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# 2014

NATIONAL COTTON CULTIVAR EVALUATION TRIALS



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## Introduction

Cultivars differ in their ability to produce optimally under different environmental conditions. The National Cotton Cultivar Trials are conducted in order to prescribe the correct cultivars and the information is distributed in the form of annual reports. Cultivars are evaluated for yield potential, adaptation and disease resistance. The information is required for making decisions on the release of new cultivars and for making cultivar recommendations to producers.

In South Africa, eight cotton-producing areas have been identified, namely:

Area 1: Lower Orange River (irrigation) – Northern Cape

Area 2: Griqualand West (irrigation) – Northern Cape

Area 3: Vryburg - North-West

Area 4: Rustenburg - North-West

Area 5: Limpopo Valley (irrigation)

Area 6: Loskop, Springbok Flats – Limpopo

Area 7: Lowveld (irrigation) - Mpumalanga

Area 8: Northern KwaZulu-Natal.

During the 2013/2014 season, nine to eleven cultivars were tested at seven different localities namely: Douglas (irrigation), Loskop (irrigation), Makhathini (dryland), Roedtan (dryland) Upington (irrigation), Vaalharts (irrigation) and Weipe (irrigation). The Makhathini trial was damaged by hail on the 25<sup>th</sup> of February 2014 and no yield data could be reported on. Fibre samples were taken and results are presented in this report. The Roedtan dryland trial had poor stand and no yield data was recorded, only fibre quality data. The trial at Vaalharts received frost early in April that resulted in bolls that did not burst. Only quality results were obtained. The Douglas farmer had stand problems on his farm, and all cotton was replanted. This trial resulted in low yields as the trial was planted late (27/11/2013) and it was planted on a low potential soil (new

land). The Department of Agriculture and Land Reform: Northern Cape planted the trials at Douglas and Upington. The past season we again evaluated two cultivars from Australia (CandiaBG and Candia B2RF), and two lines from the Agricultural Research Council – Institute for Industrial Crops (Gariiep VT1 and Gariiep VT2). Cultivars from DeltaPINE Monsanto were DP210 BRF, Delta 12 BRF, PM3225 B2RF, 13P3001 B2R2, 13P3005 B2R2 and Okra.

A special word of thanks to all the researchers for their contribution towards the success of this report, and a special word of thanks towards Cotton SA for determining the fibre qualities and for financial support. Also a special thanks to the farmers on whose farms some of the trials were planted and for their support.

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Table 1. Trial localities and planting dates.

Province	Locality	Responsible person	Cell number	Dryland / irrigation	Planting date
Orange River	Douglas	K Lategan	082 353 0069	Irrigation	27/11/2013
	Vaalharts	J Van Schalkwyk	073 801 0066	Irrigation	9/11/2013
	Upington	K Lategan	082 353 0069	Irrigation	06/11/2013
Limpopo	Weipe	J Willemse	083 236 7799	Irrigation	13/12/2013
Limpopo	Loskop	C Fourie	083 274 1951	Irrigation	22/10/2013
	Roedtan	P. Maja	082 388 0689	Dryland	27/11/2013
KwaZulu-Natal	Makhathini	J Steyn	082 898 5471	Dryland	19/11/2013

Table 2. Entries used in the national cotton cultivar trials at the different localities.

<b>Douglas (Irrigation)</b>	<b>Loskop (Irrigation)</b>	<b>Makhathini (Dryland)</b>	<b>Upington (Irrigation)</b>	<b>Weipe (Irrigation)</b>	<b>Roedtan (Dryland)</b>
DP210 BRF	DP210 BRF	DP210 BRF	DP210 BRF	DP210 BRF	DP210 BRF
Delta 12 BRF	Delta 12 BRF	Delta 12 BRF	Delta 12 BRF	Delta 12 BRF	Delta 12 BRF
PM3225 B2RF	PM3225 B2RF	PM3225 B2RF	PM3225 B2RF	PM3225 B2RF	PM3225 B2RF
13P3001 B2R2	13P3001 B2R2	13P3001 B2R2	13P3001 B2R2	13P3001 B2R2	13P3001 B2R2
13P3005 B2R2	13P3005 B2R2	13P3005 B2R2	13P3005 B2R2	13P3005 B2R2	13P3005 B2R2
Okra	Okra	Okra	Okra	Okra	Okra
DP1240 B2RF	DP1240 B2RF	DP1240 B2RF	DP1240 B2RF	DP1240 B2RF	DP1240 B2RF
Gariep VT1	Gariep VT1	Candia BG2D	Gariep VT1	Candia BG2D	Gariep VT1
Gariep VT2	Gariep VT2	Candia B2RF	Gariep VT2	Candia B2RF	Gariep VT2
Candia BG2D	Candia BG2D		Candia BG2D		Candia BG2D
Candia B2RF	Candia B2RF		Candia B2RF		Candia B2RF

Origin of cultivars:

DeltaPine Monsanto: DP 210 BRF, Delta 12 BRF, PM3225 B2RF, 13P3001 B2R2, 13P3005 B2R2, Okra and DP1240 B2R2

ARC-IIC: Gariep VT1 and Gariep VT2.

Bayer: Candia BG2D and Candia B2RF

# **DOUGLAS IRRIGATION**

## Douglas.

The trial was replanted on the 27<sup>th</sup> of November after the previous planting resulted in poor stand. Harvesting was done on the 28<sup>th</sup> of May 2014. The total fertilizer application was N = 160 kg/ha, P = 50 kg/ha and K = 60 kg/ha. Weeds were removed manually via hoeing. No bollworm application was done. Overhead irrigation was done. Defoliation was done with Ginstar.

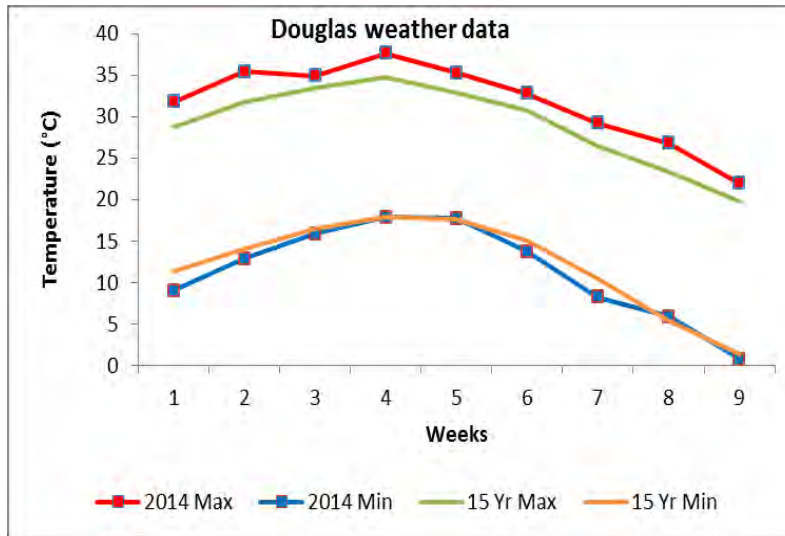


Figure 1. Maximum and minimum temperatures of the 2013/14 season and the 15 year long term mean maximum and minimum temperatures. Douglas 2013/2014

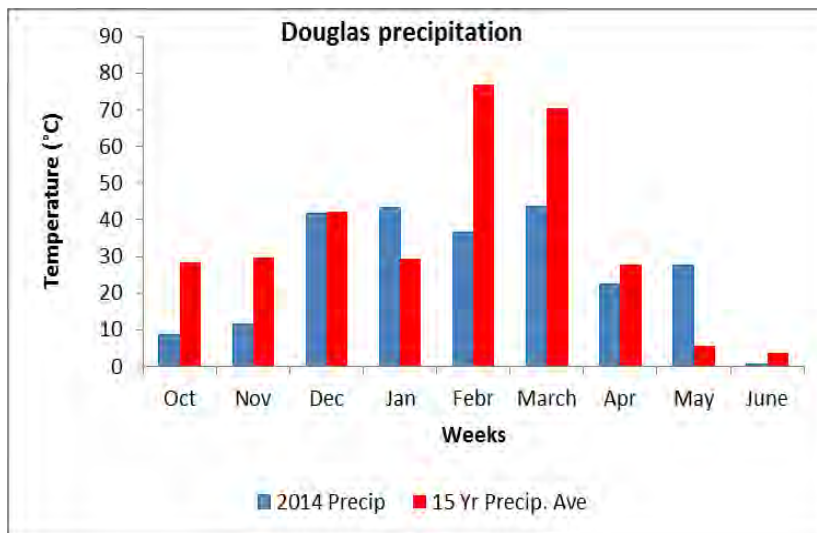


Figure 2. Rainfall for the 2013/14 season and the 15 year long term rainfall. Douglas 2013/2014



**Table 3. Yield and fibre characteristics of the cotton cultivar trial planted under irrigation at Douglas, 2013/2014.**

Variety	DP210 BRF	Delta 12 BRF	PM 3225 B2RF	13P3001 B2R2	13P3005 B2R2	Okra	DP124 0B2RF	Gariep VT1	Gariep VT2	Candi a BG2D	Candi a B2RF
Yield (kg ha <sup>-1</sup> )	3212	3165	3605	4713	4445	2940	3720	1948	1162	2888	3897
Fibre %	36.0	35.4	41.0	39.0	40.3	39.0	37.3	37.4	38.0	38.0	41.0
Fibre Yield	1158	1121	1468	1834	1792	1139	1392	728	440	1090	1576
Length (mm)	30.2	29.0	29.5	31.0	30.0	30.0	29.4	29.0	28.0	30.0	31.1
Uniformity	81.0	81.0	84.0	83.0	82.4	83.0	82.4	84.2	83.3	82.0	83.0
Strength (g tex <sup>-1</sup> )	28.0	27.0	31.1	29.0	29.0	28.2	29.0	29.2	30.0	28.0	29.0
Rd	83.0	84.0	82.0	85.0	83.0	82.4	83.1	83.0	82.1	85.1	85.0
Plus b	7.0	7.0	8.0	7.0	7.0	7.3	7.4	8.0	8.0	7.0	6.3
Micronaire	3.0	3.1	3.2	3.2	3.1	4.0	3.4	4.0	4.0	3.0	3.0
Maturity	0.83	0.83	0.82	0.83	0.83	0.84	0.83	0.83	0.84	0.82	0.83
Color	31-1	21-1	21-1	21-1	21-2	31-1	21-1	21-1	21-1	21-1	21-2
<b>Parameter</b>	<b>Tukey's</b>		<b>LSD</b>		<b>CV (%)</b>						
	<b>(p&lt;0.05)</b>										
Yield (kg ha <sup>-1</sup> )	684.6				13.9						
Fibre %	2.031				3.5						
Fibre yield	291				15.4						
Length	NS				2.9						
Uniformity	NS				1.4						
Strength	NS				5.5						
RD	NS				1.0						
+ B	NS				4.8						
Micronaire	NS				11.6						
Maturity	NS				1.2						

## **DOUGLAS**

### **Yield parameters**

Cultivars differed significantly regarding all three of the yield parameters. The cultivar 13P3001 B2R2 produced the highest yield of 4713 kg ha<sup>-1</sup> followed by 13P3005B2R2 with 4445 kg ha<sup>-1</sup>(Table 3) (Figure 3). Cultivars Candia B2RF and PM3225 B2R2 produced the highest fibre percentage of 41.0 %, followed by 13P3001 B2R2 and Okra with 39.0% (Figure 4). The cultivar, 13P3001 B2R2 produced the highest fibre yield of 1834 kg ha<sup>-1</sup> followed by 13P3005 B2R2 with 1792 kg ha<sup>-1</sup> (Figures 5).

