



**KATOEN
S U I D -
A F R I K A**



**COTTON
S O U T H
A F R I C A**

2016

NATIONAL COTTON CULTIVAR EVALUATION TRIALS



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INTRODUCTION

The past NCP season was a very strenuous one, as the worst drought in 50 years occurred. Cultivars differ in their ability to produce optimally under different environmental conditions. In the National Cotton Cultivar Trials cultivars are evaluated for yield potential and adaptation. This information can then be used by producers for selecting the cultivar with the highest yield potential for their region.

In South Africa, there are eight cotton-producing areas, namely:

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

Area 2: Griqualand West (irrigation) – Northern Cape.

Area 3: North-West – Vryburg – North-West.

Area 4: North-West – Rustenburg – North-West.

Area 5: Limpopo Valley (irrigation) – Limpopo.

Area 6: Loskop, Springbok Flats – Mpumalanga.

Area 7: Lowveld (irrigation) – Mpumalanga.

Area 8: Northern KwaZulu-Natal.

During the 2015/2016 season, up to twelve cultivars (Tables 1 and 2) were tested at eight different localities (Table 3) namely: Loskop (irrigation), Makhathini (dryland), Roedtan (dryland), Stella (dryland), Vaalharts (irrigation), Weipe (irrigation). The Department of Agriculture and Land Reform: Northern Cape planted trials at Douglas and Upington under irrigation. The Roedtan and Stella trials died due to drought. The trial at Weipe had wind damage during December 2015. This trial was irrigated via central pivot but growth was poor and bolls did not burst to the top even by end of June 2016. The Douglas trial was written off due to irrigation problems.

Two cultivars from Australia (Candia BG2D and Candia B2RF) submitted by Bayer, were again evaluated as well as three lines from the Agricultural Research Council – Institute for Industrial Crops (Jassid, Gariep VT1 and Gariep VT2). Cultivars from DeltaPINE Monsanto were DP210 BRF, Delta12 BRF, DP1531 B2RF, DP1541 B2RF, DP1240 B2RF, DP 1652 B2RF and PM 3225 B2RF. One American cultivar (Arkot 9704) and one from Pakistan (VH 260) were also evaluated for the first time.

Contributions of Farmers, Researchers and Technicians are greatly appreciated, and also a special word of thanks towards Cotton SA for determining the fibre qualities and for financial support.

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How to use the results:

Variety	DP210 BRF	Delta 12BRF BRF	PM3225 B2RF	Gariep VT1
Yield (kg/ha)	3689	3156	2922	2367
Fibre %	41.2	42.4	41.8	45.9
Fibre Yield	1540	1326	1220	923
Length (mm)	29.8	29.8	29.4	27.5
Uniformity	85.1	86.2	85.1	84.7
Strength (g/tex)	33.6	34.4	34.7	29.3
Elongation	4.9	5.0	4.7	7.6
Micronaire	4.4	4.3	4.4	4.9
Maturity	.90	.90	.91	.94

Yield and quality data. Quality data obtained from HVI testing at Cotton SA.



Parameter	Tukey's LSD (p=0.05)	CV (%)
Yield (kg/ha)	1611	26.6
Fibre %	4.9	5.7
Fibre yield	707.7	27.6
Length	2.5	2.6
Uniformity	3.2	1.2
Strength	4.7	4.6
Elongation	2.2	11.5
Micronaire	0.6	5.0
Maturity	0.02	0.8

LSD = Least significant difference. (Will only differ if you have a significant result from ANOVA)

CV = Coefficient of variance (or Relative standard deviation) is a standard measure of dispersion of a probability distribution or frequency distribution

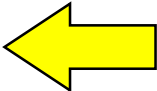


Table 1. Entries used in the national cotton cultivar trials at the different localities under irrigation conditions

Douglas	Upington	Loskop	Vaalharts	Weipe
DP210 BRF	DP210 BRF	DP210 BRF	DP210 BRF	DP210 BRF
Delta12 BRF	Delta12 BRF	Delta12 BRF	Delta12 BRF	Delta12 BRF
DP1531 B2RF	DP1531 B2RF	DP1531 B2RF	DP1531 B2RF	DP1531 B2RF
DP1541 B2RF	DP1541 B2RF	DP1541 B2RF	DP1541 B2RF	DP1541 B2RF
DP1240 B2RF	DP1240 B2RF	DP1240 B2RF	DP1240 B2RF	DP1240 B2RF
Gariep VT1	Gariep VT1	Candia BG2D	Gariep VT1	Candia BG2D
Gariep VT2	Gariep VT2	Candia B2RF	Gariep VT2	Candia B2RF
Candia BG2D	Candia BG2D	Jassid	Candia BG2D	Jassid
Candia B2RF	Candia B2RF	Arkot 9704	Candia B2RF	Arkot 9704
Jassid	Jassid	VH 260	Jassid	VH 260
Arkot 9704	Arkot 9704		Arkot 9704	
VH 260	VH 260		VH 260	

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

Makhathini	Roedtan	Stella
DP210 BRF	DP210 BRF	DP210 BRF
Delta12 BRF	Delta12 BRF	Delta12 BRF
PM 3225 B2RF	DP1531 B2RF	DP1531 B2RF
DP1531 B2RF	DP1541 B2RF	DP1541 B2RF
DP1541 B2RF	DP1240 B2RF	DP1240 B2RF
DP1240 B2RF	DP 1652 B2RF	DP 1652 B2RF
DP 1652 B2RF	DP 1652 B2RF	DP 1652 B2RF
Candia BG2D	Candia BG2D	Candia BG2D
Candia B2RF	Candia B2RF	Candia B2RF
Jassid	Jassid	Jassid
Arkot 9704	Arkot 9704	Arkot 9704
VH 260	VH 260	VH 260

Table 3. Trial localities and planting dates

Province	Locality + Responsible person	Cell number	Dryland / Irrigation	Planting date
Limpopo	Groblersdal C Fourie	083 274 1951	Irrigation	21/10/2015
	Roedtan L Venter	082 388 0689	Dryland	12/11/2015
	Weipe J Willemse	083 236 7799	Irrigation	25/11/2015
KwaZulu-Natal	Makhathini J Steyn	082 898 5471	Dryland	24/11/2015
Northern-Cape	Vaalharts J Van Schalkwyk	073 801 0066	Irrigation	02/11/2015
	Stella G Cilliers	082 524 0642	Dryland	19/11/2015
	Upington K Lategan	071 857 5579	Irrigation	19/11/2015
	Douglas K Lategan	071 857 5579	Irrigation	18/11/2015

LOSKOP IRRIGATION

Loskop - Trial information	
Nitrogen (kg/ha)	3 topdressings @ 70 N, 70 N, and 40 N at 3, 6 and 8 weeks after planting
Phosphorus (kg/ha)	150 kg/ha Super phosphate
Potassium (kg/ha)	200 kg K ₂ SO ₄
Weed control	Manual
Irrigation	Central pivot

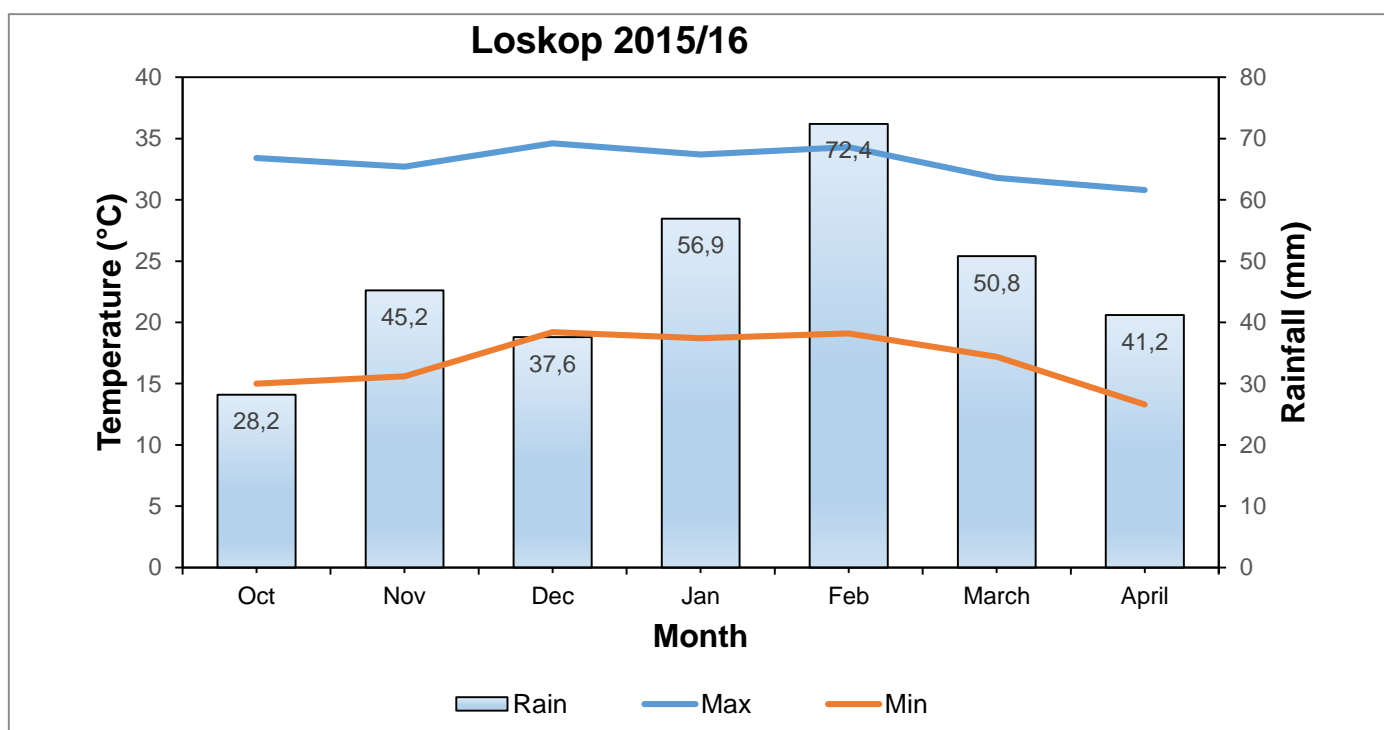


Figure 1. Minimum temperature (°C), maximum temperature (°C) and rainfall (mm) of the Loskop trial, 2015/2016

Table 4. Yield and fibre characteristics of the cotton cultivar trial planted under irrigation at Loskop, 2015/2016

Variety	DP210 BRF	Delta 12BRF	DP1531 B2RF	DP1541 B2RF	DP1240 B2RF	Candia B2RF	Candia BG2D	Jassid	Arkot 9704	VH260
Yield (kg/ha)	2866	2428	3254	4166	2699	2569	2546	3520	3057	3763
Fibre %	42.9	40.8	45.0	44.9	42.2	44.3	44.2	39.8	43.3	44.6
Fibre Yield	1678	992	1468	1871	1138	1140	1127	1401	1316	1678
Length (mm)	30.7	29.9	29.7	29.7	30.5	30.6	30.3	29.0	28.5	27.2
Uniformity	83.9	83.6	84.6	84.8	84.2	84.0	83.5	84.1	83.4	82.9
Strength (g/tex)	30.1	28.8	29.7	30.0	31.6	29.4	26.7	28.9	27.5	26.6
Rd	79.6	79.7	79.8	79.4	78.0	80.9	80.2	78.9	78.5	77.0
Plus b	7.1	6.7	6.8	7.3	8.0	6.7	7.0	7.6	7.6	7.7
Micronaire	4.4	4.1	4.9	4.9	4.5	3.3	3.4	5.0	4.8	4.6
Maturity	0.8	0.8	0.9	0.9	0.9	0.8	0.8	0.9	0.8	0.8
Parameter	Tukey's LSD (p<0.05)		CV (%)							
Yield (kg/ha)	666.6		14.8							
Fibre %	1.4		2.3							
Fibre yield	284.5		14.7							
Length	1.4		3.2							
Uniformity	1.0		1.4							
Strength	2.0		4.8							
RD	2.2		1.4							
+ B	0.5		3.6							
Micronaire	0.3		4.3							
Maturity	0.01		0.7							

Table 5. Colour grades of the NCP cotton trial at Loskop, 2015/2016

Cultivar	Rep 1	Rep 2	Rep 3	Rep 4
DP210 BRF	31-1	31-2	31-1	41-1
Delta12 BRF	31-2	31-2	31-2	31-2
DP1531 B2RF	41-1	31-2	31-1	31-1
DP1541 B2RF	31-1	31-2	31-2	31-1
DP1240 B2RF	31-1	31-1	31-1	31-1
Candia BG2D	31-1	31-1	31-1	31-2
Candia B2RF	31-1	31-1	41-1	31-1
Jassid	31-1	31-2	31-1	31-1
Arkot 9704	31-2	31-2	31-1	31-2
VH 260	41-1	31-1	31-2	41-1

Yield parameters

From Table 4 it can be seen that cultivars differed significantly regarding all three of the yield parameters. The cultivar, DP1541 B2RF produced the highest seed cotton yield of 4166 kg/ha followed by VH260 with 3763 kg/ha. The cultivar DP1541 B2RF produced the highest fibre yield of 1871 kg/ha followed by VH260 with 1678 kg/ha. The cultivar, DP 1531 produced the highest fibre percentage of 45.0% followed by DP1541 B2RF with 44.9% (Figures 2 – 4).

