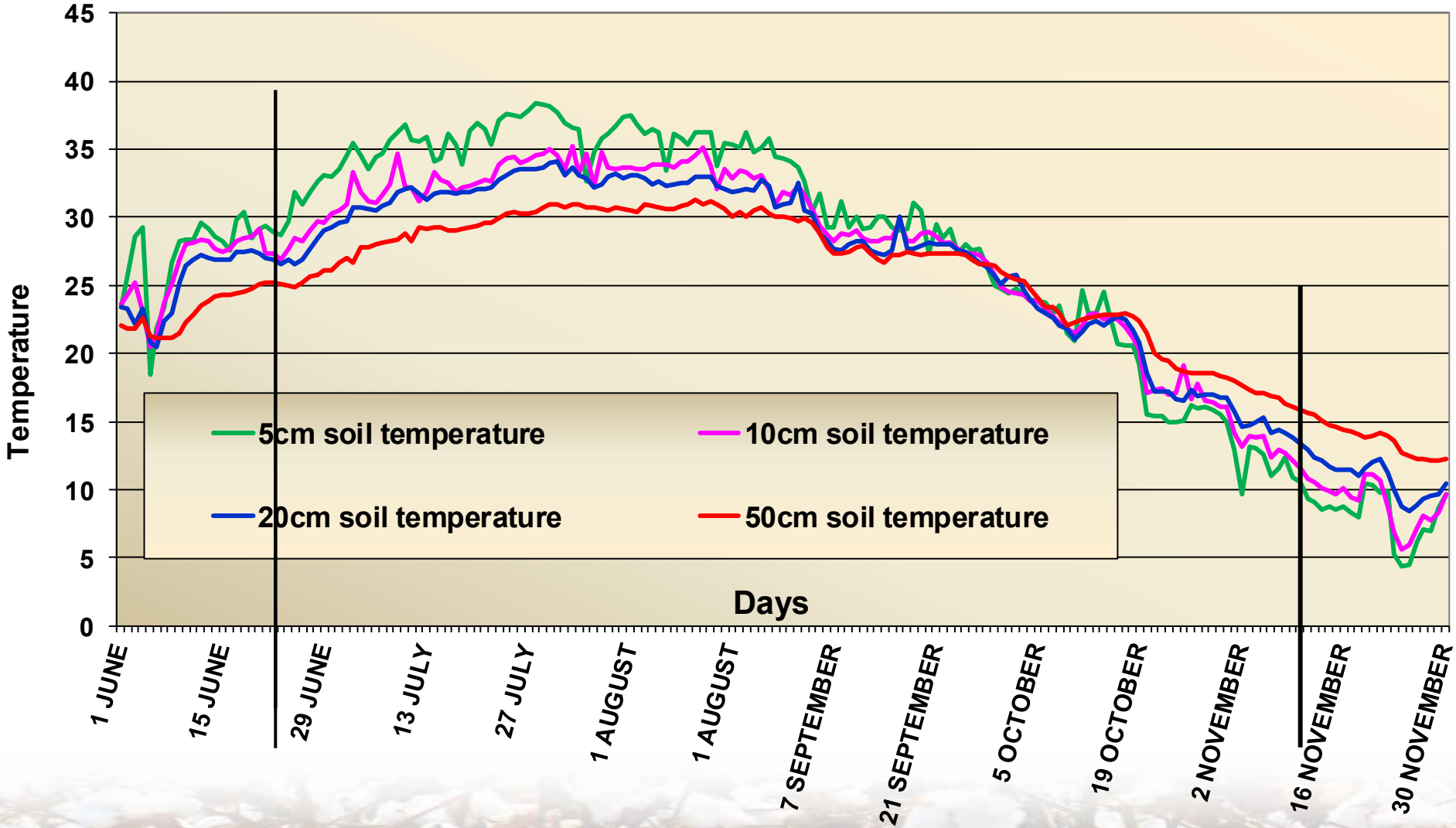
Material and Method

Investigated Properties

- ✓ Number of sympodial branches,
- ✓ number of boll,
- ✓ date of first square (day),
- ✓ seed cotton yield ($kg.ha^{-1}$)
- ✓ fiber length (mm),
- ✓ fiber fineness (microneir),
- ✓ fiber strength ($g.tex^{-1}$),
- ✓ fiber maturity (%)
- ✓ short fiber index (%)