### **Quality parameters**

From Table 3 it can be seen that cultivars did not differ significantly regarding any of the measured parameters. The cultivar CandiaB2RF produced the longest fibre of 31.1 mm followed by DP210 BRF with 30.2 mm (Figure 6). PM3225 B2RF produced the strongest fibre of 31.1 g tex<sup>-1</sup> (Figure 7). All the cultivars evaluated fell below the acceptable limits of 3.5 to 4.5 for micronaire except for Okra, Gariép VT1 and Gariép VT2 with a micronaire of 4 (Figures 8).

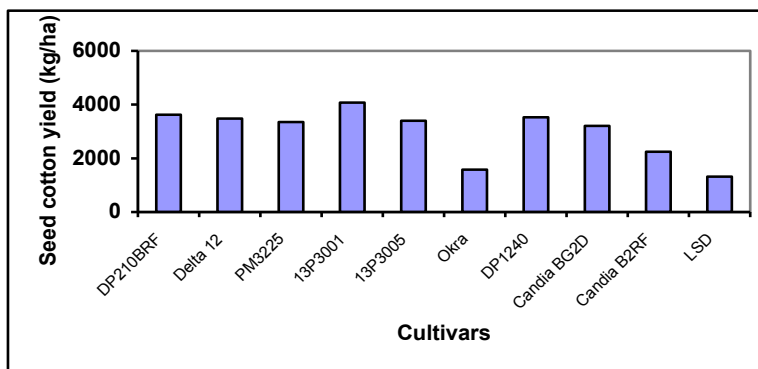


Figure 3. Seed cotton yield ( $\text{kg ha}^{-1}$ ) of cotton cultivars planted under irrigation at Douglas, 2013/2014 season.

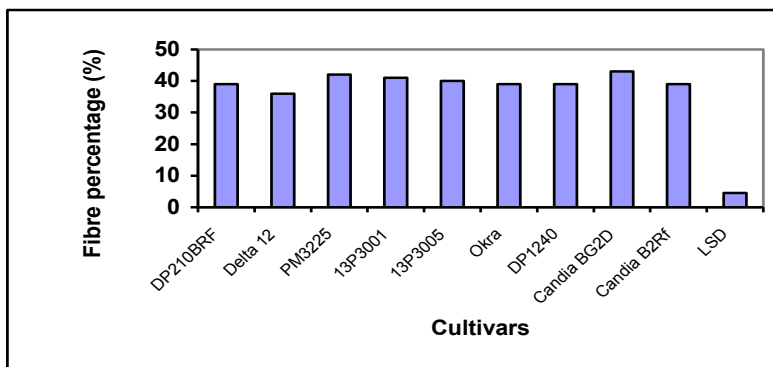


Figure 4. Fibre percentage (%) of cotton cultivars planted under irrigation at Douglas, 2013/2014 season.

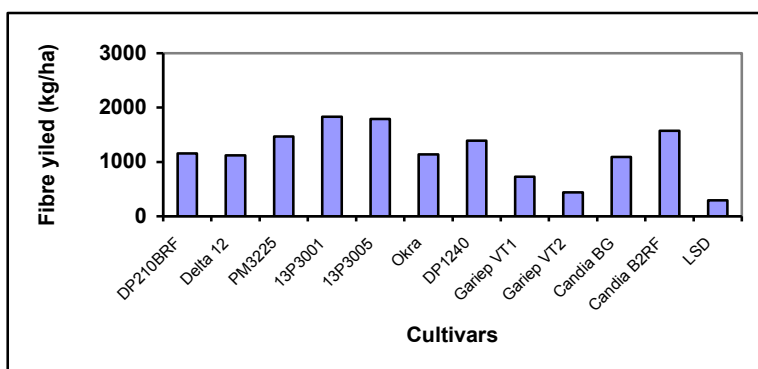


Figure 5. Fibre yield ( $\text{kg ha}^{-1}$ ) of cotton cultivars planted under irrigation at Douglas, 2013/2014 season.

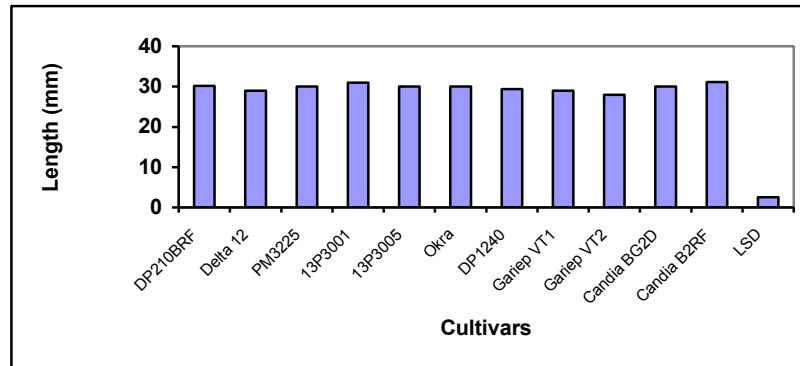


Figure 6. Length (mm) of cotton cultivars planted under irrigation at Douglas, 2013/2014 season.

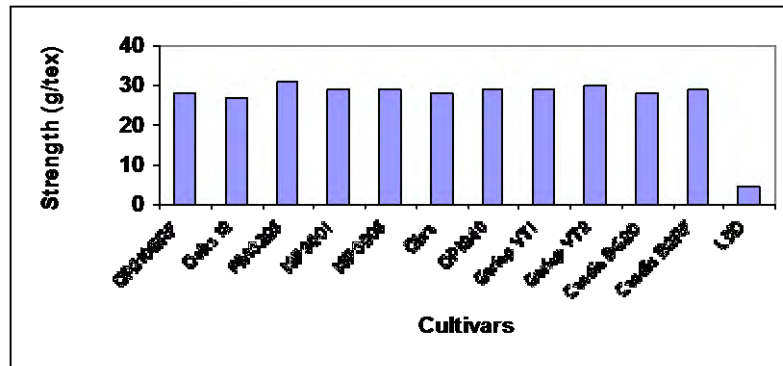


Figure 7. Strength ( $\text{g tex}^{-1}$ ) of cotton cultivars planted under irrigation at Douglas, 2013/2014 season.

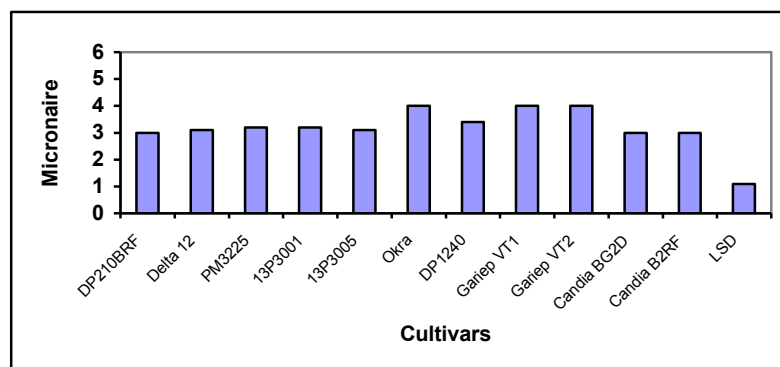


Figure 8. Micronaire of cotton cultivars planted under irrigation at Douglas, 2013/2014 season.

# **VAALHARTS IRRIGATION**

## Vaalharts.

Vaalharts was planted on the 9<sup>th</sup> of November 2013. Early frost in April resulted in most of the bolls not opening and actually rotting in the field. Only fibre quality results are available.

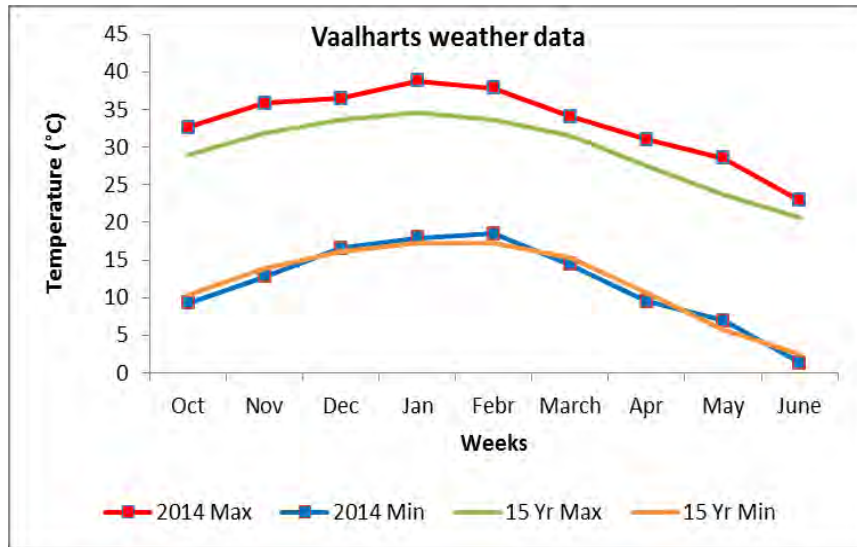


Figure 9. Maximum and minimum temperatures for the 2013/14 season and the 15 year long term mean maximum and minimum temperatures. Vaalharts, 2013/2014.