Quality parameters

From Table 4 it can be seen that cultivars differed significantly regarding fibre length, fibre strength and micronaire. The cultivars, DP210 BRF produced the longest fibre of 30.7 mm followed by Candia B2RF with 30.6 mm. DP1240 B2RF produced the strongest fibre of 31.6 g/tex followed by DP210 BRF with 30.1 g/tex. The cultivars, Candia B2RF and Candia BG2D produced the lowest micronaire values of 3.3 and 3.4 respectively. Jassid had the highest micronaire value of 5.0. The rest were in the acceptable range (Figures 5 – 7).

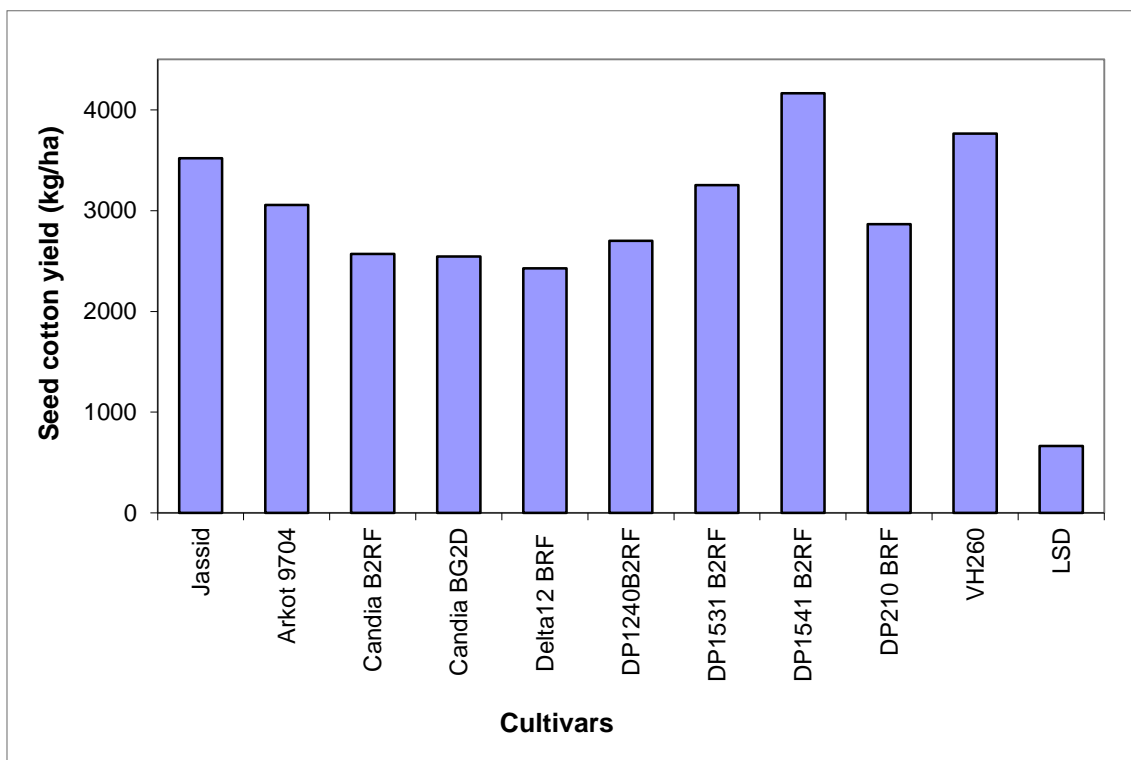


Figure 2. Seed cotton yield (kg/ha) of cotton cultivars planted under irrigation at Loskop, 2015/2016

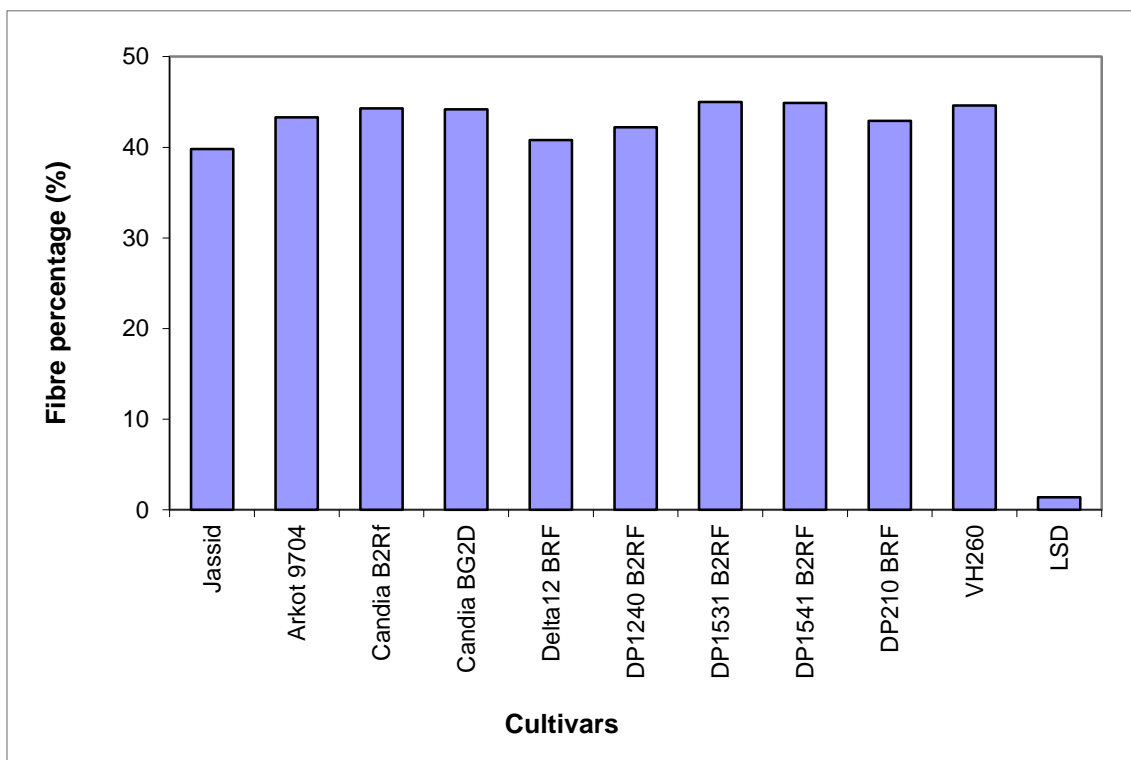


Figure 3. Fibre percentage (%) of cotton cultivars planted under irrigation at Loskop, 2015/2016

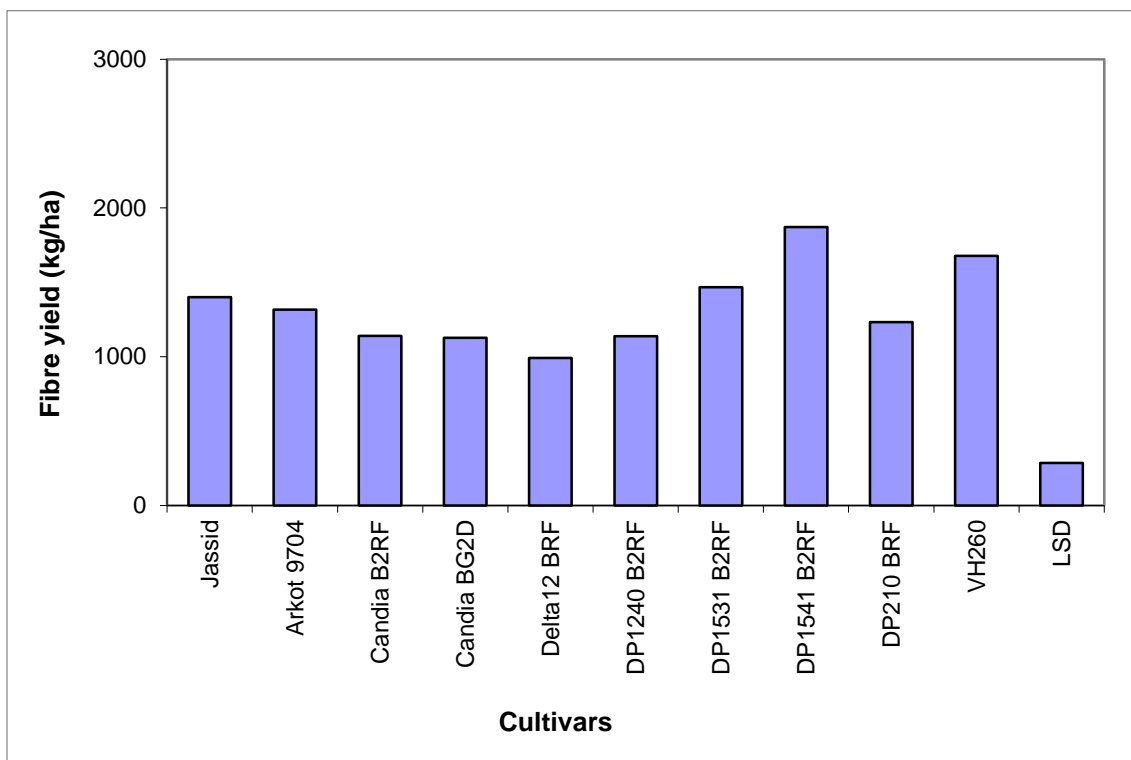


Figure 4. Fibre yield (kg/ha) of cotton cultivars planted under irrigation at Loskop, 2015/2016