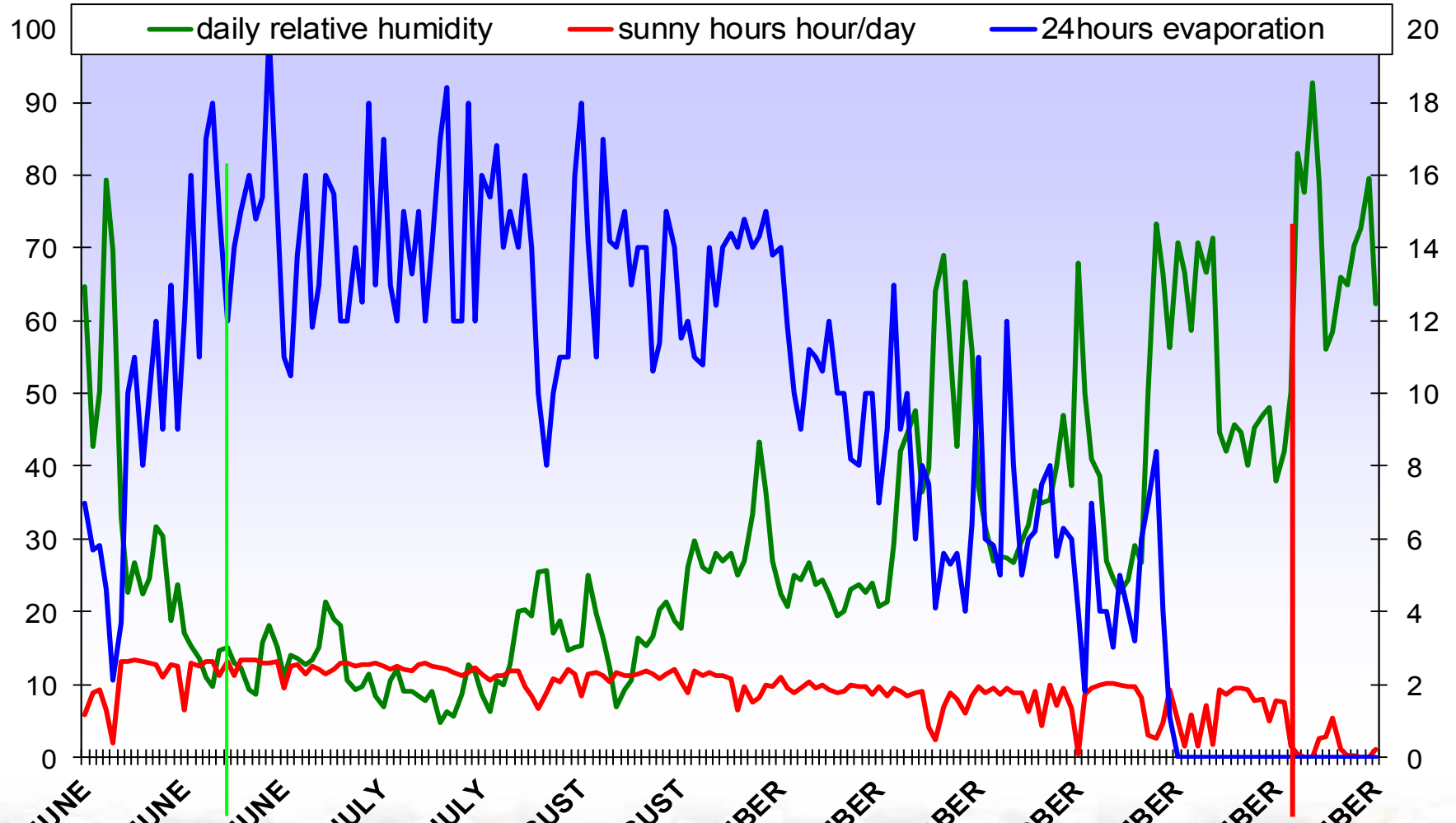
Material and Method

Figure 1. 5 cm, 10 cm, 20 cm, 50 cm daily soil temperature in the cotton growth period



Material and Method

Data of daily relative humidity, sunny hours and rate of evaporation in the cotton growth period



Results of The Study

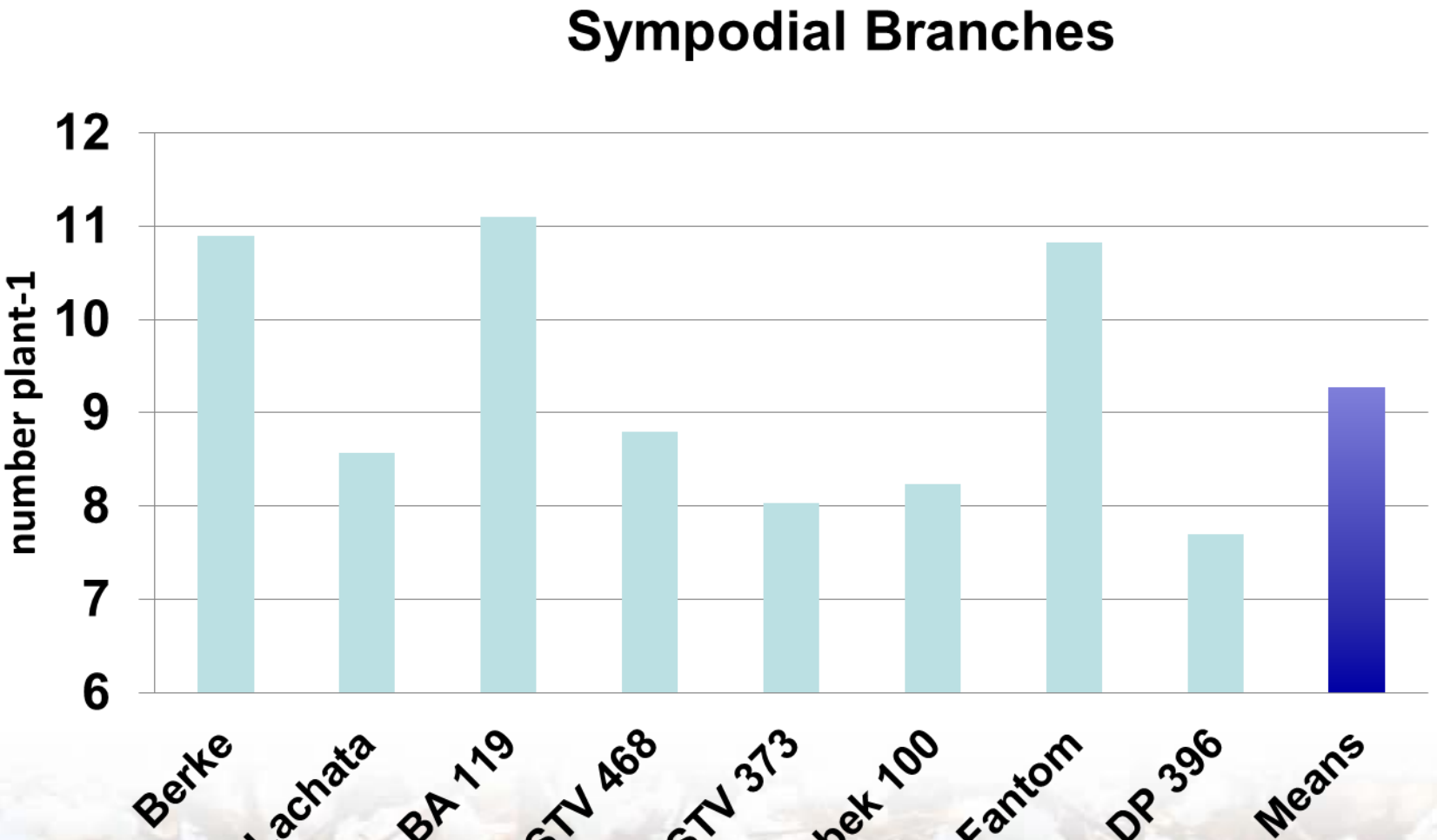
Means of Agricultural Properties of cotton varieties and LSD groups