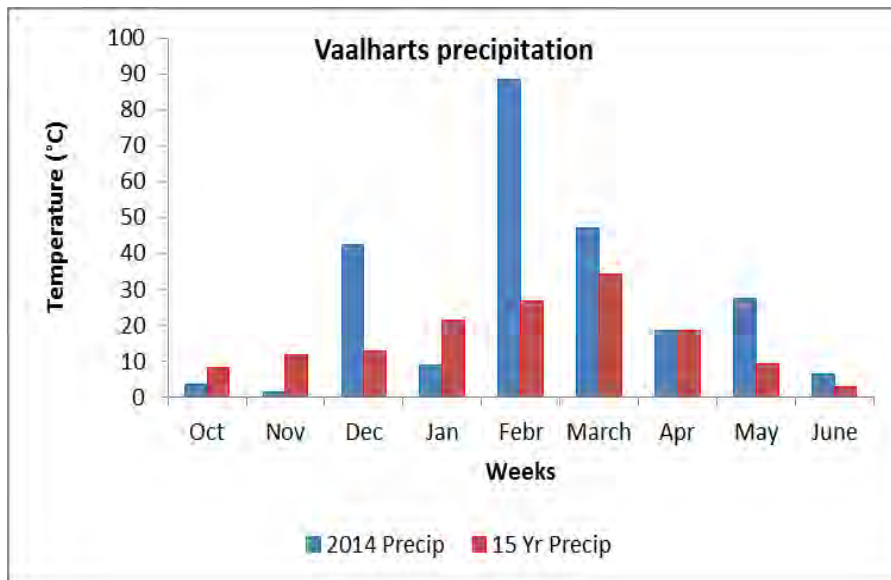


Figure 10. Rainfall for the 2013/14 season and the 15 year long term rainfall. Vaalharts, 2013/2014.

Table 4. Fibre characteristics of the cotton cultivar trial planted under irrigation at Vaalharts, 2013/2014.

Variety	DP210 BRF	Delta 12 BRF	PM 3225 B2RF	13P3001 B2R2	13P3005B 2R2	Okra	DP1240 B2RF	Gariep VT1	Gariep VT2	Candia BG2D	Candia B2RF
Length (mm)	32.0	30.0	30.0	31.1	30.0	30.1	30.2	29.0	29.0	32.0	31.0
Uniformity	83.3	82.0	84.0	85.0	83.4	83.0	83.3	85.0	85.0	83.4	83.0
Strength (g tex <sup>-1</sup> )	30.0	29.0	34.0	30.4	31.0	30.0	33.0	30.0	30.3	30.0	31.0
Rd	80.0	78.1	76.1	78.0	77.0	78.0	76.0	80.0	79.0	80.0	78.0
Plus b	8.0	8.0	9.0	8.3	8.4	8.3	9.0	8.4	9.3	8.0	8.0
Micronaire	4.0	4.0	4.0	4.1	4.3	4.0	4.3	4.1	4.5	3.4	4.0
Maturity	0.84	0.84	0.84	0.84	0.85	0.84	0.85	0.84	0.85	0.84	0.84
Color	31-1	31-2	41-1	31-1	31-4	31-3	31-3	21-2	21-1	31-1	41-1
Parameter	Tukey's LSD		CV (%)								
	(p<0.05)										
Length	2.0		2.3								
Uniformity	NS		1.2								
Strength	NS		5.0								
RD	NS		1.6								
+ B	NS		4.6								
Micronaire	NS		6.6								
Maturity	NS		0.7								

## **VAALHARTS**

### **Quality parameters**

From Table 4 it can be seen that cultivars differed significantly regarding fibre length (mm). The cultivars DP210 BRF and Candia B2RF produced the longest fibre of 32.0 mm. These were followed by 13P3001 B2R2 with 31.1 mm (Figure 11). The cultivars did not differ significantly regarding fibre strength ( $\text{g tex}^{-1}$ ). PM3225 B2RF produced the strongest fibre of  $34.0 \text{ g tex}^{-1}$  followed by DP1240 B2RF with  $33.0 \text{ g tex}^{-1}$  (Figure 12). Cultivars did not differ significantly regarding micronaire. Micronaire values fell within the acceptable limit of 3.5 to 4.5 except for Candia BG2D which fell below the acceptable limits with micronaire value of 3.4 (Figure 13).



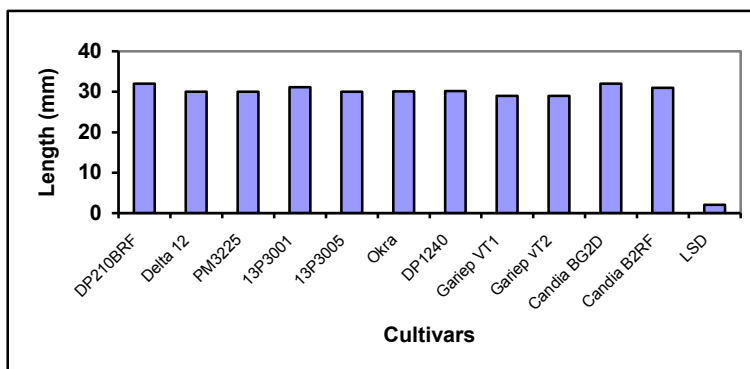


Figure 11. Length (mm) of cotton cultivars planted under irrigation at Vaalharts, 2013/2014 season.

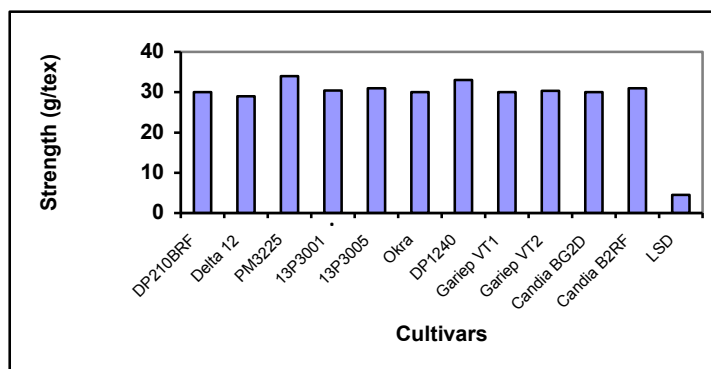


Figure 12. Strength (g tex<sup>-1</sup>) of cotton cultivars planted under irrigation at Vaalharts, 2013/2014 season.

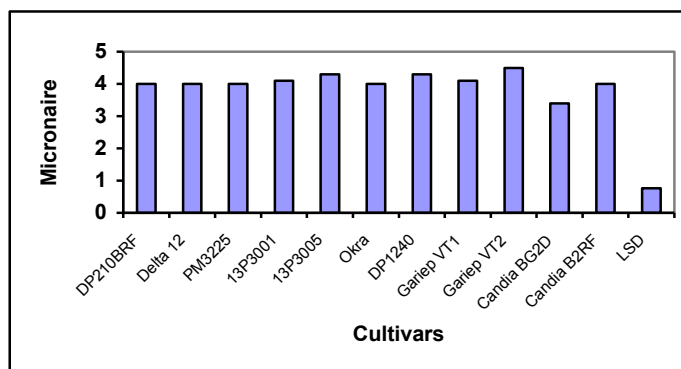


Figure 13. Micronaire of cotton cultivars planted under irrigation at Vaalharts, 2013/2014 season.

# **UPINGTON IRRIGATION**

## Upington.

The trial was planted on the 6<sup>th</sup> of November 2013. Harvesting was done on the 26<sup>th</sup> of May 2014. The total fertilizer applied was N = 200 kg/ha, P = 12 kg/ha, and K = 62 kg/ha. Weeds were controlled with MSMA. Two Thionex insect sprays were done. Flood irrigation was applied.

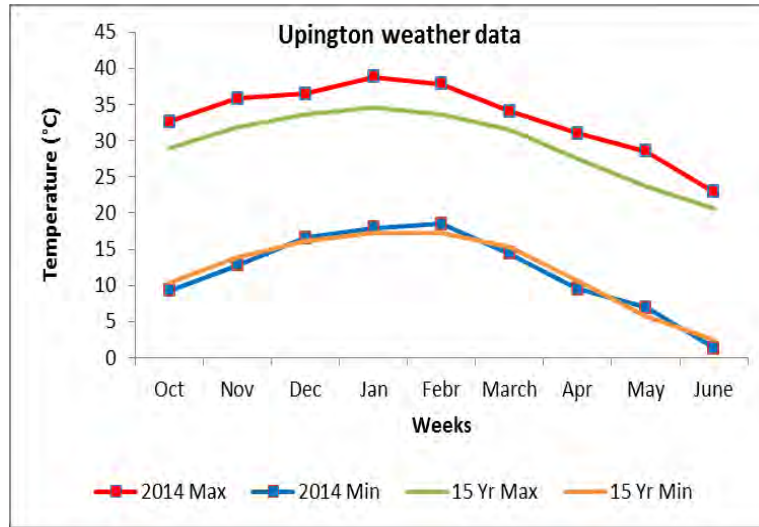


Figure 14. Maximum and minimum temperatures for the 2013/14 season and the 15 year long term mean maximum and minimum temperatures. Upington, 2013/2014.

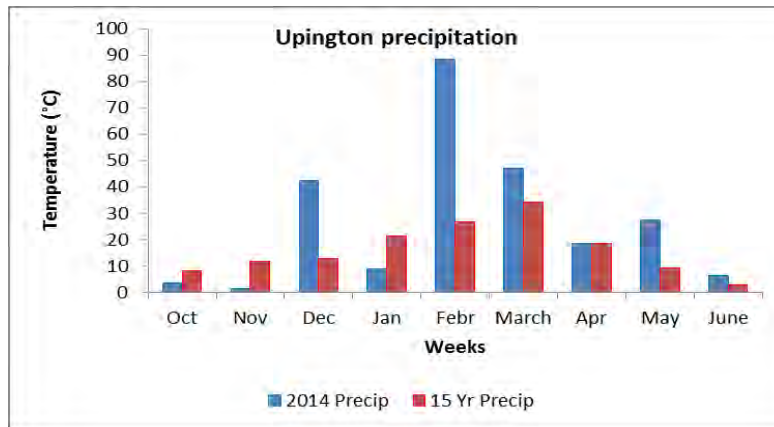


Figure 15. Rainfall for the 2013/14 season and the 15 year long term rainfall. Upington, 2013/2014.

Table 5. Yield and fibre characteristics of the cotton cultivar trial planted under irrigation at Uppington, 2013/2014.