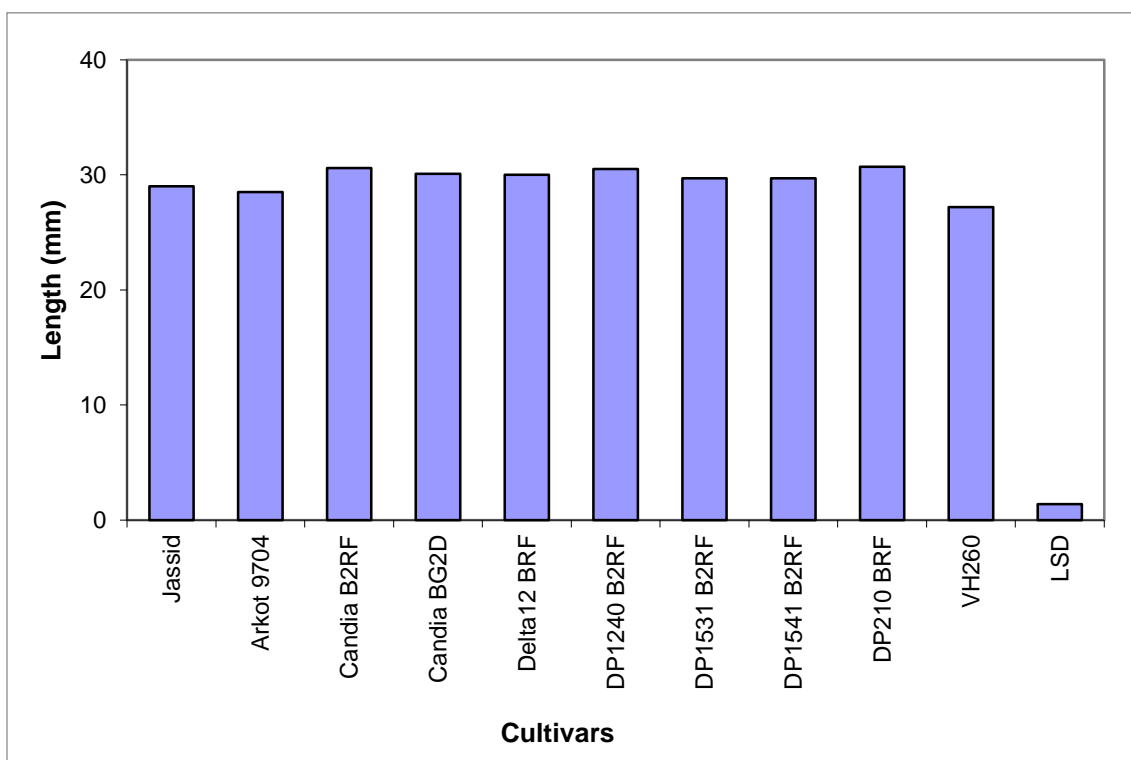


Figure 5. Length (mm) of cotton cultivars planted under irrigation at Loskop, 2015/2016

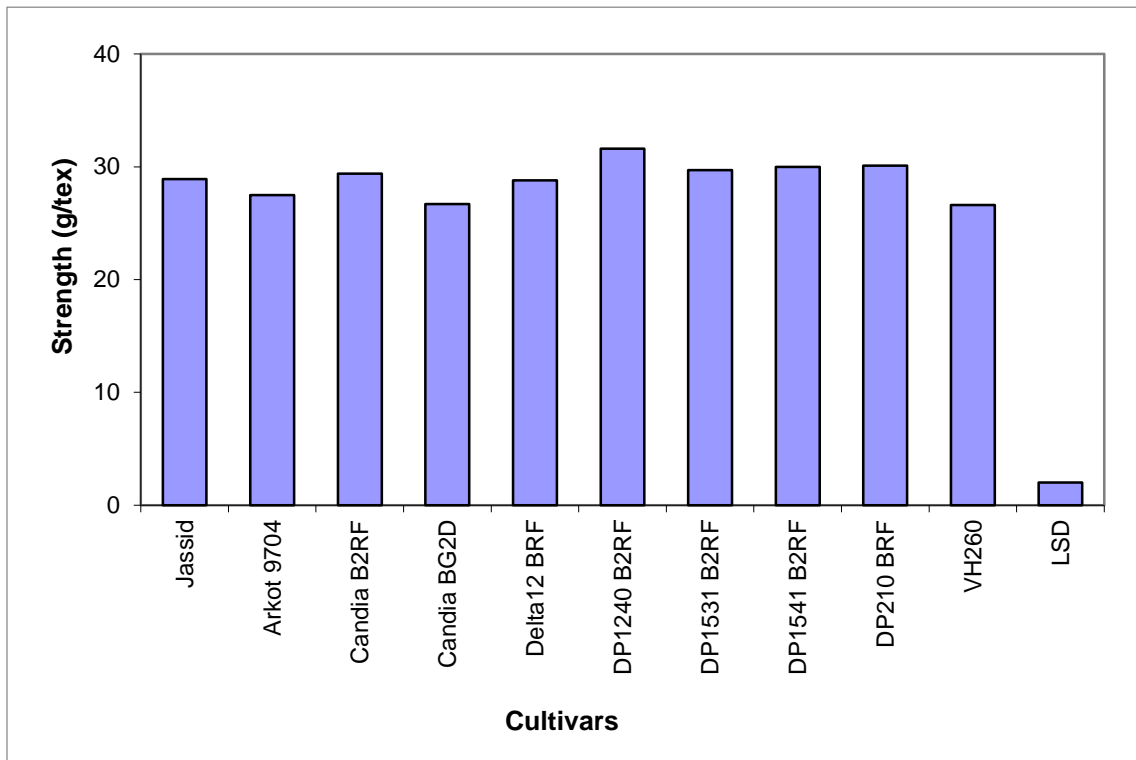


Figure 6. Strength (g/tex) of cotton cultivars planted under irrigation at Loskop, 2015/2016

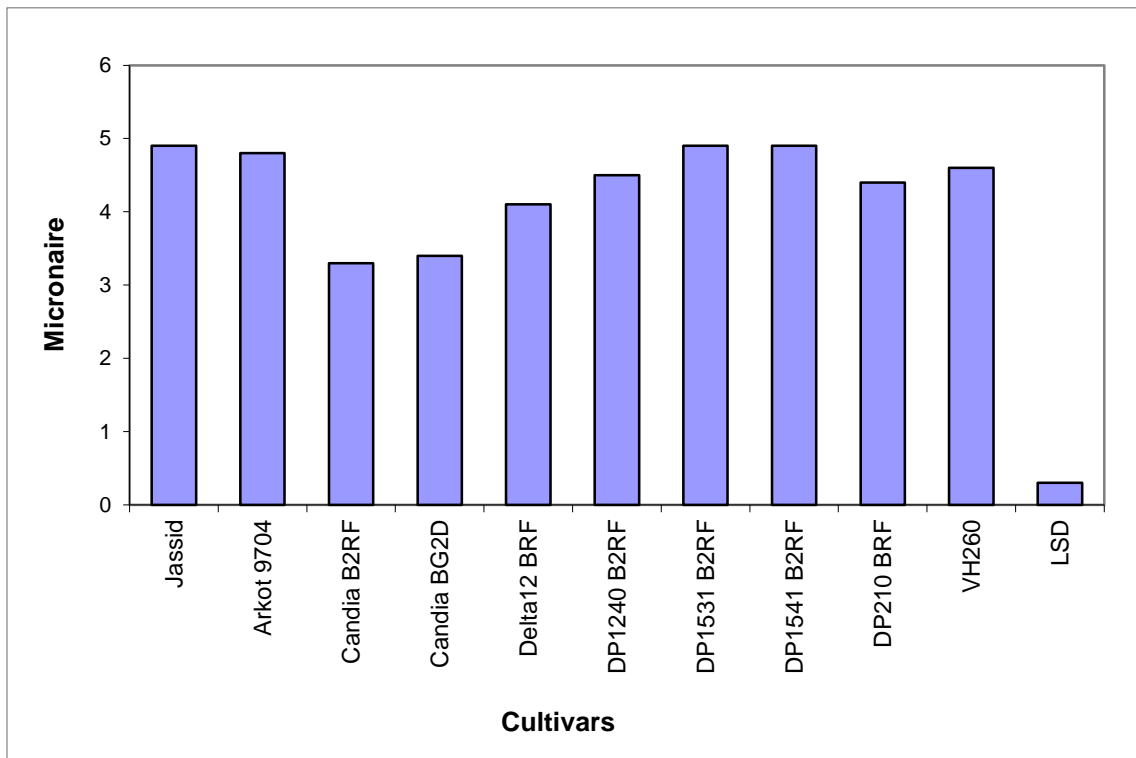


Figure 7. Micronaire of cotton cultivars planted under irrigation at Loskop, 2015/2016

MAKHATHINI DRYLAND

Makhathini – Trial information	
Nitrogen (kg/ha)	0
Phosphorus (kg/ha)	0
Potassium (kg/ha)	0
Weed control	Manual
Irrigation	Rainfed

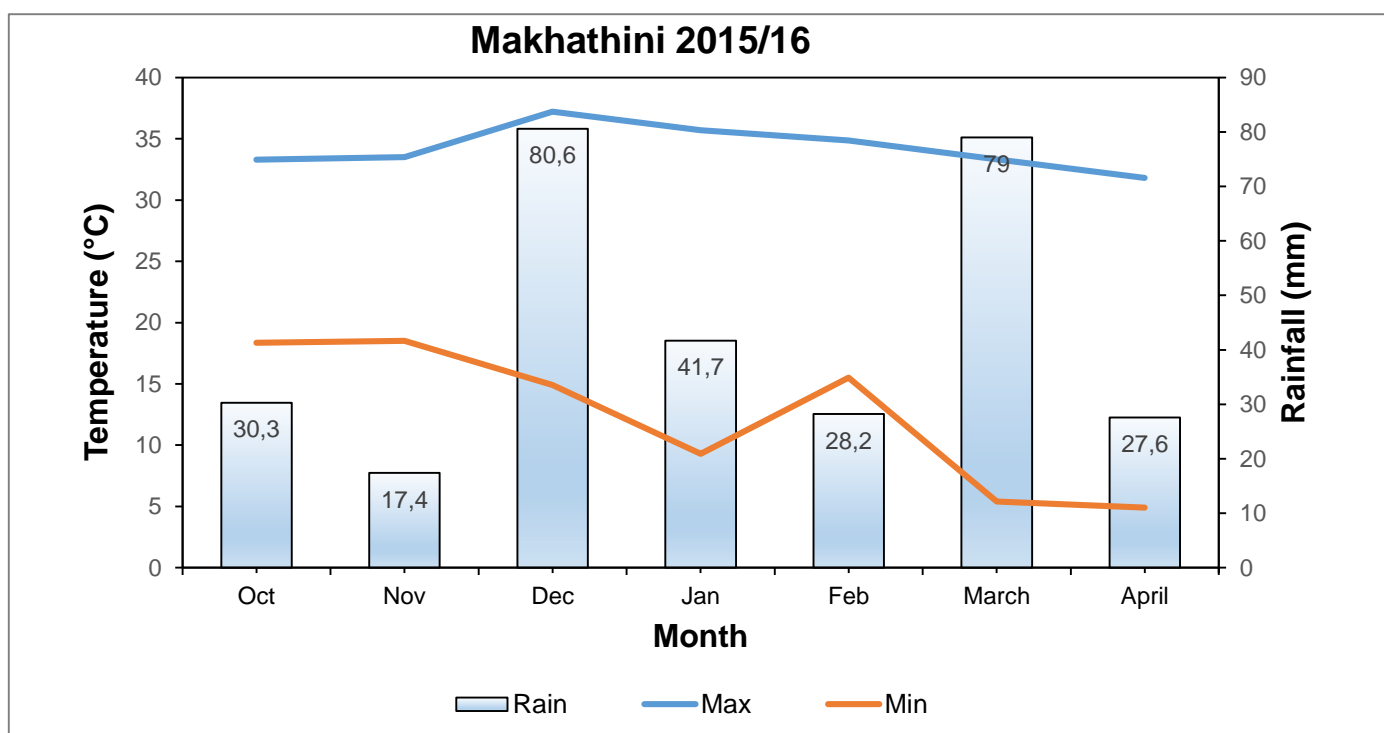


Figure 8. Minimum temperature (°C), maximum temperature (°C) and rainfall (mm) of the Makhathini trial, 2015/2016

Table 6. Fibre characteristics of the cotton cultivar trial planted under dryland at Makhathini, 2015/2016