Varieties	Sympodial branches (number. plant^{-1})		number of bolls (number. plant^{-1})		Date of First Square (days)		Seed Cotton Yield (kg.ha^{-1})	
Berke	**10.90**	**A**	7.27	B	35.30	B	1950.37	A
Lachata	8.57	B	5.30	D	34.57	BC	1270.67	B
BA 119	11.10	A	6.00	CD	37.73	AB	1140.27	BC
STV 468	8.80	B	**9.57**	**A**	33.56	C	**2040.20**	**A**
STV 373	8.03	B	5.57	D	35.86	AB	680.83	C
Özbek 100	8.23	B	6.83	BC	33.00	C	1050.06	BC
Fantom	10.83	A	9.30	AC	**29.37**	**D**	1450.40	B
DP 396	7.70	B	5.67	CD	38.90	A	720.10	C
LSD	1.186		1.226		3.180		46.093	
Prob	**		**		**		**	

Means of Technological Properties of cotton varieties and LSD groups

Varieties	Fibre Length (mm)		Fiber Fineness (microneir)		Fiber Strength (g.tex^{-1})		Fiber Maturity (%)		Short Fiber Index (%)	
Berke	30.31	AB	4.59	A	**37.17**	**A**	**94.47**	**A**	7.33	D
Lachata	29.69	BC	4.02	B	31.47	BC	86.23	CD	**12.90**	**A**
BA 119	29.15	C	4.66	A	33.03	B	89.87	B	10.27	B
STV 468	28.68	CD	4.52	A	32.03	BC	88.20	BC	7.40	D
STV 373	28.61	CD	4.50	AB	**30.70**	**C**	89.30	B	10.13	BC
Özbek 100	**27.84**	**D**	**4.97**	**A**	32.27	BC	90.27	B	9.60	BC
Fantom	**31.13**	**A**	**3.48**	**C**	32.93	B	**84.66**	**D**	**7.23**	**D**
DP 396	29.16	C	4.50	AB	36.17	A	90.37	B	8.40	CD
LSD	1.096		0.481		1.945		2.898		1.863	
Prob	**		**		**		**		**	

Results of The Study



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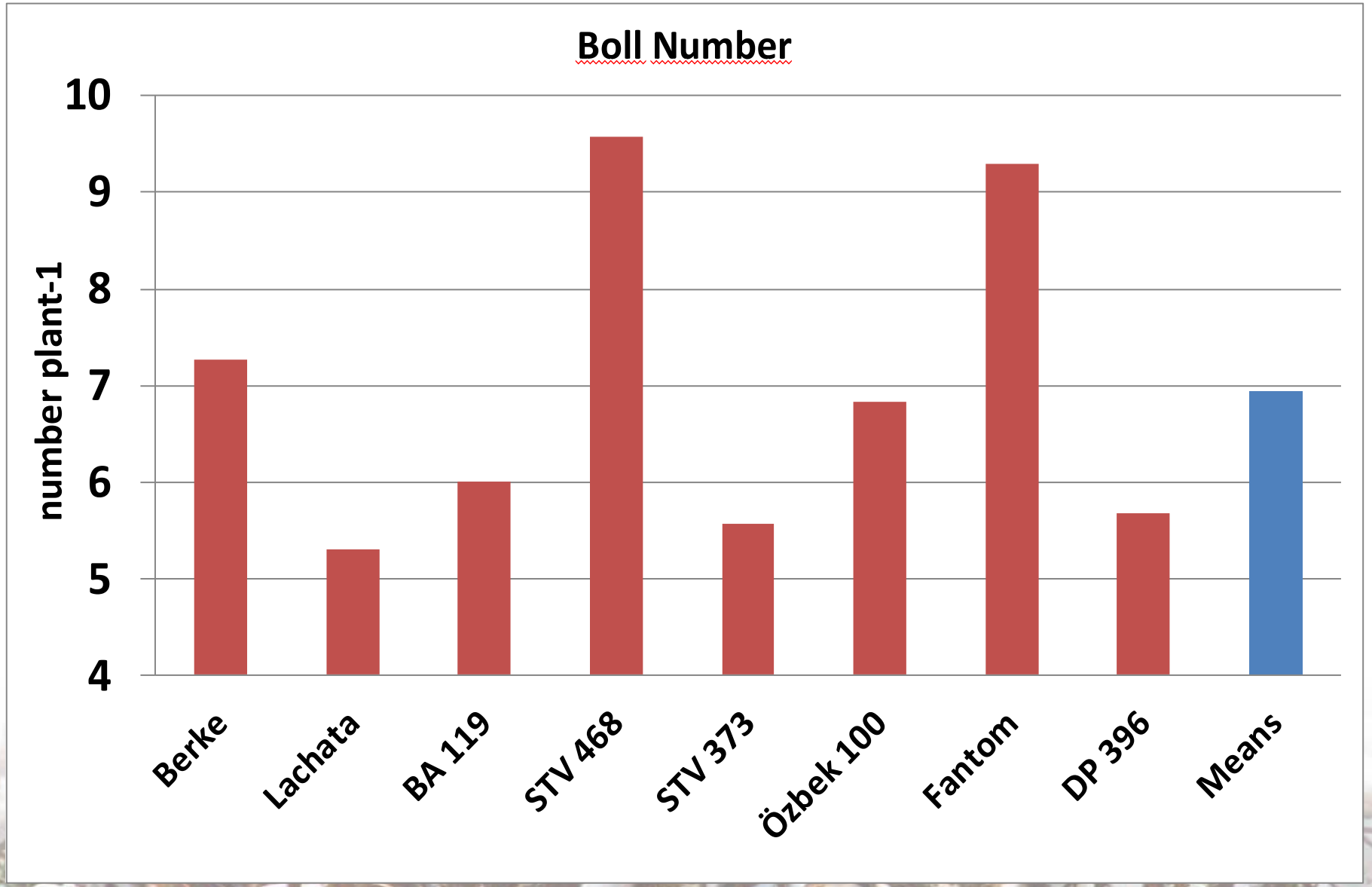