Variety	DP210 BRF	Delta 12 BRF	PM 3225 B2RF	13P3001 B2R2	13P3005B 2R2	Okra	DP1240B 2RF	Gariep VT1	Gariep VT2	Candia BG2D	Candia B2RF
Yield (kg ha <sup>-1</sup> )	7855	6942	8814	8396	8470	7946	8284	7031	7099	8206	8306
Fibre %	40.62	38.50	42.82	42.47	43.27	43.4	40.15	40.20	39.7	43.35	42.9
Fibre Yield	3185	2671	3782	3570	3664	3449	3329	2825	2819	3555	3560
Length (mm)	32.0	31.0	30.1	32.0	31.0	30.0	32.0	29.0	29.4	32	32
Uniformity	84.0	84.0	84.0	86.0	84.2	83.0	84.2	84.3	85.2	83.0	83.3
Strength (g tex <sup>-1</sup> )	31.0	30.0	32.0	32.0	32.3	29.3	34.0	31.2	31.4	30.0	31.2
Rd	79.0	80.0	76.0	80.1	78.0	80.4	78.0	78.0	78.0	80.44	81.0
Plus b	7.0	7.0	8.0	7.1	8.0	8.0	8.0	8.0	8.2	7.0	7.0
Micronaire	4.0	4.3	4.3	4.4	4.7	4.4	4.7	4.4	4.5	4.0	4.1
Maturity	0.85	0.86	0.85	0.86	0.87	0.86	0.87	0.86	0.86	0.85	0.86
Color	31-2	31-1	41-1	31-2	31-1	21-2	31-1	31-2	31-1	21-1	31-1
Parameter	Tukey's		LSD	CV (%)							
	(p<0.05)										
Yield (kg ha <sup>-1</sup> )			848.4			7.0					
Fibre %			1.26			2.0					
Fibre yield			398.1			7.9					
Length			1.406			1.8					
Uniformity			2.463			1.2					
Strength			3.164			4.0					
RD			4.035			2.0					
+ B			1.027			5.5					
Micronaire			0.6366			5.8					
Maturity			0.1618			0.7					

## **UPINGTON**

### **Yield parameters**

Cultivars differed significantly regarding all three of the yield parameters. The cultivar PM3225B2RF produced the highest yield of 8814 kg ha<sup>-1</sup> followed by 13P3005 B2R2 with 8470 kg ha<sup>-1</sup>(Table 5) (Figure 16). The cultivar Okra produced the highest fibre percentage of 43.40 %, followed by Candia BG2D with 43.35 (Figure 17). PM3225B2RF produced the highest fibre yield of 3782 kg ha<sup>-1</sup> followed by 13P3005 B2R2 with 3664 kg ha<sup>-1</sup> (Figure 18).

### **Quality parameters**

From Table 5 it can be seen that cultivars differed significantly regarding fibre length (mm), fibre strength (g tex<sup>-1</sup>) and micronaire. The cultivars DP210 BRF, 13P3001 B2R2, DP1240 B2RF, Candia BG2D and Candia B2RF produced the longest fibre of 32.0 mm followed by Delta12 BRF and 13P3005 B2R2 with 31.0 mm (Figure 19). DP1204 B2RF produced the strongest fibre of 34.0 g tex<sup>-1</sup>, followed by 13P3005 B2R2 with 32.0 g tex<sup>-1</sup> (Figure 20). Most of the cultivars evaluated fell within the acceptable limits of 3.5 to 4.5 except 13P3005 B2R2 and DP1240 B2RF both with micronaire values of 4.7 (Figure 21).

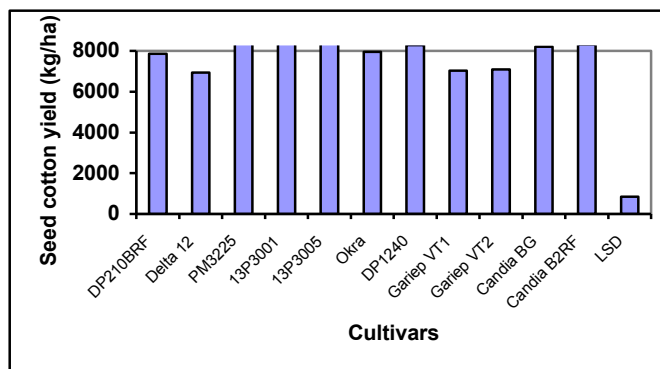


Figure 16. Seed cotton yield ( $\text{kg ha}^{-1}$ ) of cotton cultivars planted under irrigation at Uppington, 2013/2014 season.

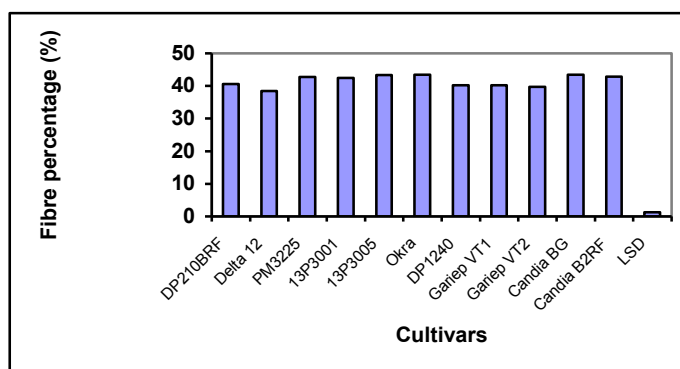


Figure 17. Fibre percentage (%) of cotton cultivars planted under irrigation at Uppington, 2013/2014 season.

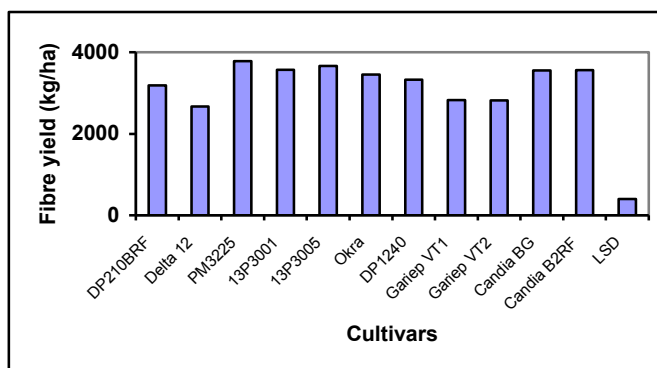


Figure 18. Fibre yield ( $\text{kg ha}^{-1}$ ) of cotton cultivars planted under irrigation at Uppington, 2013/2014 season.

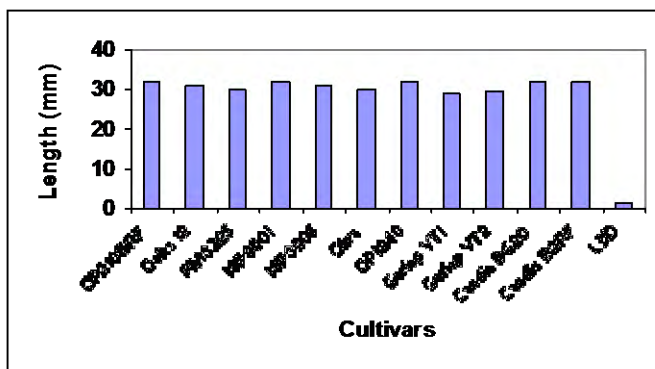


Figure 19. Length (mm) of cotton cultivars planted under irrigation at Uppington, 2013/2014 season.

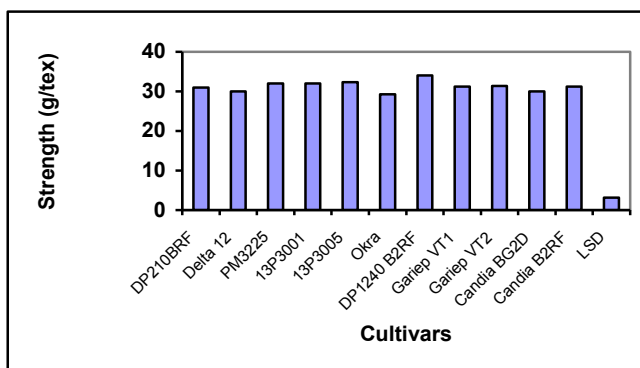


Figure 20. Strength (g tex<sup>-1</sup>) of cotton cultivars planted under irrigation at Uppington, 2013/2014 season.

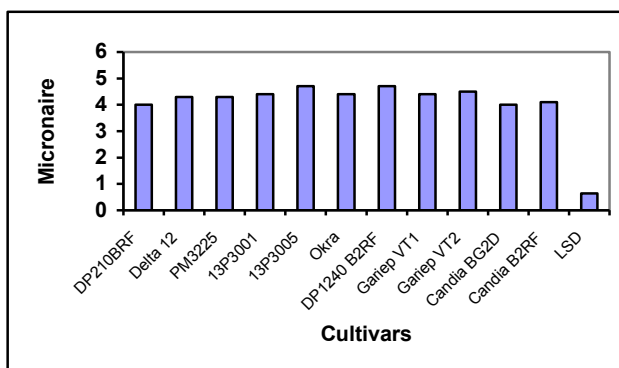


Figure 21. Micronaire of cotton cultivars planted under irrigation at Uppington, 2013/2014 season.

# **WEIPE IRRIGATION**



## Weipe.

The trial was planted on the 13<sup>th</sup> of December 2013, as rainfall again occurred late and farmers had to wait for the river to flow before planting.

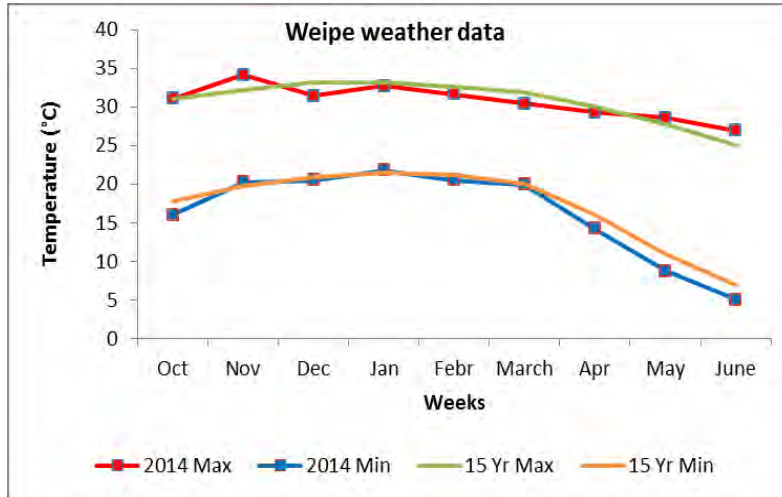


Figure 22. Maximum and minimum temperatures for the 2013/14 season and the 15 year long term mean maximum and minimum temperatures. Weipe, 2013/2014.

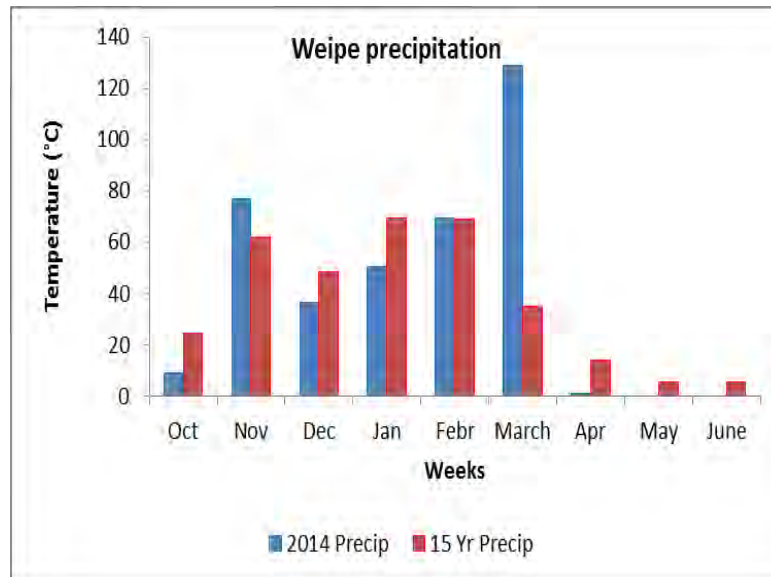


Figure 23. Rainfall for the 2013/14 season and the 15 year long term rainfall. Weipe, 2013/2014.