Variety	DP210 BRF	Delta12 BRF	PM3225 B2RF	DP1531 B2RF	DP1541 B2RF	DP1240 B2RF	DP1652 B2RF	Candia BG2D	Candia B2RF	Jassid	Arkot 9704	VH260
Yield (kg/ha)	885	1190	706	602	790	839	825	990	663	498	667	616
Pick 1 %	23.6	31.6	40.3	28.2	33.3	25.8	42.3	8.0	30.3	13	22.7	36.5
Fibre %	40.5	39.6	42.4	44.3	44.2	40.2	41.4	44.0	45.1	40.2	44.7	42.7
Fibre Yield	358.3	471.0	299.1	265.5	347.8	334.1	341.2	433.3	300.7	200.1	298.9	261.9
Length (mm)	28.5	26.9	23.5	27.2	26.6	27.2	25.6	26.5	25.5	25.1	23.7	22.9
Uniformity	82.3	82.4	78.7	82.3	82.4	82.5	80.4	81.3	78.9	80.4	78.8	78.5
Strength (g/tex)	28.1	24.7	26.7	28.0	27.8	29.5	25.0	27.1	25.4	27.1	24.0	23.9
Rd	80.9	83.2	79.0	82.2	80.6	78.6	80.7	82.7	82.7	79.7	78.8	79.0
Plus b	9.5	8.8	10.0	9.1	9.7	10.3	9.5	9.0	9.1	9.4	10.0	10.2
Micronaire	4.6	4.4	4.3	4.8	4.8	4.8	4.7	3.7	3.9	4.5	4.9	4.4
Maturity	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.9	0.9	0.9

Parameter	Tukey's LSD (p<0.05)	CV (%)
Yield (kg/ha)	431.8	33.0
Pick 1 %	23.2	49.0
Fibre %	1.3	3.5
Fibre Yield	86.8	31.4
Length	2.3	5.3
Uniformity	3.2	2.3
Strength	3.1	10.0
RD	1.2	0.9
+ B	0.5	2.9
Micronaire	0.5	6.7
Maturity	0.01	0.9

Table 7. Colour grades of the NCP cotton trial at Makhathini, 2015/2016

Cultivar	Rep 1	Rep 2	Rep 3
DP210 BRF	11-1	11-1	11-1
Delta12 BRF	11-1	11-1	11-1
PM 3225 B2RF	11-4	12-2	12-1
DP1531 B2RF	11-1	11-1	11-1
DP1541 B2RF	11-3	11-1	11-1
DP1240 B2RF	12-2	11-4	12-2
DP1652 B2RF	11-1	11-1	11-3
Candia BG2D	11-1	11-1	-
Candia B2RF	11-1	11-1	11-1
Jassid	11-2	11-4	-
Arkot 9704	12-1	12-1	11-4
VH260	11-3	12-2	11-3

Yield parameters

From Table 6 it can be seen that cultivars did not differ significantly regarding seed cotton yield and pick 1 percentage. The cultivar, Delta12 BRF produced the highest seed cotton yield of 1190 kg/ha followed by Candia BG2D with 990 kg/ha. The cultivar, Candia B2RF had the highest fibre percentage of 45.1 %, followed by Arkot 9704 B2RF with 44.7 %. The cultivar, Delta12 BRF produced the highest fibre yield of 471.0 kg/ha followed by Candia BG2D with 433.3 kg/ha (Figures 9 - 11).

Quality parameters

From Table 6 it can be seen that cultivars differed significantly regarding fibre length (mm). The cultivar, DP 210 B2RF produced the longest fibre of 28.5 mm followed by DP1240 B2RF with fibre length of 27.2 mm. Cultivars did not differ significantly regarding fibre strength (g/tex). DP1240 B2RF produced the strongest fibre of 29.5 g/tex followed by DP 210 B2RF with fibre strength of 28.1 g/tex. Cultivars did not differ significantly regarding micronaire. All of the cultivars evaluated were in the acceptable range (Figures 12 – 14).

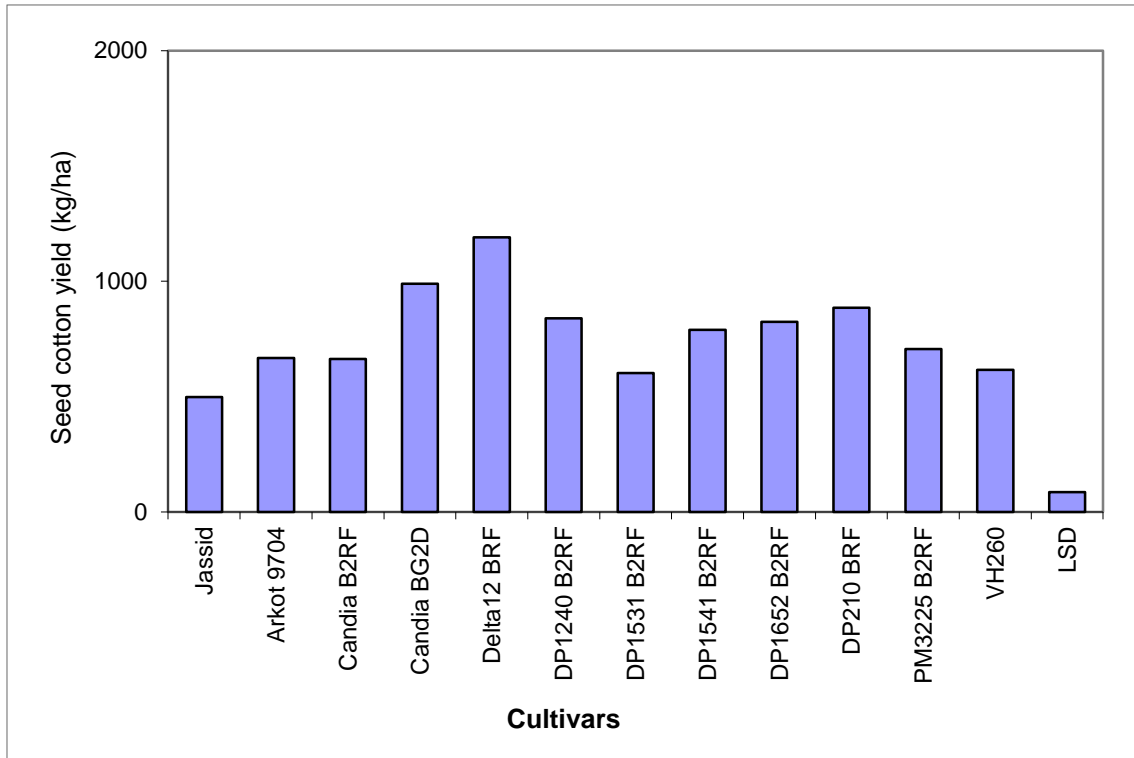


Figure 9. Seed cotton yield (kg/ha) of cotton cultivars planted under rainfed conditions at Makhathini, 2015/2016

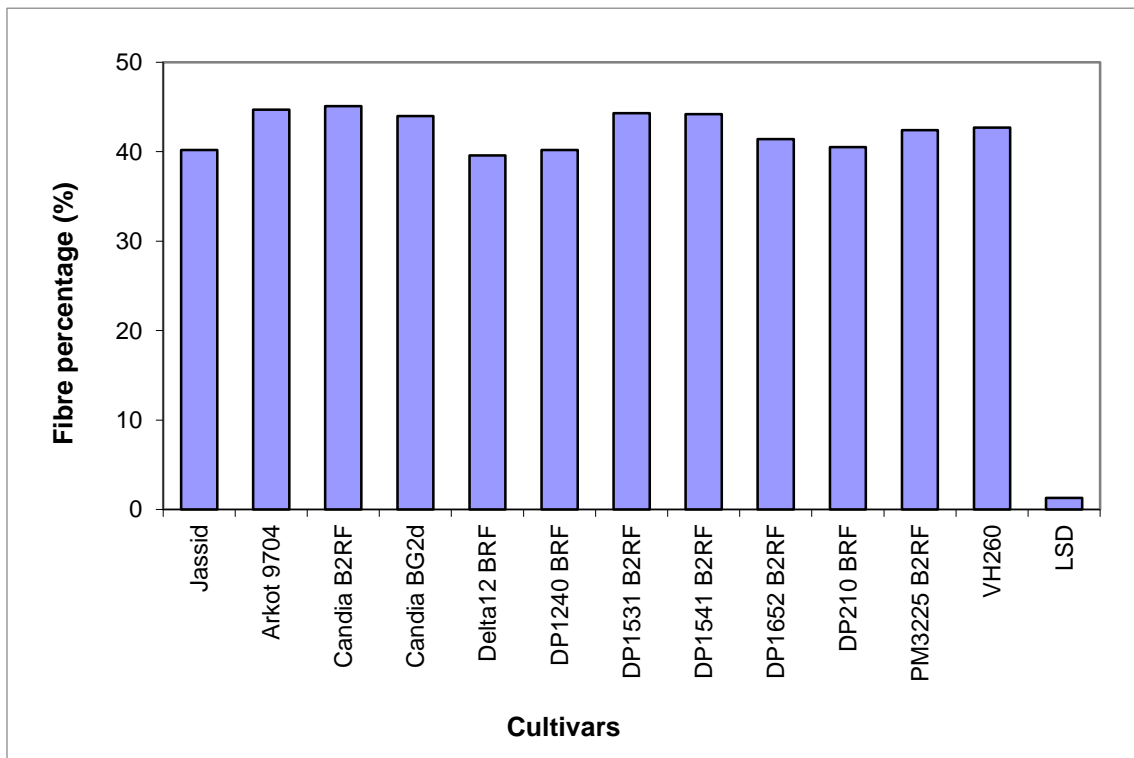


Figure 10. Fibre percentage (%) of the first pick of cotton cultivars planted under rainfed conditions at Makhathini, 2015/2016

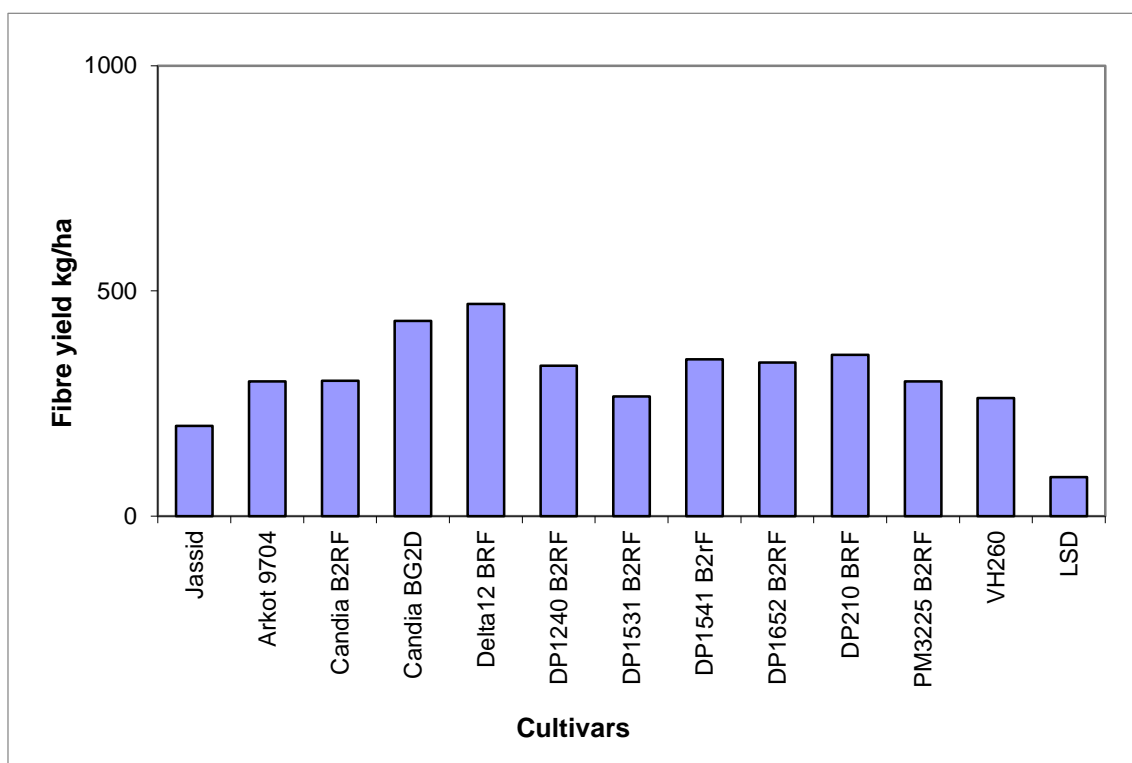


Figure 11. Fibre yield (kg/ha) of cotton cultivars planted under rainfed conditions at Makhathini, 2015/2016