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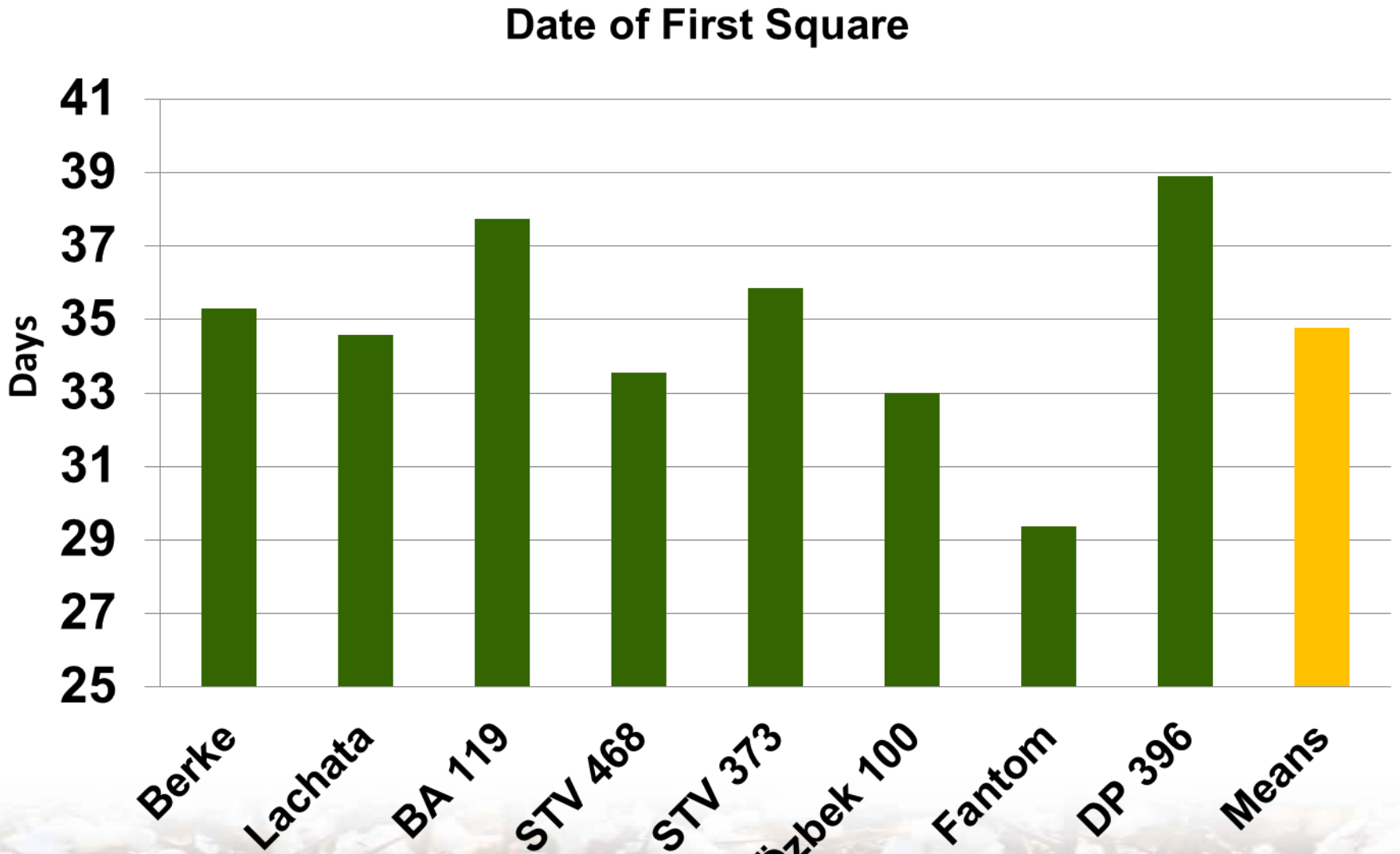