Table 6. Yield and fibre characteristics of the cotton cultivar trial planted under irrigation at Weipe, 2013/2014.

Variety	DP210 BRF	Delta 12 BRF	PM 3225 B2RF	13P3001 B2R2	13P3005 B2R2	OKra	DP1240 B2RF	Candia BG2D	Candia B2RF
Yield (kg ha <sup>-1</sup> )	3621	3483	3351	4075	3402	1586	3534	3207	2243
Fibre %	39.0	36.2	42.0	41.0	40.2	39.1	39.3	43.0	39.0
Fibre Yield	1618	1282	1395	1677	1362	629	1651	1368	1289
1Length (mm)	31.0	31.0	31.1	31.4	31.0	30.4	31.0	31.0	32.0
Uniformity	83.0	83.5	85.1	85.3	85.0	84.5	85.2	84.0	84.0
Strength (g tex <sup>-1</sup> )	31.0	29.0	32.0	30.1	31.1	29.3	33.0	30.5	29.0
Rd	80.4	81.3	80.0	79.0	79.3	80.0	80.0	80.0	79.5
Plus b	7.0	7.0	7.3	7.1	8.0	7.4	8.0	7.0	7.3
Micronaire	3.5	4.0	4.0	4.3	4.3	4.4	4.5	3.5	4.0
Maturity	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.8	0.9
Color	41-1	31-1	31-1	41-1	21-2	31-1	31-1	41-1	41-1
Parameter	Tukey's (p<0.05)		LSD	CV (%)					
Yield (kg ha <sup>-1</sup> )	NS			27.5					
Fibre %	NS			7.5					
Fibre yield	NS			28.7					
Length	NS			2.4					
Uniformity	NS			1.1					
Strength	NS			4.3					
RD	NS			1.4					
+ B	NS			6.4					
Micronaire	NS			3.7					
Maturity	NS			0.8					

## **WEIPE**

### **Yield parameters**

From Table 6 it can be seen that cultivars did not differ significantly regarding all three of the yield parameters. The cultivar 13P3001 B2R2 produced the highest yield of 4075 kg ha<sup>-1</sup> followed by DP210 BRF with 3621 kg ha<sup>-1</sup> (Figure 24). Candia produced the highest fiber percentage of 43.0%, followed by PM3225 B2RF with 42.0% (Figure 25). Cultivar 13P3001 B2R2 produced the highest fibre yield of 1677 kg ha<sup>-1</sup> followed by DP1240 B2RF with 1651 kg ha<sup>-1</sup> (Figure 26).

### **Quality parameters**

From Table 6 it can be seen that cultivars did not differ significantly regarding fibre length (mm) and fibre strength (g tex<sup>-1</sup>). The cultivar Candia B2RF produced the longest fibre of 32.0 mm (Figure 27) followed by 13P3001 B2R2 with 31.4 mm. DP1240 B2RF produced the strongest fibre of 33.0 g tex<sup>-1</sup> followed by PM3225 B2RF with 32.0 g tex<sup>-1</sup> (Figure 28). Cultivars differed significantly regarding micronaire. All micronaire values of all cultivars evaluated fell within the acceptable limit of 3.5 to 4.5 (Figure 29).

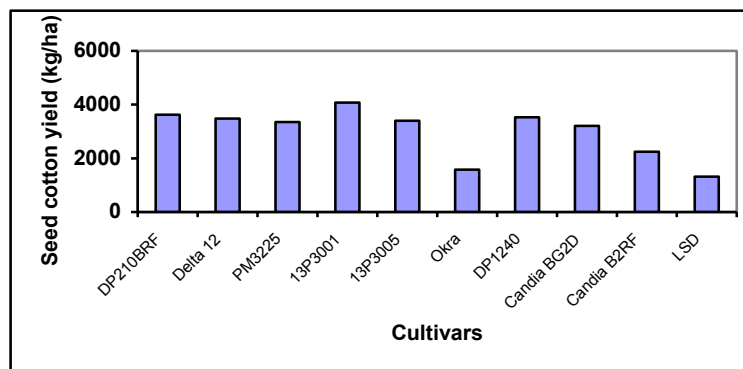


Figure 24. Seed cotton yield ( $\text{kg ha}^{-1}$ ) of cotton cultivars planted under irrigation at Weipe, 2013/2014 season.

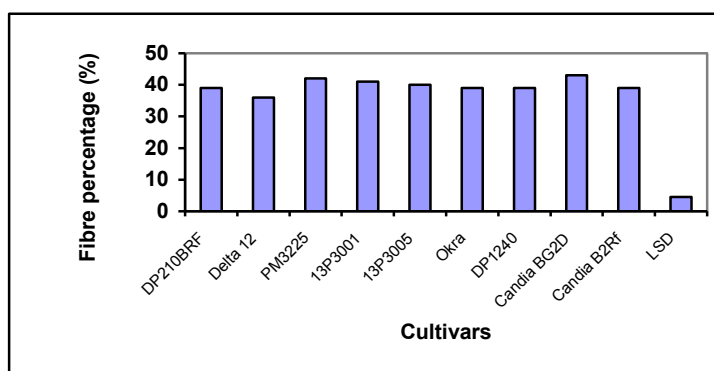


Figure 25. Fibre percentage (%) of cotton cultivars planted under irrigation at Weipe, 2013/2014 season.

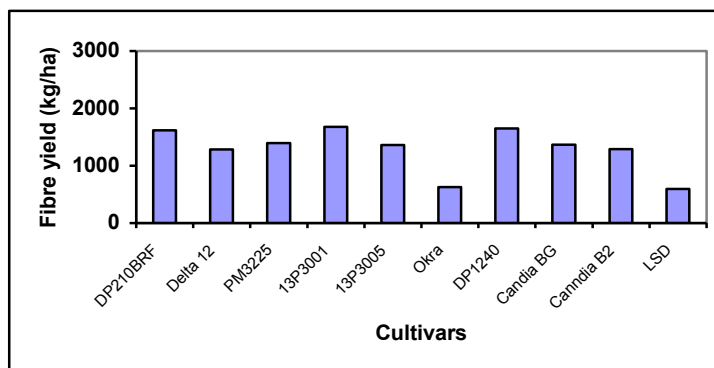


Figure 26. Fibre yield ( $\text{kg ha}^{-1}$ ) of cotton cultivars planted under irrigation at Weipe, 2013/2014 season.

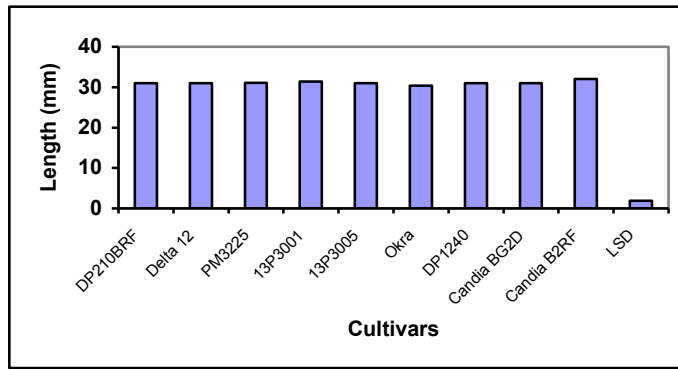


Figure 27. Length (mm) of cotton cultivars planted under irrigation at Weipe, 2013/2014 season.

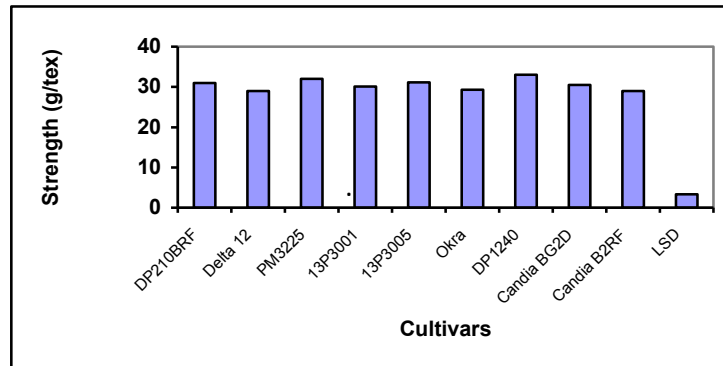


Figure 28. Strength ( $\text{g tex}^{-1}$ ) of cotton cultivars planted under irrigation at Weipe, 2013/2014 season.

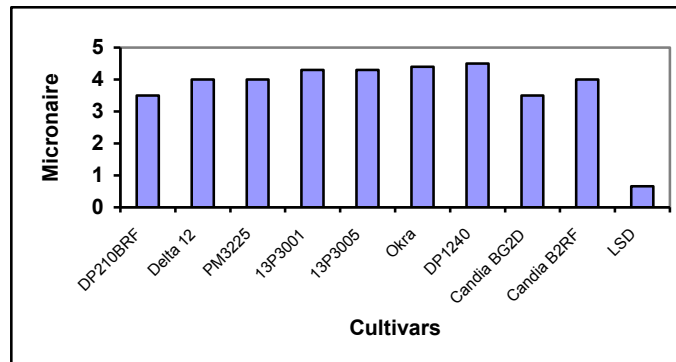


Figure 29. Micronaire of cotton cultivars planted under irrigation at Weipe, 2013/2014 season.

# **LOSKOP IRRIGATION**

## Loskop.

The trial was planted on the 22<sup>nd</sup> of October 2013. Hail and heavy rain storms resulted in the trial being replanted on the 28<sup>th</sup> of October 2013. Harvesting dates were 15<sup>th</sup> April and 7<sup>th</sup> June 2014. Fertilizers applied were N = 180 kg/ha, P = 35 kg/ha and K = 85 kg/ha. Insect control included 3 x lambda-cyhalothrin and 3x acetamiprid. Pix was applied 3 x 250 ml/ha.

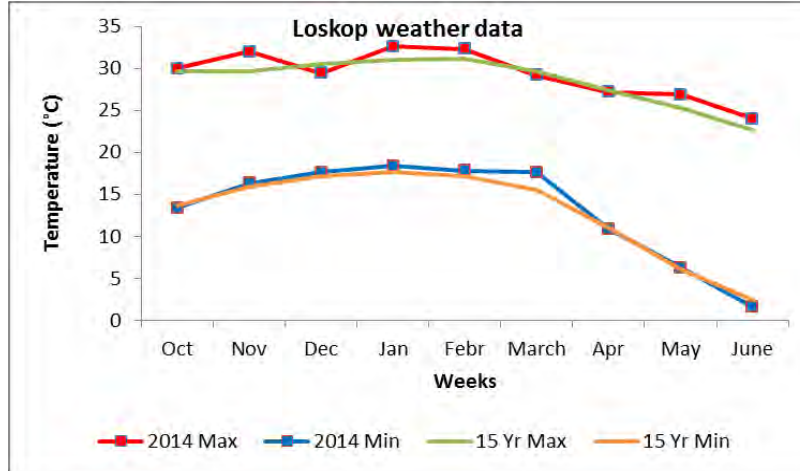


Figure 30. Maximum and minimum temperatures for the 2013/14 season and the 15 year long term mean maximum and minimum temperatures. Loskop, 2013/2014.