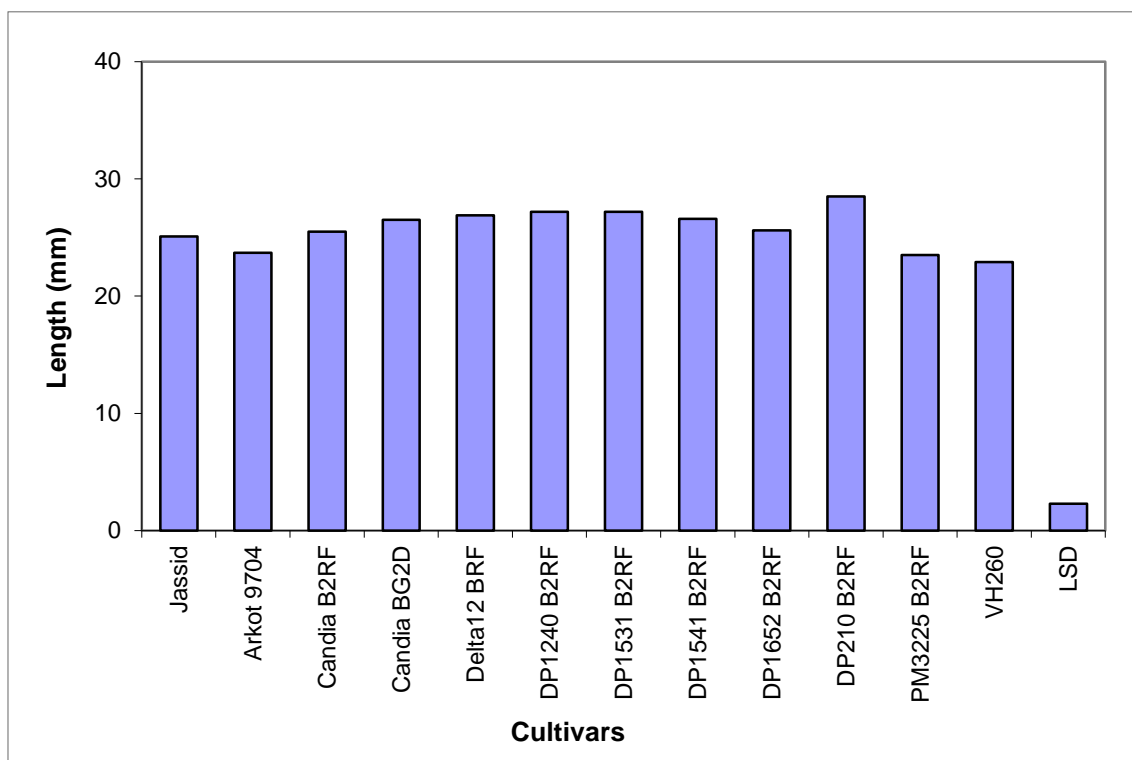


Figure 12. Length (mm) of cotton cultivars planted under rainfed conditions at Makhathini, 2015/2016

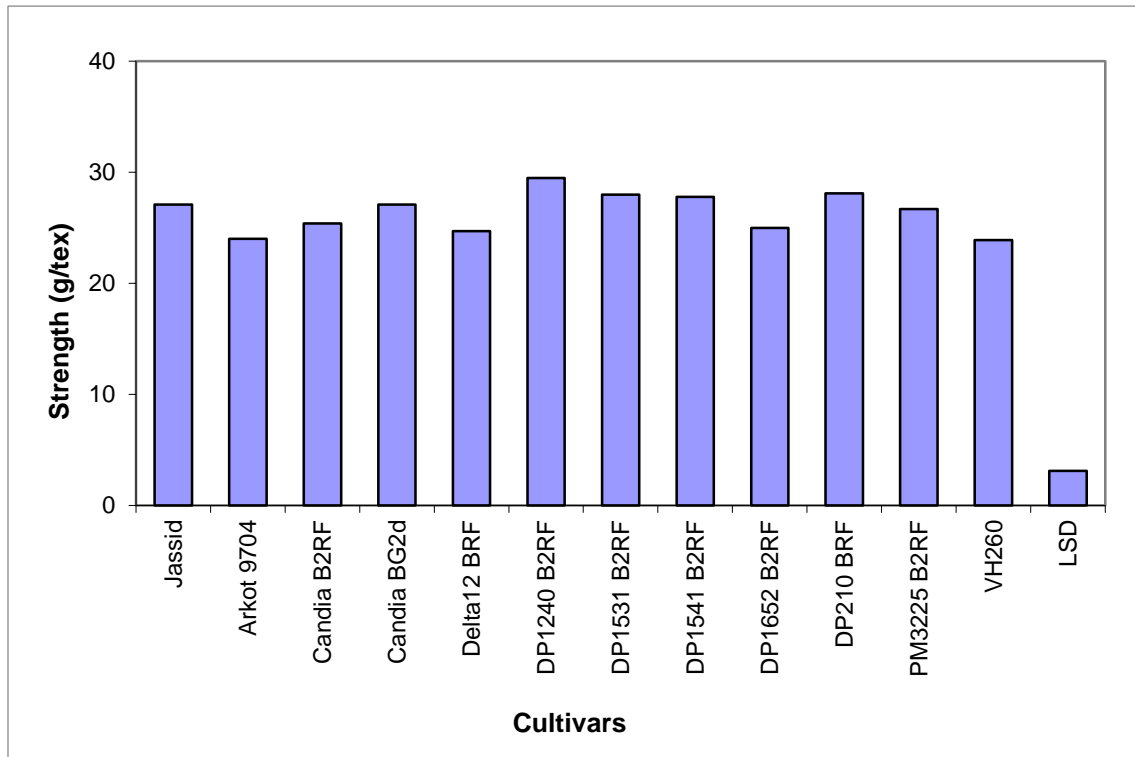


Figure 13. Strength (g/tex) of cotton cultivars planted under rainfed conditions at Makhathini, 2015/2016

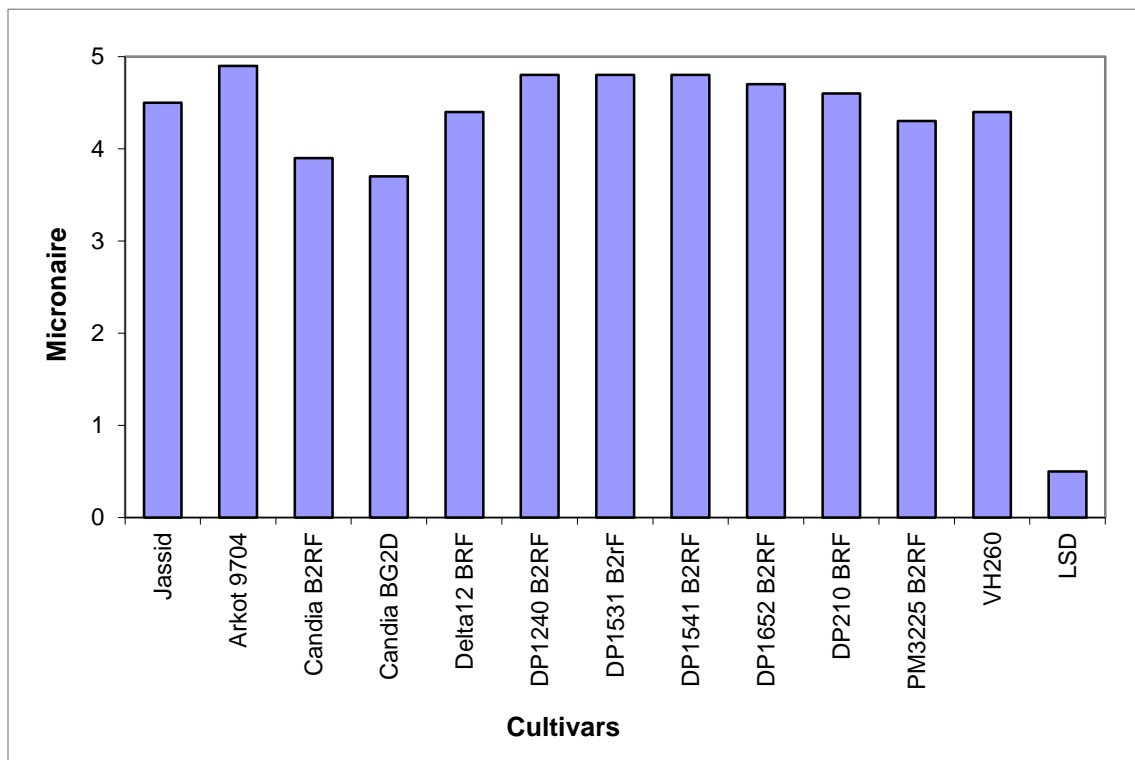


Figure 14. Micronaire of cotton cultivars planted under rainfed conditions at Makhathini, 2015/2016

VAALHARTS IRRIGATION

Trial information	
Nitrogen (kg/ha)	130 kg N/ha before planting. Top dressed with 60 kg N at 5 – 6 weeks and 7 – 8 weeks after planting.
Phosphorus (kg/ha)	100
Potassium (kg/ha)	70
Weed control	Manual
Irrigation	Flood irrigation

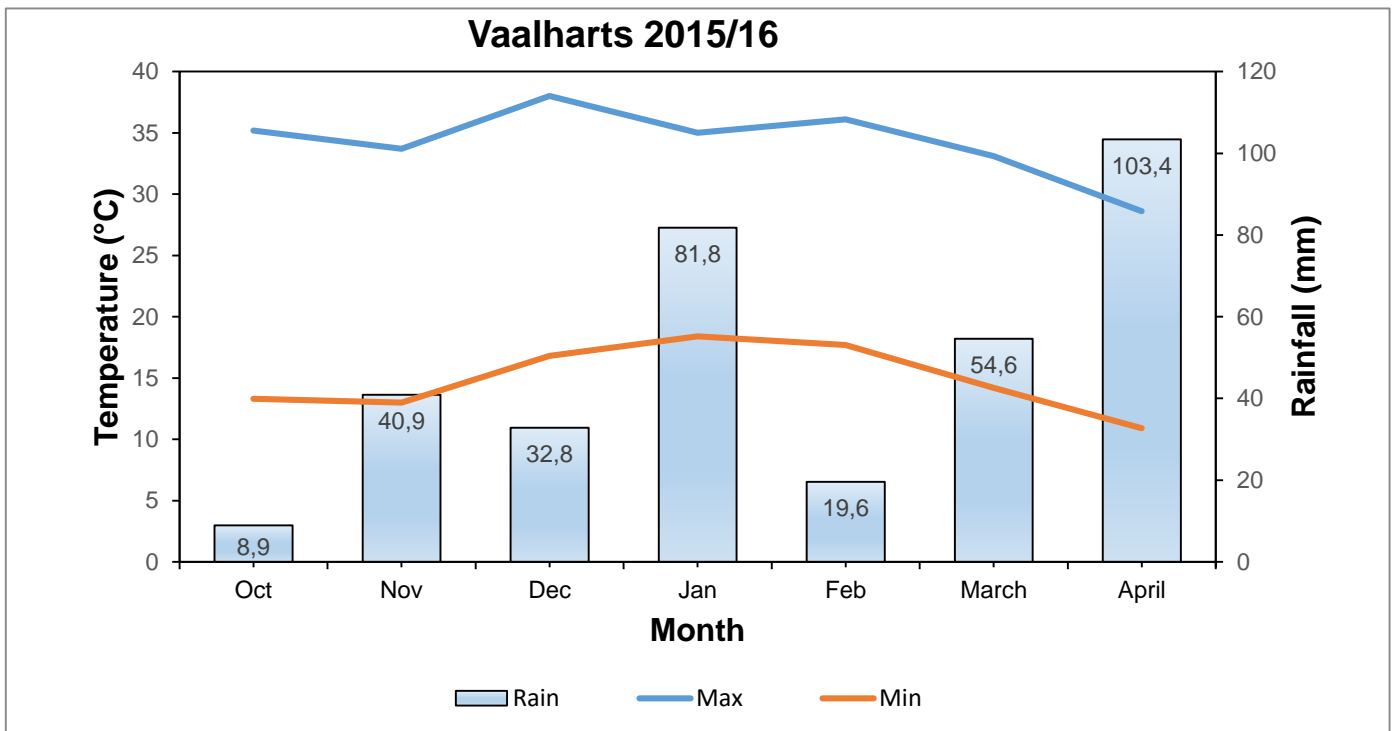


Figure 15. Minimum temperature (°C), maximum temperature (°C) and rainfall (mm) of the Vaalharts trial, 2015/2016