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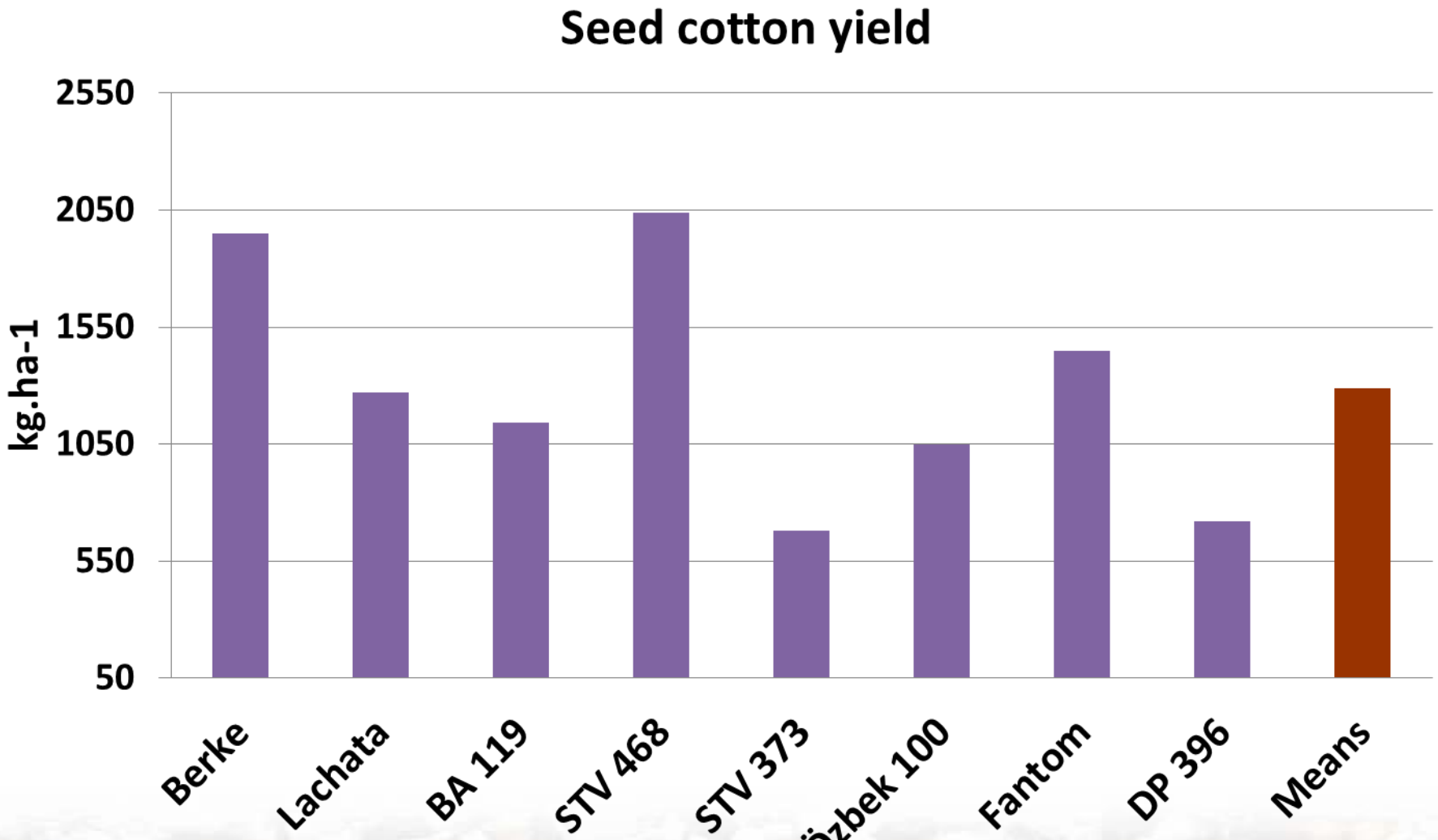

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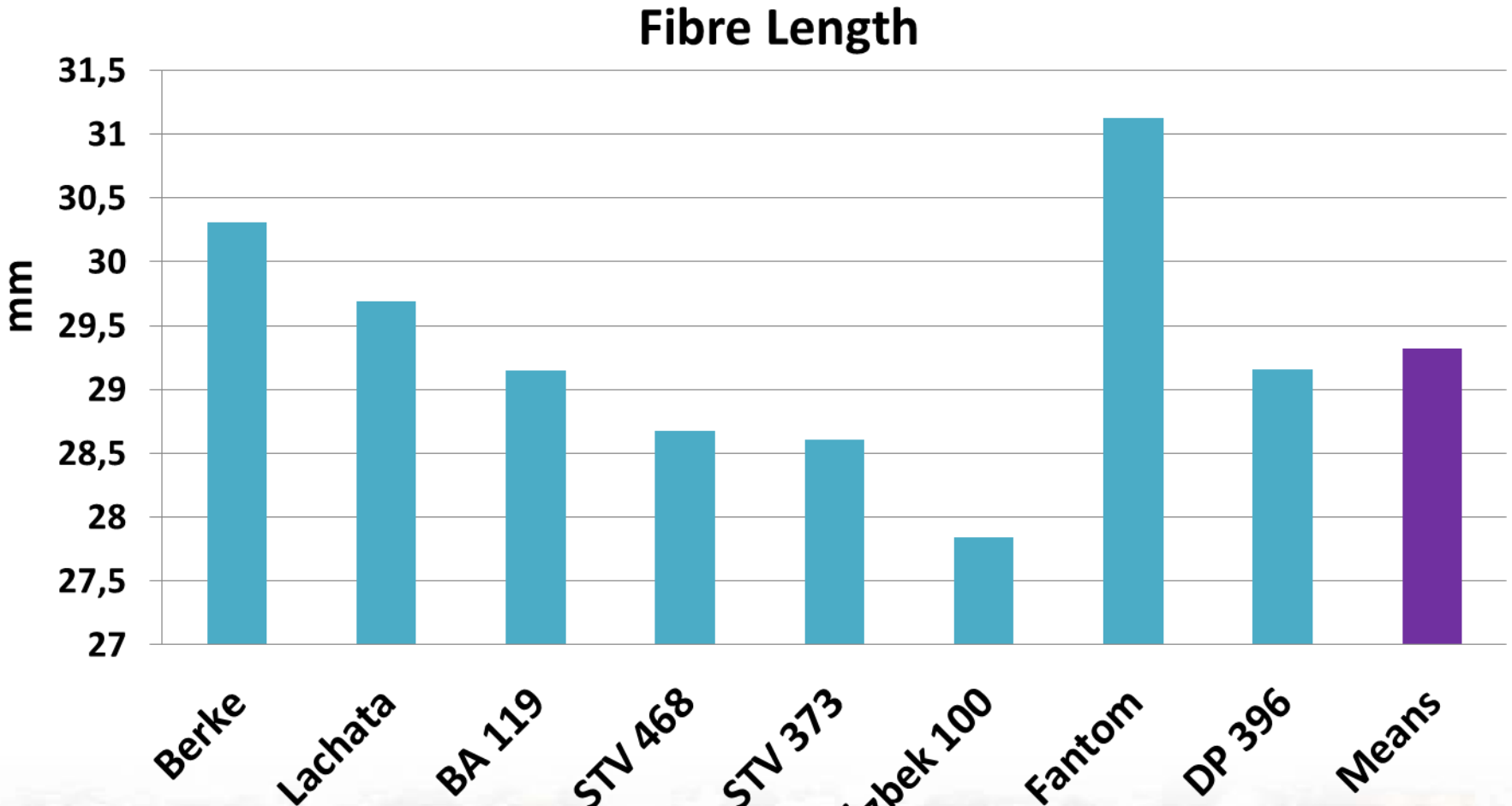