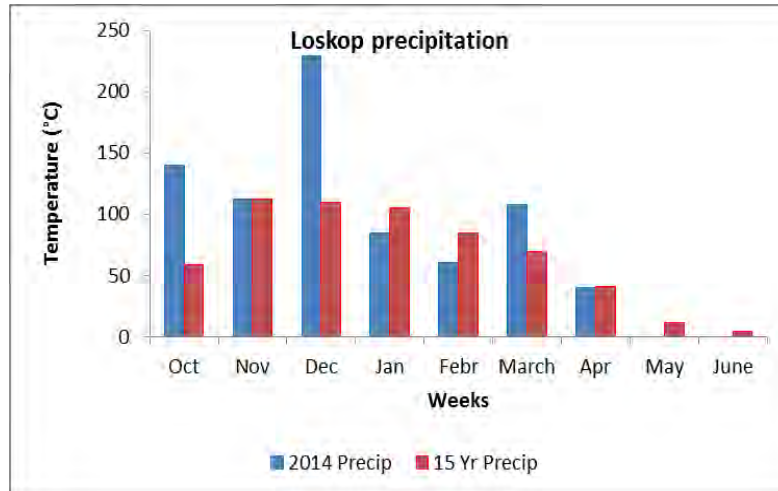


Figure 31. Rainfall for the 2013/14 season and the 15 year long term rainfall. Loskop, 2013/2014.

**Table 7. Yield and fibre characteristics of the cotton cultivar trial planted under irrigation at Loskop, 2013/2014.**

Variety	DP210 BRF	Delta 12 BRF	PM 3225 B2RF	13P3001 B2R2	13P3005B 2R2	Okra	DP124 0B2RF	Gariep VT1	Gariep VT2	Candia BG2D	Candia B2RF
Yield (kg ha <sup>-1</sup> )	6516	5626	5968	6197	6668	5605	6558	4382	3236	6200	6056
Fibre %	41.11	40.93	43.01	40.07	40.45	40.15	38.00	39.81	41.18	41.94	40.85
Fibre Yield	2679	2310	2570	2480	2695	2259	2496	1744	1326	2600	2493
Length (mm)	31.0	30.3	32.0	32.0	30.4	31.0	32.0	28.1	28.5	31.4	31.1
Uniformity	84.1	84.0	85.2	86.5	85.2	85.0	86.0	84.4	85.3	84.2	85.0
Strength (g tex <sup>-1</sup> )	29.5	30.5	31.3	32.0	31.4	31.5	33.8	28.0	29.4	29.3	31.0
Rd	80.8	81.2	78.9	80.2	79.9	79.9	79.7	79.8	78.9	78.8	79.6
Plus b	7.8	7.9	8.5	7.8	8.6	8.6	8.6	8.6	8.9	8.9	8.6
Micronaire	4.3	4.3	3.9	4.6	4.6	4.1	4.8	4.0	4.7	4.0	3.8
Maturity	0.85	0.85	0.84	0.85	0.86	0.85	0.86	0.84	0.86	0.84	0.84
Color	31-1	21-2	31-1	31-1	21-1	21-1	21-1	21-1	22-1	22-1	22-1
<b>Parameter</b>	<b>Tukey's</b>		<b>LSD</b>		<b>CV (%)</b>						
	<b>(p&lt;0.05)</b>										
Yield (kg ha <sup>-1</sup> )	889.0				10.2						
Fibre %	NS				7.3						
Fibre yield	504.8				14.3						
Length	2.4				2.7						
Uniformity	NS				0.9						
Strength	NS				6.3						
RD	NS				1.6						
+ B	NS				6.3						
Micronaire	NS				8.6						
Maturity	NS				0.9						



## LOSKOP

### Yield parameters

From Table 7 it can be seen that, cultivars differed significantly regarding seed cotton yield and fibre yield. The cultivar 13P3005 B2R2 produced the highest seed cotton yield of 6668 kg ha<sup>-1</sup> followed by DP210 B2RF with 6516 kg ha<sup>-1</sup> (Figure 32). Cultivars did not differ significantly with regard to fibre percentage. The cultivar PM3225 B2RF produced the highest fibre percentage of 43.01%, followed by Candia BG2D with 41.94 % (Figure 33). The cultivar 13P3005 B2R2 produced the highest fibre yield of 2695 kg ha<sup>-1</sup> followed by DP210BRF with 2679 kg ha<sup>-1</sup> (Figure 34).

### Quality parameters

From Table 7 it can be seen that cultivars differed significantly regarding fibre length (mm). The cultivars PM3225 B2RF, 13P3001 B2R2 and DP1240 B2RF produced the longest fibre of 32.0 mm followed by Candia BG2D with 31.4 mm (Figure 35). Cultivars did not differ significantly regarding fibre strength (g tex<sup>-1</sup>). DP1240 B2RF had the strongest fibre of 33.8 g tex<sup>-1</sup> followed by 13P3001 B2R2 Okra both with 32.0 g tex<sup>-1</sup> (Figure 36). Cultivars did not differ significantly regarding micronaire. Most of the cultivars evaluated fell within the acceptable limits of 3.5 to 4.5 for micronaire except DP1240 B2RF, Gariep VT2, 13P3001 B2R2 and 13P3005 B2R2 which gave micronaire values of 4.6 and greater (Figure 37).

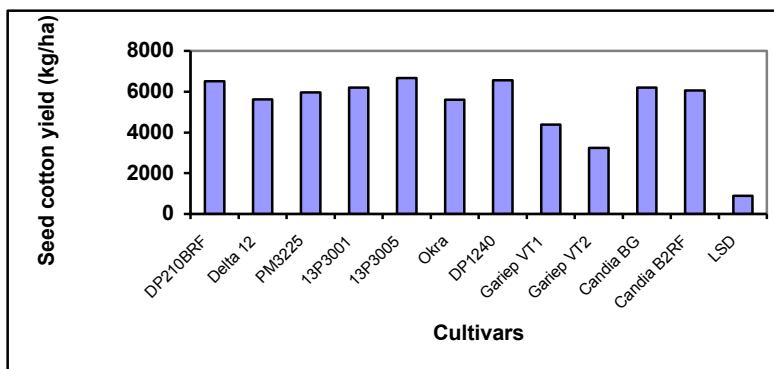


Figure 32. Seed cotton yield ( $\text{kg ha}^{-1}$ ) of cotton cultivars planted under irrigation at Loskop, 2013/2014 season.

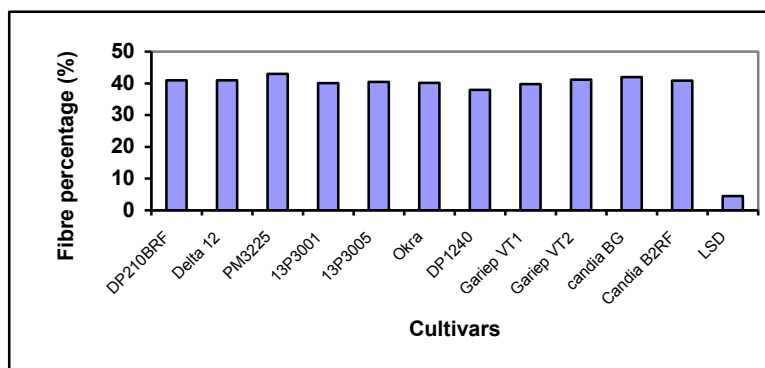


Figure 33. Fibre percentage (%) of cotton cultivars planted under irrigation at Loskop, 2013/2014 season.

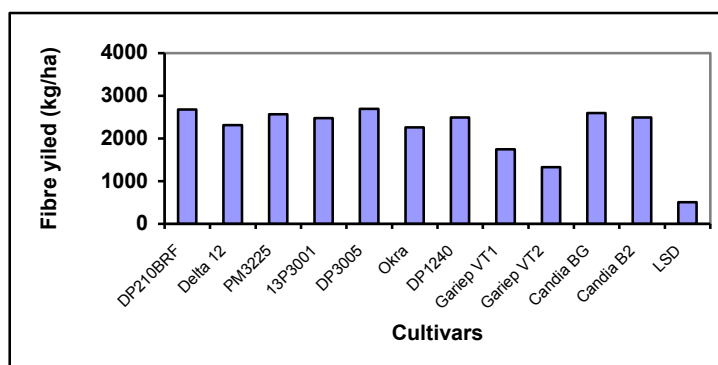


Figure 34. Fibre yield ( $\text{kg ha}^{-1}$ ) of cotton cultivars planted under irrigation at Loskop, 2013/2014 season.

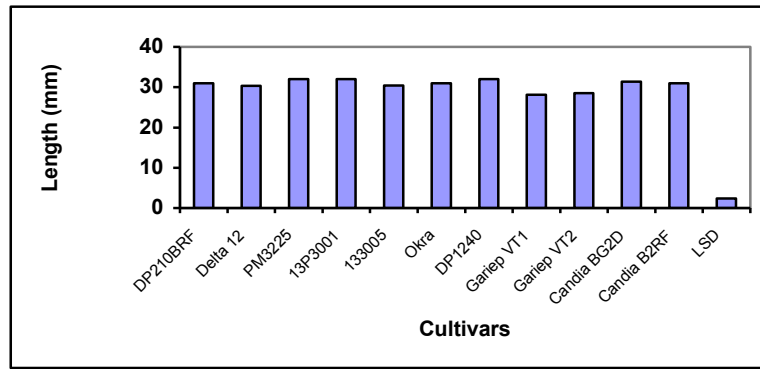


Figure 35. Length (mm) of cotton cultivars planted under irrigation at Loskop, 2013/2014 season.

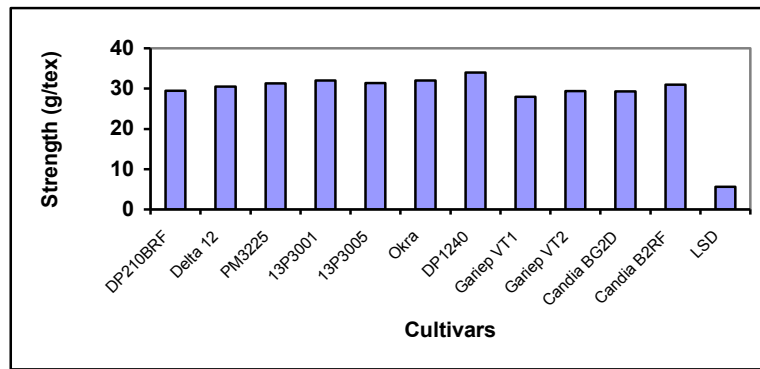


Figure 36. Strength (g tex<sup>-1</sup>) of cotton cultivars planted under irrigation at Loskop, 2013/2014 season.