Table 8. Fibre characteristics of the cotton cultivar trial planted under irrigation at Vaalharts, 2015/2016

Variety	DP210 BRF	Delta12 BRF	DP1531 B2RF	DP1541 B2RF	DP1240 B2RF	Gariep VT1	Gariep VT2	Candia BG2D	Candia B2RF	Jassid	Arkot 9704	VH260
Yield (kg/ha)	4508	5307	5748	5022	5895	2507	2320	5432	5785	3419	4635	4581
Pick 1 %	92.6	91.6	95.5	93.3	83.8	66.7	66.8	92.4	90.5	73.3	78.3	83.3
Fibre %	40.3	37.1	42.8	44.0	39.2	40.1	40.7	42.6	43.6	38.2	40.7	42.4
Fibre Yield	1811	1963	2459	2206	2313	1012	944	2301	2506	1305	1888	1944
Length (mm)	30.6	29.4	30.4	29.4	30.1	28.8	28.2	30.3	30.6	29.0	29.2	28.1
Uniformity	82.5	81.8	82.8	83.1	83.6	84.1	83.1	81.5	83.0	82.9	83.3	82.6
Strength (g/tex)	28.5	27.7	28.6	29.8	30.8	28.6	28.5	28.6	28.6	28.5	27.0	27.0
Rd	80.4	80.9	80.9	81.2	81.0	79.9	80.9	81.3	81.3	80.3	80.3	78.9
Plus b	5.0	5.5	5.6	6.2	6.2	7.5	7.3	6.0	6.2	7.2	7.3	6.9
Micronaire	4.1	4.4	4.3	4.9	4.6	4.5	4.6	4.1	3.8	4.6	4.7	4.6
Maturity	0.8	0.9	0.8	0.9	0.9	0.9	0.9	0.9	0.8	0.9	0.9	0.9
Parameter	Tukey's LSD (p<0.05)		CV (%)									
Yield (kg/ha)	1276.1		16.4									
Pick 1 %	10.0		7.0									
Fibre %	2.3		3.3									
Fibre Yield	251.3		15.7									
Length	1.3		2.6									
Uniformity	0.9		1.2									
Strength	1.6		3.6									
RD	1.0		1.2									
+ B	1.2		10.8									
Micronaire	0.3		4.1									
Maturity	0.01		0.8									

Table 9. Colour grades of the NCP cotton trial at Vaalharts, 2015/2016

Cultivar	Rep 1	Rep 2	Rep 3
DP210 BRF	41-1	31-2	41-2
Delta12 BRF	31-2	31-2	41-1
DP1531 B2RF	41-1	41-1	31-2
DP1541 B2RF	41-1	31-2	31-1
DP1240 B2RF	31-1	31-1	41-1
Gariep VT1	31-1	31-1	31-1
Gariep VT2	31-1	31-1	31-1
Candia BG2D	41-1	31-1	31-1
Candia B2RF	31-2	31-1	-
Jassid	31-2	31-1	31-1
Arkot 9704	21-2	31-2	31-1
VH 260	31-2	31-1	41-1

Yield parameters

From Table 8 it can be seen that cultivars differed significantly regarding yield. The cultivar DP1240 B2RF produced the highest yield of 5895 kg/ha followed by Candia B2RF with 5785 kg/ha. Cultivar DP1541 B2RF produced the highest fibre percentage of 44.0 %, followed by Candia B2RF with 43.6 %. The cultivar Candia B2RF produced the highest fibre yield of 2506 kg/ha, followed by DP1531 B2RF with 2459 kg/ha (Figures 16 – 18).

Quality parameters

From Table 8 it can be seen that cultivars did not differ significantly regarding fibre length (mm). DP210 BRF and Candia B2RF both produced the longest fibre of 30.6 mm. Although cultivars did not differ significantly regarding fibre strength (g/tex), DP1240 B2RF produced the strongest fibre of 30.8 g/tex. Cultivars differed significantly regarding micronaire. All micronaire values of all cultivars evaluated fell within the acceptable limit of 3.5 to 4.9. (Figures 19 – 21).

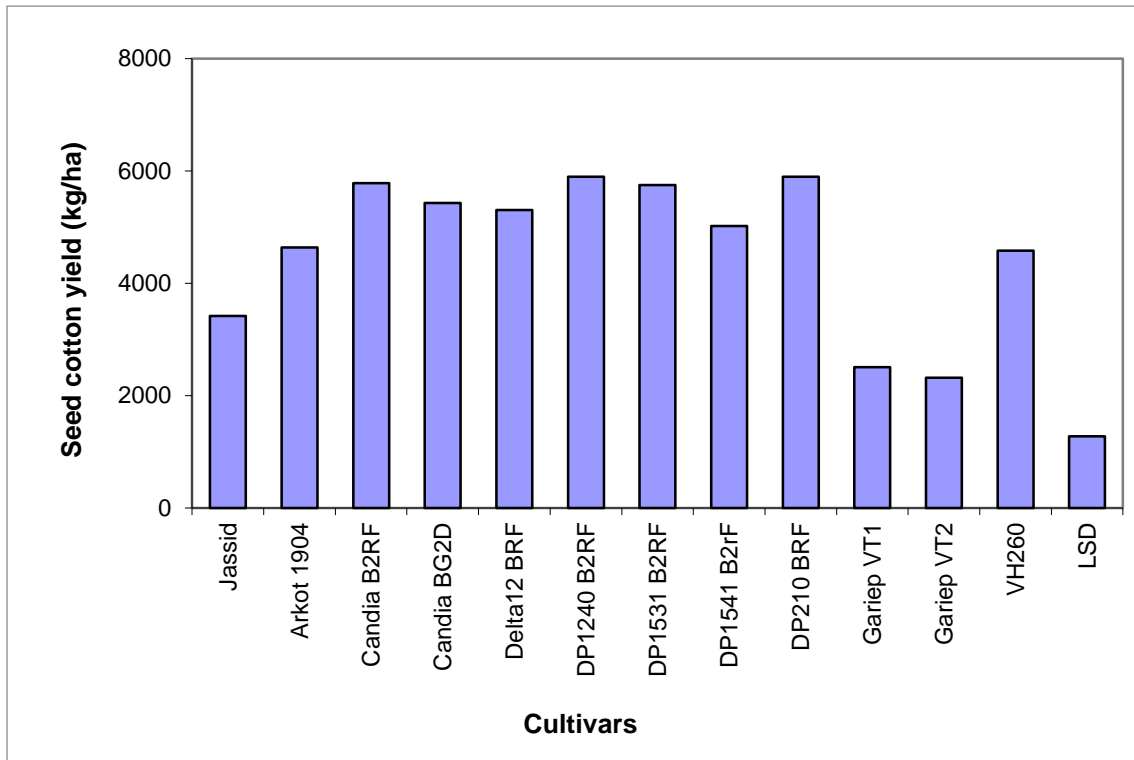


Figure 16. Seed cotton yield (kg/ha) of cotton cultivars planted under irrigation at Vaalharts, 2015/2016

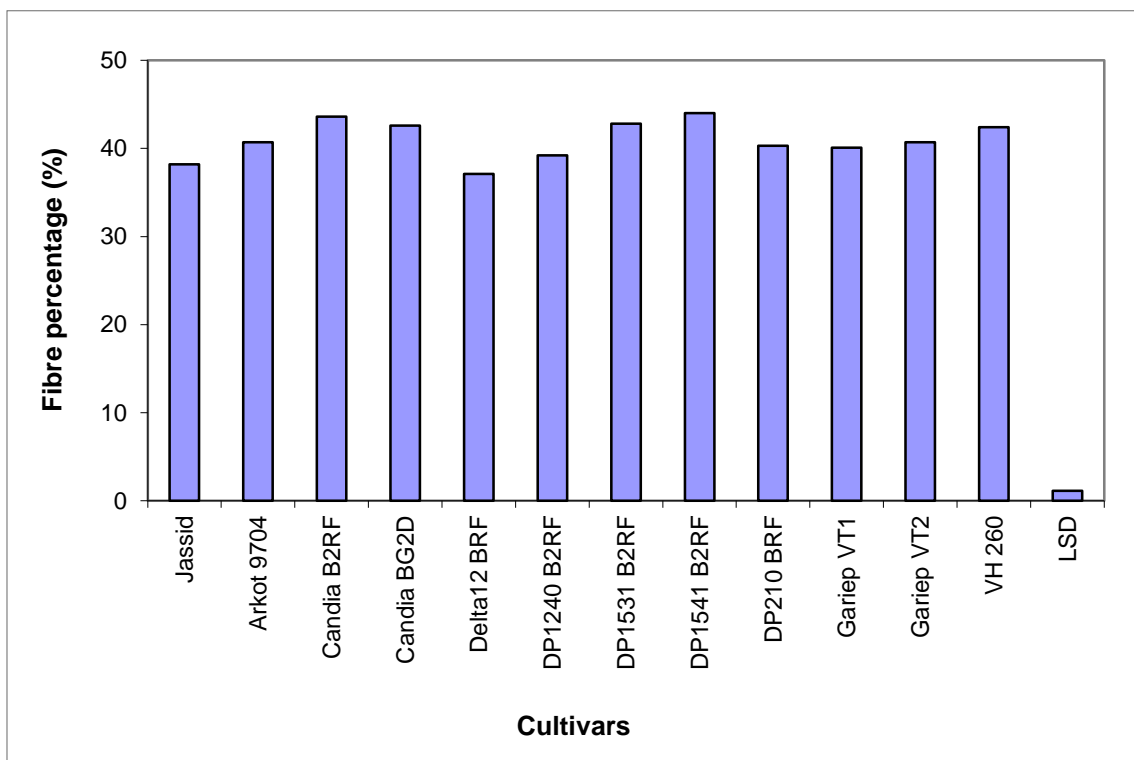


Figure 17. Fibre percentage (%) of cotton cultivars planted under irrigation at Vaalharts, 2015/2016.