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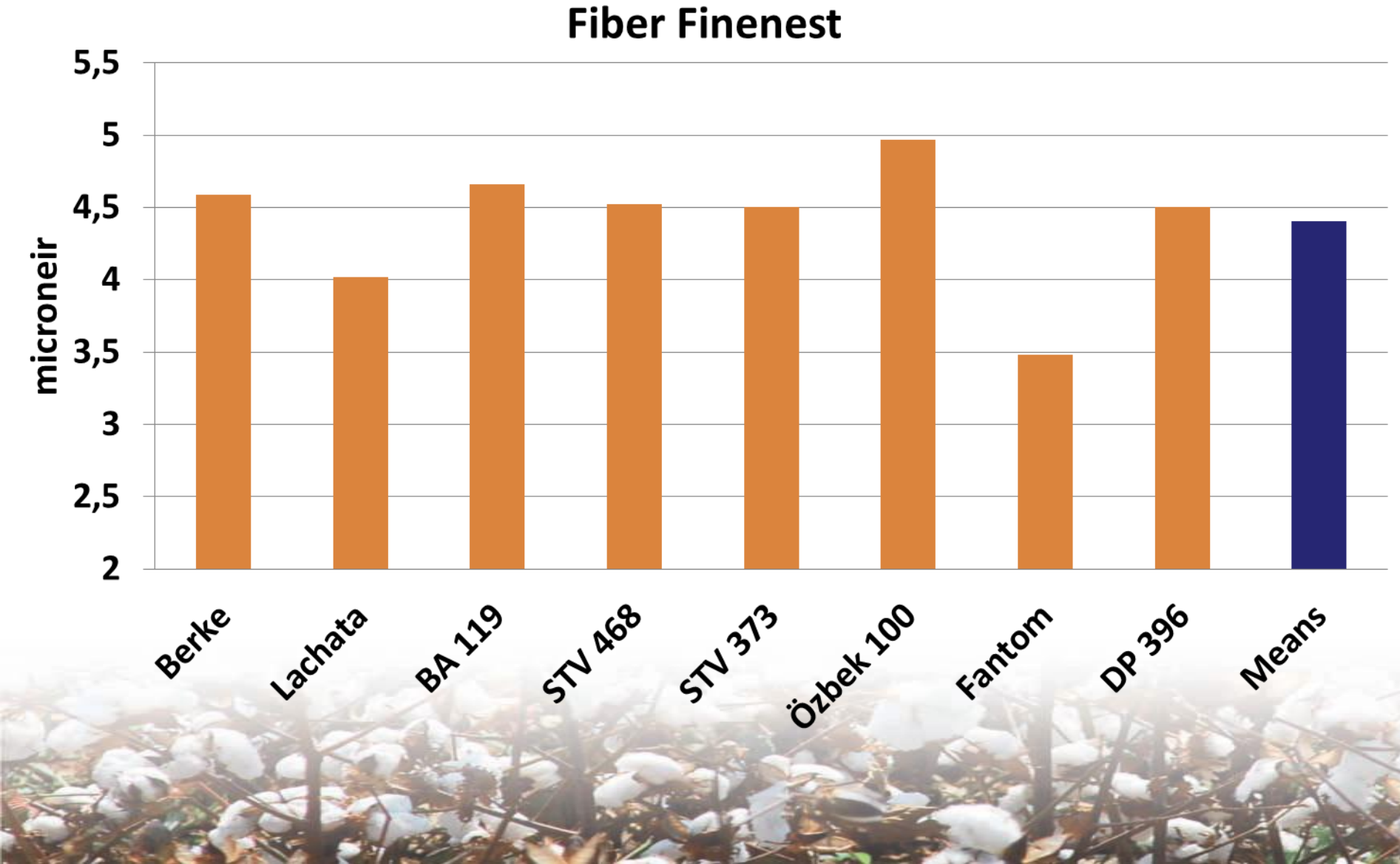