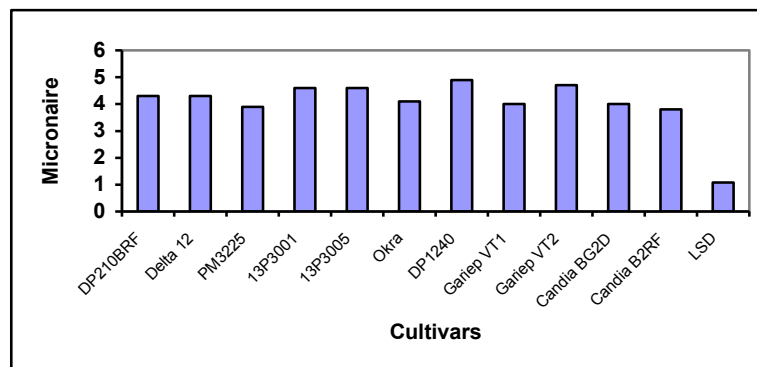


Figure 37. Micronaire of cotton cultivars planted under irrigation at Loskop, 2013/2014 season.

**ROEDTAN**  
**DRYLAND**

**Roedtan.**

The trial was planted on the 27<sup>th</sup> of November 2013. Due to very low rainfall in January and February, the trial did not result in any yields that could be measured. Fibre samples were collected and send to CottonSA for quality determinations. As expected low micronaire values were obtained.

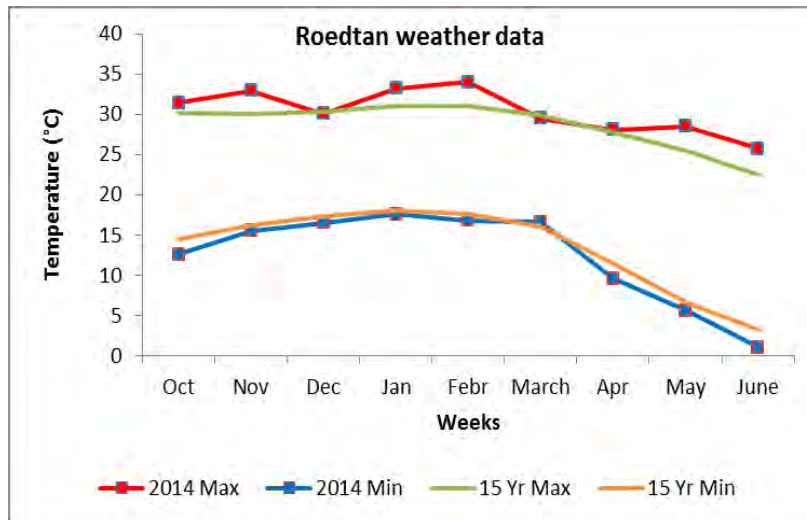


Figure 38. Maximum and minimum temperatures for the 2013/14 season and the 15 year long term mean maximum and minimum temperatures. Roedtan, 2013/2014.

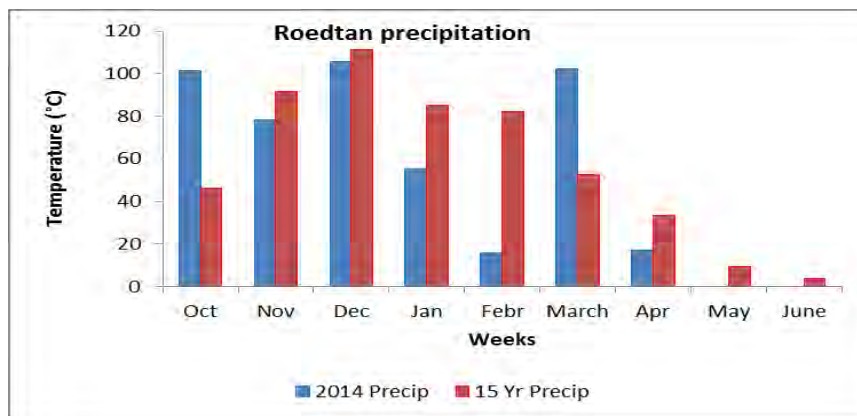


Figure 39. Rainfall for the 2013/14 season and the 15 year long term rainfall. Roedtan, 2013/2014.

Table 8. Fibre characteristics of the cotton cultivar trial planted under irrigation at Roedtan, 2013/2014.

Variety	DP210 BRF	Delta 12 BRF	PM 3225 B2RF	13P3001 B2R2	13P3005B 2R2	Okra	DP1240 B2RF	Gariep VT1	Gariep VT2	Candia BG2D	Candia B2RF
Length (mm)	27.0	27.0	27.1	29.0	27.1	27.0	28.0	27.4	27.0	26.3	28.2
Uniformity	81.0	81.0	82.4	83.4	83.0	82.0	83.0	82.0	80.2	80.0	82.0
Strength (g tex <sup>-1</sup> )	26.0	25.0	26.3	28.0	28.0	26.3	26.2	25.0	24.1	24.4	25.3
Rd	80.0	80.0	78.0	79.4	78.0	79.0	79.0	79.0	79.4	80.0	77.2
Plus b	8.1	9.1	9.0	8.3	8.2	8.4	9.0	9.0	9.0	9.0	8.0
Micronaire	3.0	3.0	3.2	4.0	4.0	4.0	3.4	3.2	3.2	3.4	3.0
Maturity	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Color	21-2	31-1	31-2	31-1	41-1	31-1	21-2	21-2	21-1	21-1	21-1
Parameter	Tukey's		LSD	CV (%)							
	(p<0.05)										
Length			1.44	1.8							
Uniformity			NS	0.8							
Strength			NS	4.3							
RD			NS	2.1							
+ B			NS	6.5							
Micronaire			NS	6.4							
Maturity			NS	0.7							

## ROEDTAN

### Quality parameters

From Table 8 it can be seen that cultivars differed significantly regarding fibre length (mm). The cultivar 13P3001 B2R produced the longest fibre of 29.0 mm followed by Candia B2RF with 28.2 mm (Figure 40). The cultivars did not differ significantly regarding fibre strength. The cultivars 13P3001 B2R2 and 13P3005 B2R2 both produced the strongest fibre of 28.0 g tex<sup>-1</sup>. PM3225 B2RF and Okra were second both with 26.3 g tex<sup>-1</sup> (Figure 41). Cultivars did not differ significantly regarding micronaire. Most of the cultivars evaluated fell below the acceptable limits of 3.5 except 13P3001 B2R2, 13P3005 and Okra which had a value of 4.0 (Figure 42).

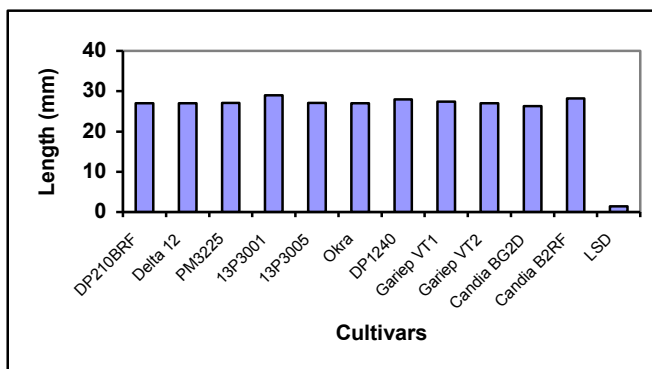


Figure 40. Length (mm) of cotton cultivars planted under irrigation at Roedtan, 2013/2014 season.

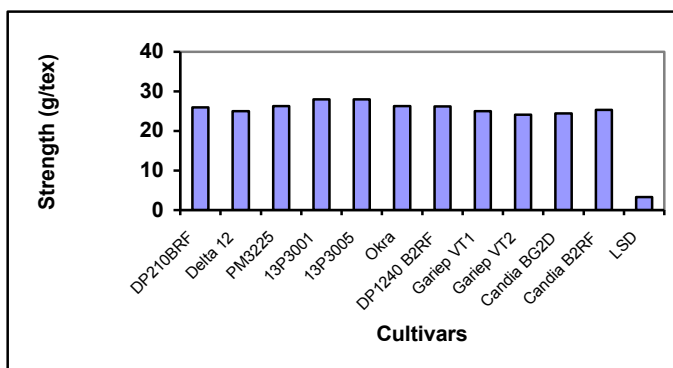


Figure 41. Strength (g tex<sup>-1</sup>) of cotton cultivars planted under irrigation at Roedtan, 2013/2014 season.

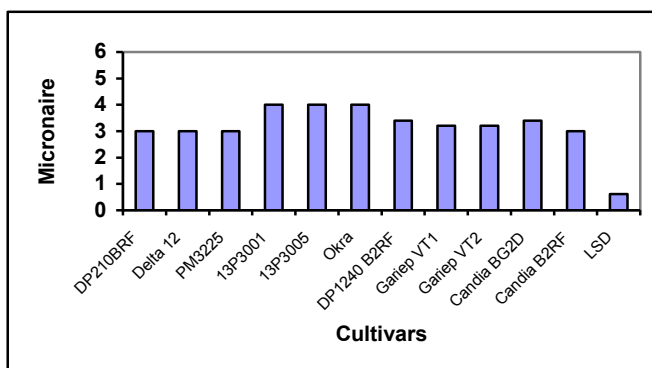


Figure 42. Micronaire of cotton cultivars planted under irrigation at Roedtan, 2013/2014 season.



**MAKHATHINI  
DRYLAND**

**Makhathini.**

The Makhathini trial was planted on the 19<sup>th</sup> of November 2013. A heavy hail storm on 25<sup>th</sup> February 2014 resulted in no yield being measured. Fibre samples were send for quality analysis to CottonSA. As expected, low micronaires were obtained.