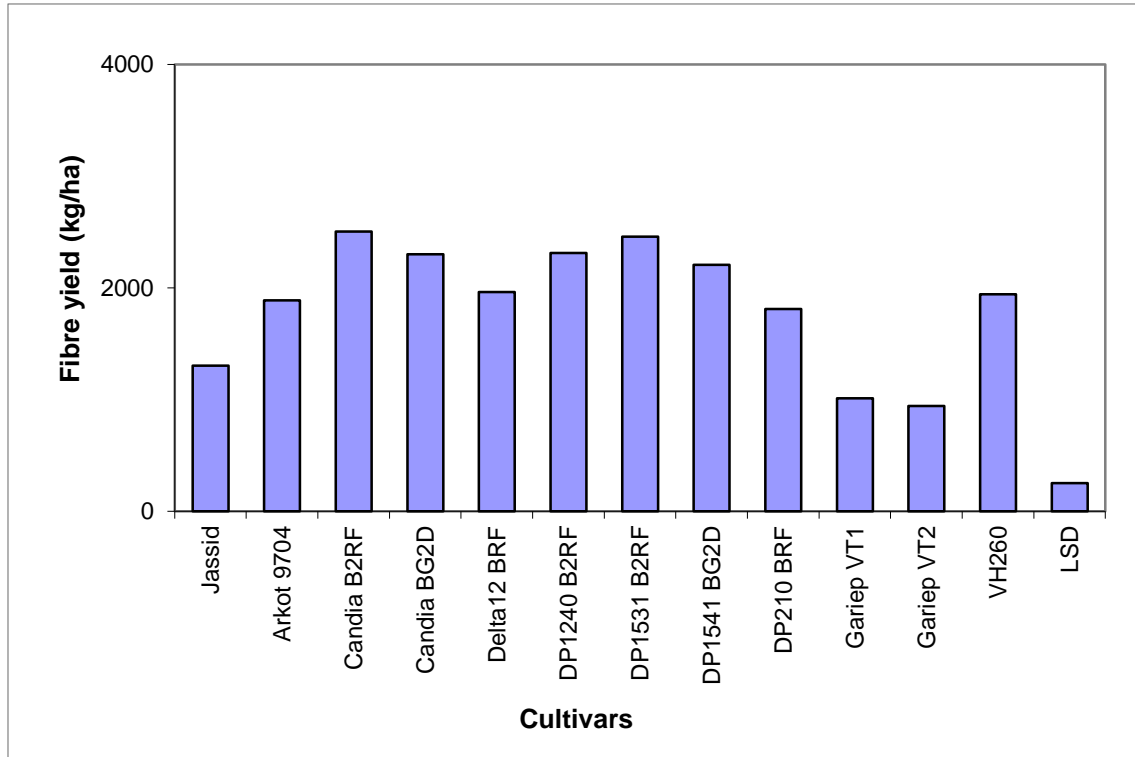


Figure 18. Fibre yield (kg/ha) of cotton cultivars planted under irrigation at Vaalharts, 2015/2016

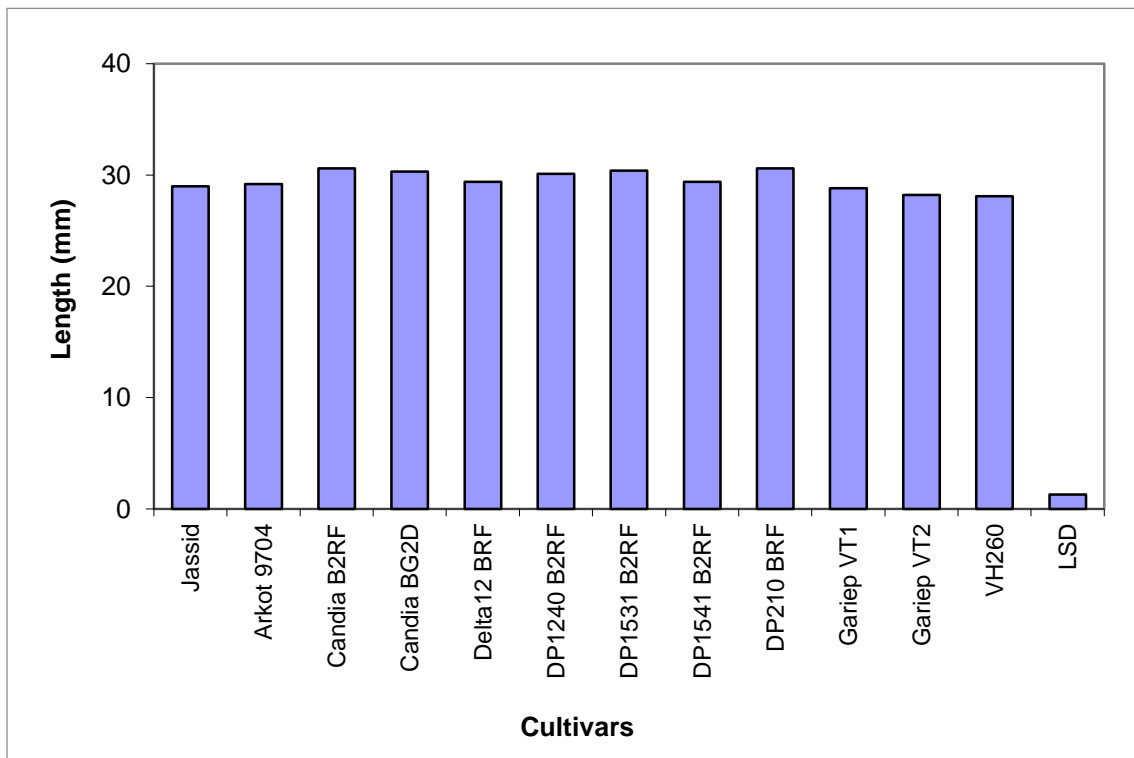


Figure 19. Length (mm) of cotton cultivars planted under irrigation at Vaalharts, 2015/2016

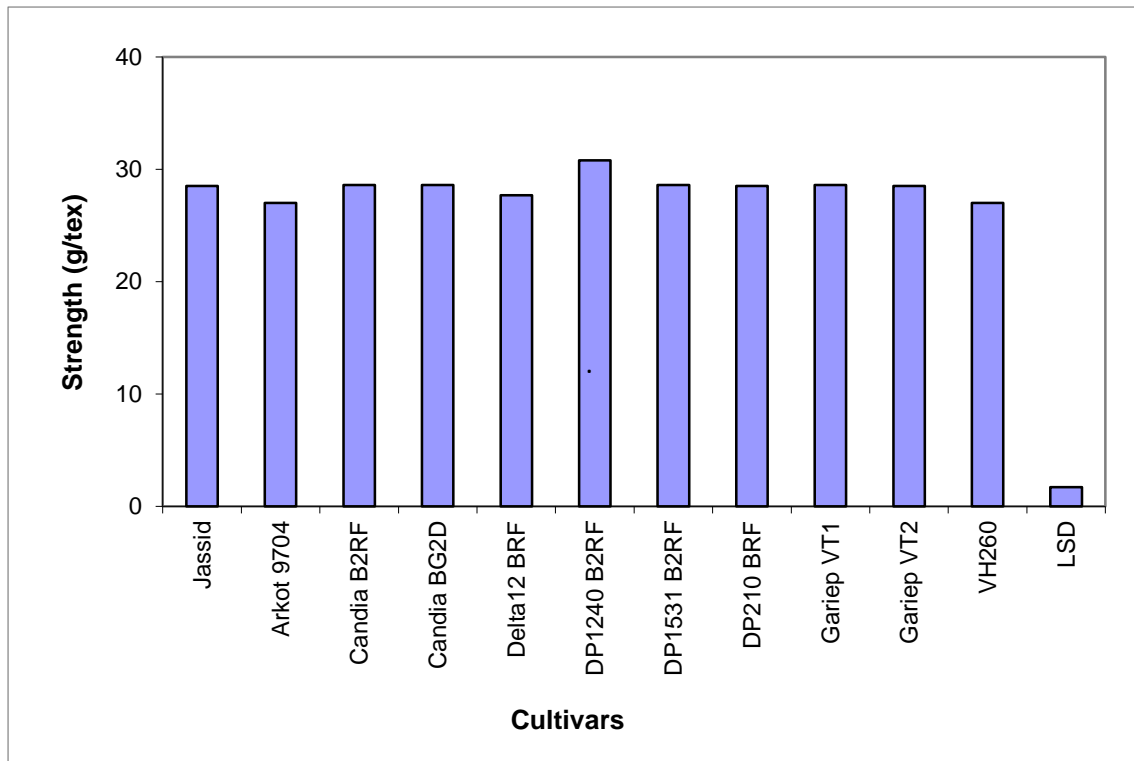


Figure 20. Strength (g/tex) of cotton cultivars planted under irrigation at Vaalharts, 2015/2016

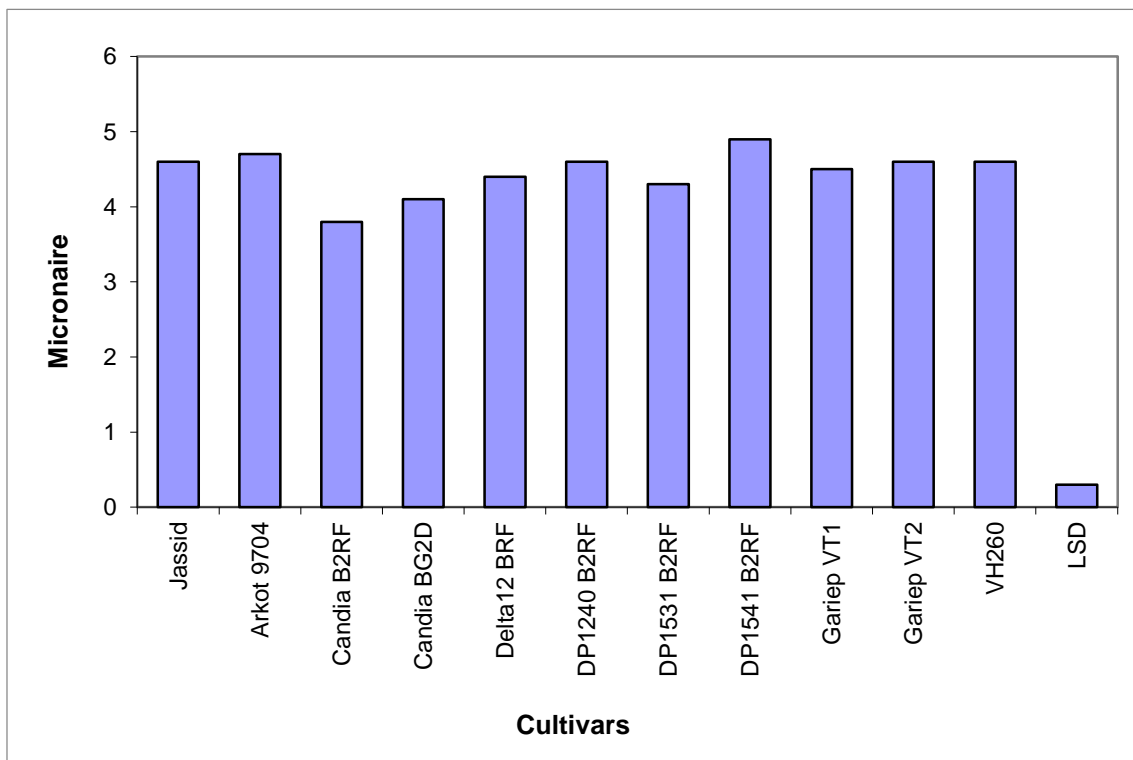


Figure 21. Micronaire of cotton cultivars planted under irrigation at Vaalharts, 2015/2016

WEIPE IRRIGATION

Weipe - Trial information	
Nitrogen (kg/ha)	160 N
Phosphorus (kg/ha)	30 P
Potassium (kg/ha)	80 K
Weed control	Manual
Irrigation	Central pivot