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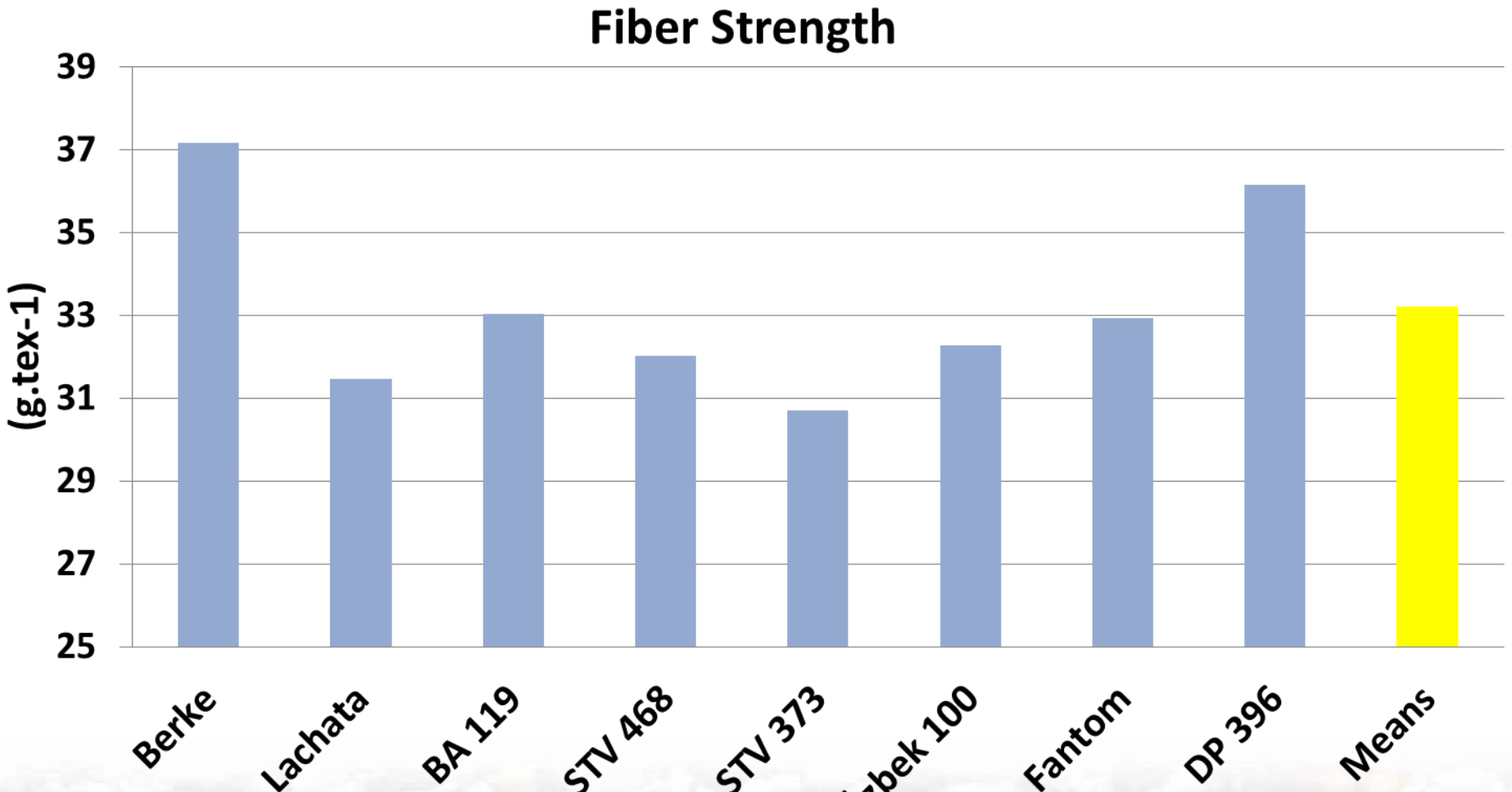

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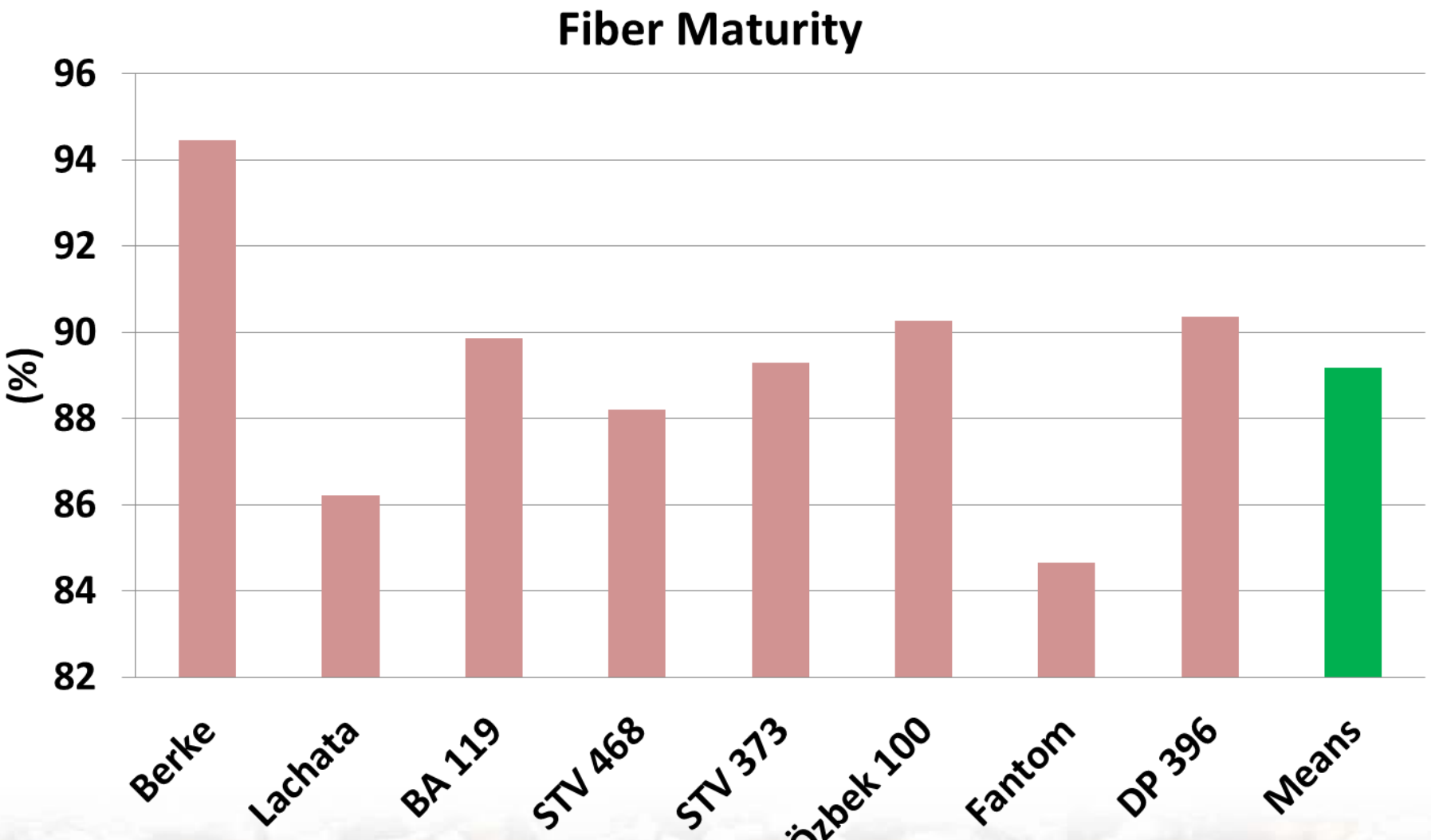