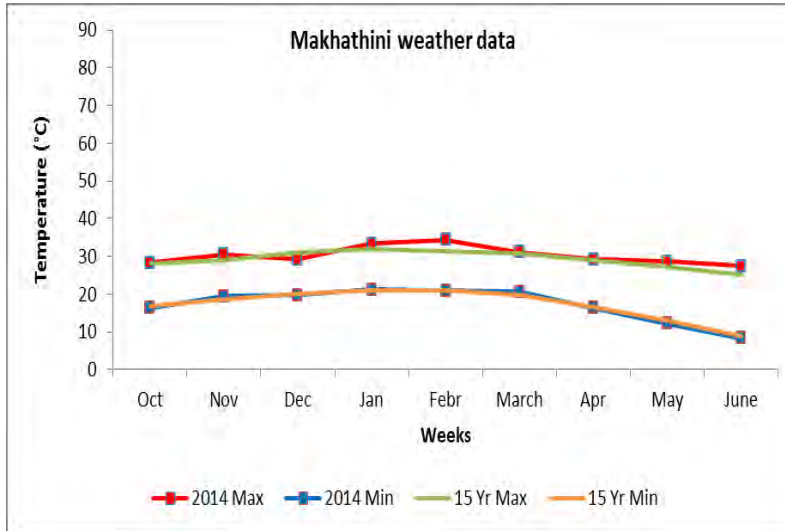


Figure 43. Maximum and minimum temperatures for the 2013/14 season and the 15 year long term mean maximum and minimum temperatures. Makhathini, 2013/2014.

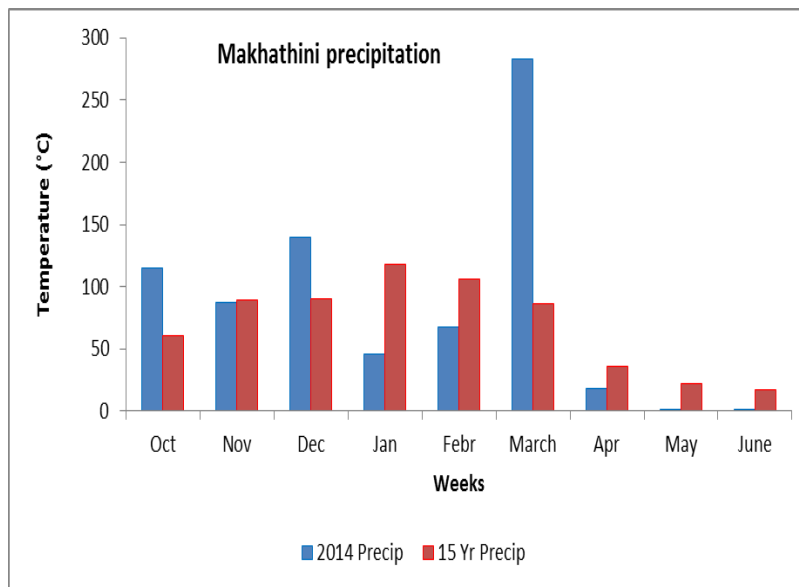


Figure 44. Rainfall for the 2013/14 season and the 15 year long term rainfall. Makhathini, 2013/2014.

Table 9. Fibre characteristics of the cotton cultivar trial planted under dryland at Makhathini, 2013/2014.

Variety	DP210 BRF	Delta 12 BRF	PM 3225 B2RF	13P3001 B2R2	13P3005 B2R2	Okra	DP1240 B2RF	Candia BG2D	Candia B2RF
Length (mm)	27.2	27.0	26.1	27.1	26.0	26.0	27.4	27.3	28.0
Uniformity	80.0	80.0	81.0	80.1	79.2	78.3	82.3	80.0	80.4
Strength (g tex <sup>-1</sup> )	29.0	26.4	27.0	26.2	23.4	26.3	32.0	28.4	26.0
Rd	76.1	77.0	75.4	73.3	70.4	74.0	75.4	80.0	79.2
Plus b	8.4	8.3	9.0	9.0	9.3	8.3	9.4	8.0	8.0
Micronaire	3.0	3.2	3.0	3.4	3.1	3.0	3.7	3.0	3.0
Maturity	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Color	31-1	31-1	31-1	41-1	31-4	31-2	32-1	21-1	31-1
<b>Parameter</b>	<b>Tukey's LSD (p&lt;0.05)</b>		<b>CV (%)</b>						
Length	1.15		1.5						
Uniformity	NS		1.2						
Strength	NS		7.3						
RD	NS		2.6						
+ B	NS		5.0						
Micronaire	NS		13.1						
Maturity	NS		1.1						

## **MAKHATHINI**

### **Quality parameters**

From Table 9 it can be seen that cultivars differed significantly regarding fibre length (mm). The cultivar Candia B2RF produced the longest fibre of 28.0 mm followed by DP1240 B2RF with a fibre length of 27.4 mm (Figure 45). Cultivars did not differ significantly regarding fibre strength ( $\text{g tex}^{-1}$ ). DP1240 B2RF produced the strongest fibre of  $32.0 \text{ g tex}^{-1}$  followed by DP210 BRF with fibre strength of  $29.0 \text{ g tex}^{-1}$  (Figure 46). Cultivars did not differ significantly regarding micronaire. All of the cultivars evaluated fell below the acceptable limit of 3.5 except DP1240 B2RF with a micronaire of 3.7 (Figure 47).

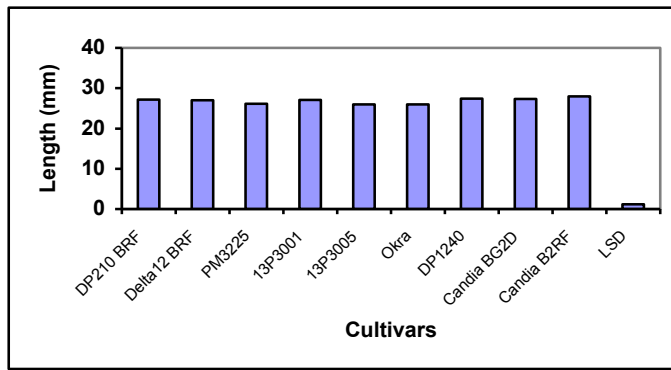


Figure 45. Length (mm) of cotton cultivars planted under irrigation at Makhathini, 2013/2014 season.

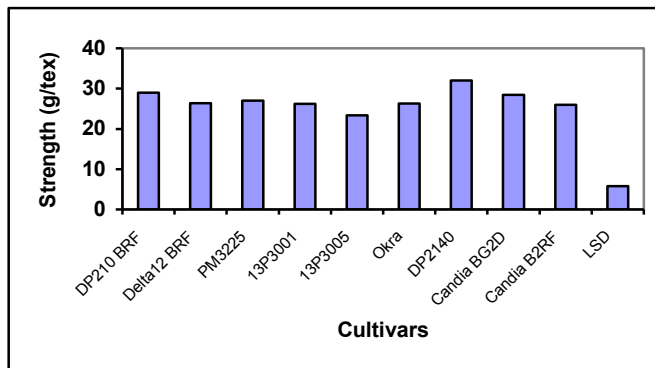


Figure 46. Strength ( $\text{g tex}^{-1}$ ) of cotton cultivars planted under irrigation at Makhathini, 2013/2014 season.

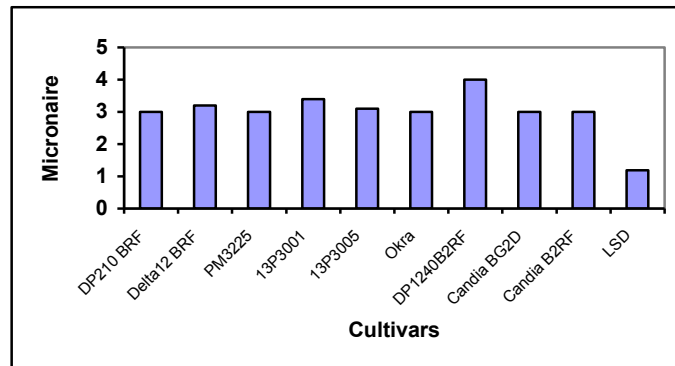


Figure 47. Micronaire of cotton cultivars planted under irrigation at Makhathini, 2013/2014 season.

Table 10. Soil sample analysis of Loskop (National Cotton Cultivar Trials), 2013/2014

<b>Measured parameter</b>	<b>Loskop</b>	
	<b>0 - 30 cm</b>	<b>30 -60 cm</b>
<b>pH</b>	5.89	
<b>Resistance (ohms)</b>	900	
<b>mg/kg</b>		
<b>N</b>	15	5
<b>P</b>	41	1
<b>K</b>	245	135
<b>Ca</b>	570	725
<b>Mg</b>	218	313
<b>Na</b>	25	28
<b>S Value</b>	5.39	6.68
<b>Ca %</b>	52.9	54.3
<b>Mg %</b>	33.4	38.7
<b>K %</b>	11.7	5.2
<b>Na %</b>	2.0	1.8
<b>Sand</b>	77	
<b>Slik</b>	5	
<b>Clay</b>	18	
<b>S-(SO4)</b>	17	46

Table 11. Soil sample analysis of Upington (National Cotton Cultivar Trials), 2013/2014

<b>Measured parameter</b>	<b>Upington</b>
	<b>0 - 30 cm</b>
<b>pH</b>	6.9
<b>Resistance (ohms)</b>	590
<b>mg/kg</b>	
<b>P (Olsen)</b>	3 mg/kg
<b>K</b>	136 mg/kg
<b>Ca</b>	7.6 cmol(+)/kg
<b>Mg</b>	3.2 cmol(+)/kg
<b>Na</b>	43 mg/kg
<b>Cu</b>	3.93 mg/kg
<b>Zn</b>	1.08 mg/kg
<b>Mn</b>	177.4 mg/kg
<b>B</b>	0.11 mg/kg
<b>Sulphur</b>	4.5 mg/kg

Table 12. Soil sample analysis of Vaalharts (National Cotton Cultivar Trials), 2013/2014

<b>Measured parameter</b>	<b>Vaalharts</b>
	<b>0 - 30 cm</b>
<b>pH(H<sub>2</sub>O)</b>	7.32
<b>Resistance (ohms)</b>	590
<b>mg/kg</b>	
<b>P (Bray1)</b>	55
<b>K</b>	185
<b>Ca</b>	550
<b>Mg</b>	195
<b>Na</b>	65
<b>Cu</b>	0.72
<b>Zn</b>	2.68
<b>Mn</b>	28
<b>s-(SO<sub>4</sub>)</b>	18
<b>C%</b>	
<b>S-Value</b>	5.12
<b>Ca%</b>	53.7
<b>Mg%</b>	31.5
<b>K%</b>	9.3
<b>Na%</b>	5.5
<b>%Sand</b>	90
<b>%Silk</b>	2
<b>%Clay</b>	8



Table 13. Soil sample analysis of Makhathini (National Cotton Cultivar Trials), 2013/2014

<b>Measured parameter</b>	<b>Makhathini</b>
	<b>0 - 30 cm</b>
<b>pH</b>	6.07
<b>Resistance (ohms)</b>	1130
<b>mg/kg</b>	
<b>N</b>	8
<b>P</b>	35
<b>K</b>	383
<b>Ca</b>	548
<b>Mg</b>	175
<b>Na</b>	43
<b>S Value</b>	5.36
<b>Ca %</b>	51.2
<b>Mg %</b>	27.0
<b>K %</b>	18.3
<b>Na %</b>	3.5