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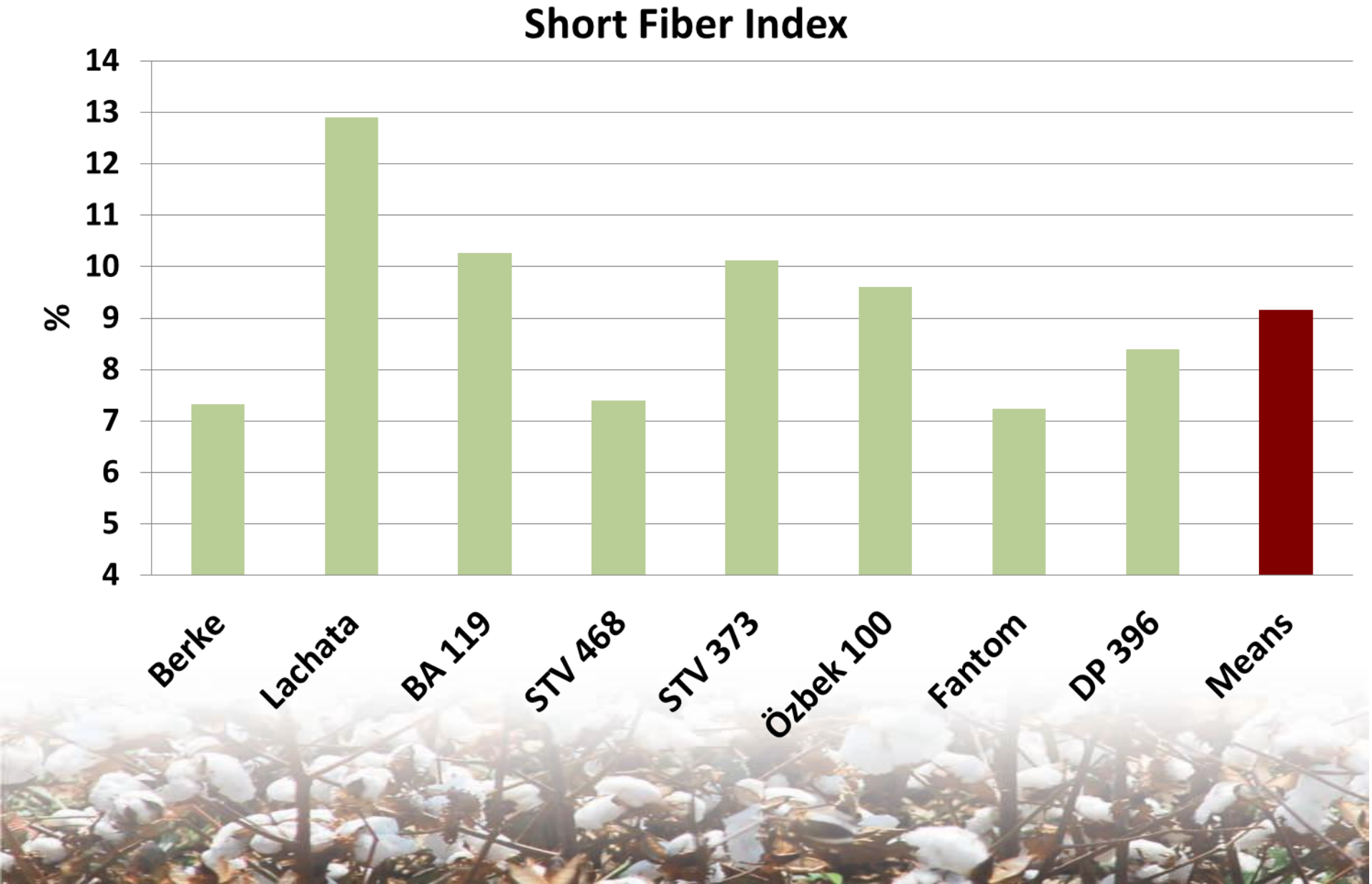

Conclusion

- In this study was carried out to determine seed cotton yield and fibre technological properties as second crop growing some early-maturity cotton varieties on stubble of ridge planted wheat.

- In the experiment, the cotton varieties examined in terms of some yield and technological properties had significant differences.

Conclusion

- More early maturity cotton varieties have better results in terms of yield and technological properties in second crop cotton system

- and were concluded to be possible successful double-cropping with planted early maturing cotton genotypes such as Berke, STV 468 and Fantom in South-eastern Anatolia Region condition.

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Conclusion

THANK YOU
FOR YOUR ATTENTION

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