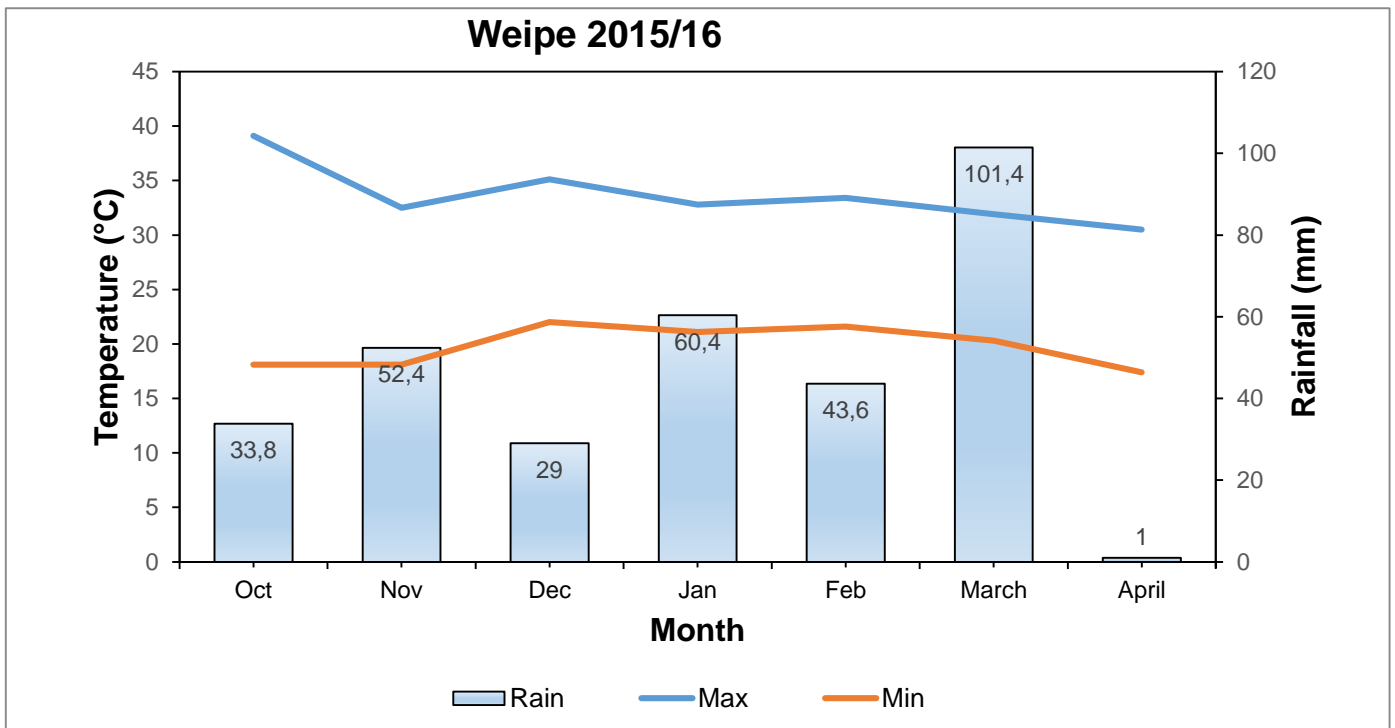


Figure 22. Minimum temperature (°C), maximum temperature (°C) and rainfall (mm) of the Weipe trial, 2015/2016

Table 10. Fibre characteristics of the cotton cultivar trial planted under irrigation at Weipe, 2015/2016

Variety	DP210 BRF	Delta12 BRF	DP1531 B2RF	DP1541 B2RF	DP1240 B2RF	Candia BG2D	Candia B2RF	Jassid	Arkot 9704	VH260
Yield (kg/ha)	2063	1659	1644	1641	1574	1326	1841	1025	1355	1348
Fibre %	42.0	40.9	45.1	45.0	42.3	43.9	44.2	40.1	43.2	44.5
Fibre Yield	866	680	740	737	666	581	814	410	583	599
Length (mm)	28.1	28.1	27.5	27.1	27.3	28.2	28.1	28.0	27.8	27.9
Uniformity	78.0	80.9	80.4	81.0	80.32	80.3	80.6	80.7	80.3	80.5
Strength (g/tex)	28.4	28.2	27.8	27.4	26.9	28.3	29.0	28.1	27.7	28.7
Rd	74.5	74.1	72.4	72.7	73.2	77.0	75.1	77.5	74.1	75.3
Plus b	6.5	6.9	7.0	7.1	7.0	6.6	6.7	6.8	6.6	7.2
Micronaire	4.7	4.9	5.0	5.2	4.0	4.5	4.5	4.1	4.7	4.8
Maturity	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Parameter	Tukey's LSD (p<0.05)		CV (%)							
Yield (kg/ha)	1038		25.9							
Fibre %	1.6		2.2							
Fibre Yield	456		25.5							
Length	1.0		4.2							
Uniformity	1.0		1.9							
Strength	1.8		5.9							
RD	1.9		2.9							
+ B	0.6		4.8							
Micronaire	0.4		9.1							
Maturity	0.01		1.1							

Table 11. Colour grades of the NCP cotton trial at Weipe, 2015/2016

Cultivar	Rep 1	Rep 2	Rep 3
DP 210 B2RF	41-2	41-2	41-2
Delta12 BRF	41-2	41-2	41-2
DP1531 B2RF	51-1	51-1	41-2
DP1541 B2RF	51-1	41-1	51-1
DP1240 B2RF	41-1	51-1	51-1
Candia BG2D	41-1	41-1	41-2
Candia B2RF	41-2	41-1	41-2
Jassid	41-1	-	41-1
Arkot 9704	41-1	41-2	51-1
VH 260	41-1	41-2	41-1

Yield parameters

From Table 10 it can be seen that cultivars did not differ significantly regarding yield. The cultivar DP210 BRF produced the highest yield of 2063 kg/ha followed by Candia B2RF with 1841 kg/ha. Cultivar DP1531 B2RF produced the highest fibre percentage of 45.1 %, followed by DP1541 B2RF with 45.0 %. The cultivar DP 210 B2RF produced the highest fibre yield of 866 kg/ha, followed by Candia B2RF with 814 kg/ha (Figures 23 – 25).

Quality parameters

From Table 10 it can be seen that cultivars did not differ significantly regarding fibre length (mm), fibre strength (g/tex) and micronaire. Cultivar Candia BG2D produced the longest fibre of 28.2 mm. Cultivars Candia B2RF produced the strongest fibre of 29.0 g/tex. All micronaire values of all cultivars evaluated fell within the acceptable limit of 3.5 to 4.9 except DP1531 B2RF and DP 1541 both with micronaire values of 5.0 and 5.2 respectively (Figures 26 – 28).

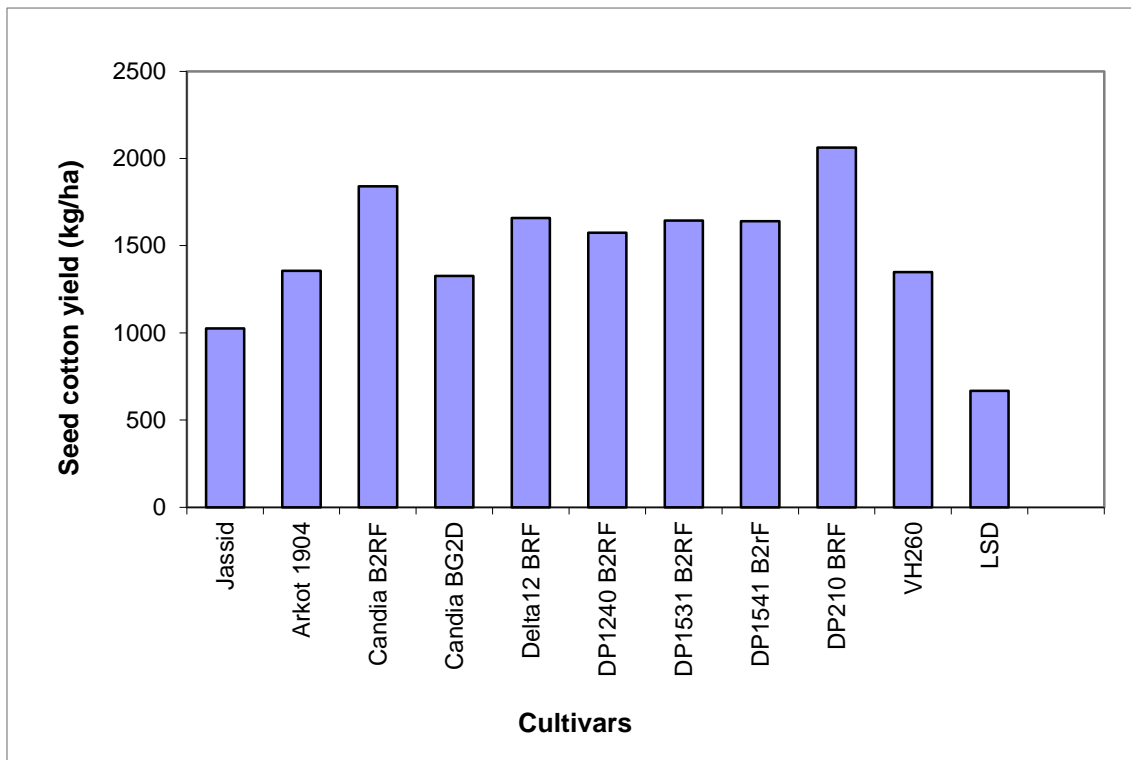


Figure 23. Seed cotton yield (kg/ha) of cotton cultivars planted under irrigation at Weipe, 2015/2016

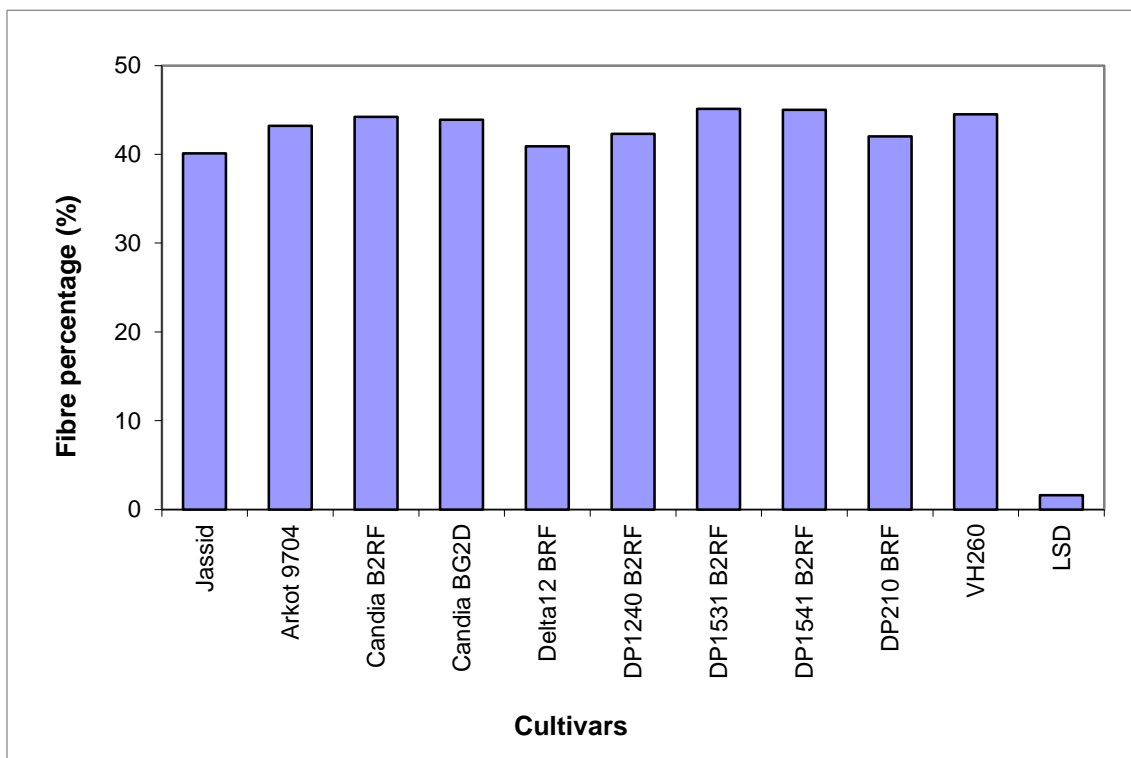


Figure 24. Fibre percentage (%) of cotton cultivars planted under irrigation at Weipe, 2015/2016

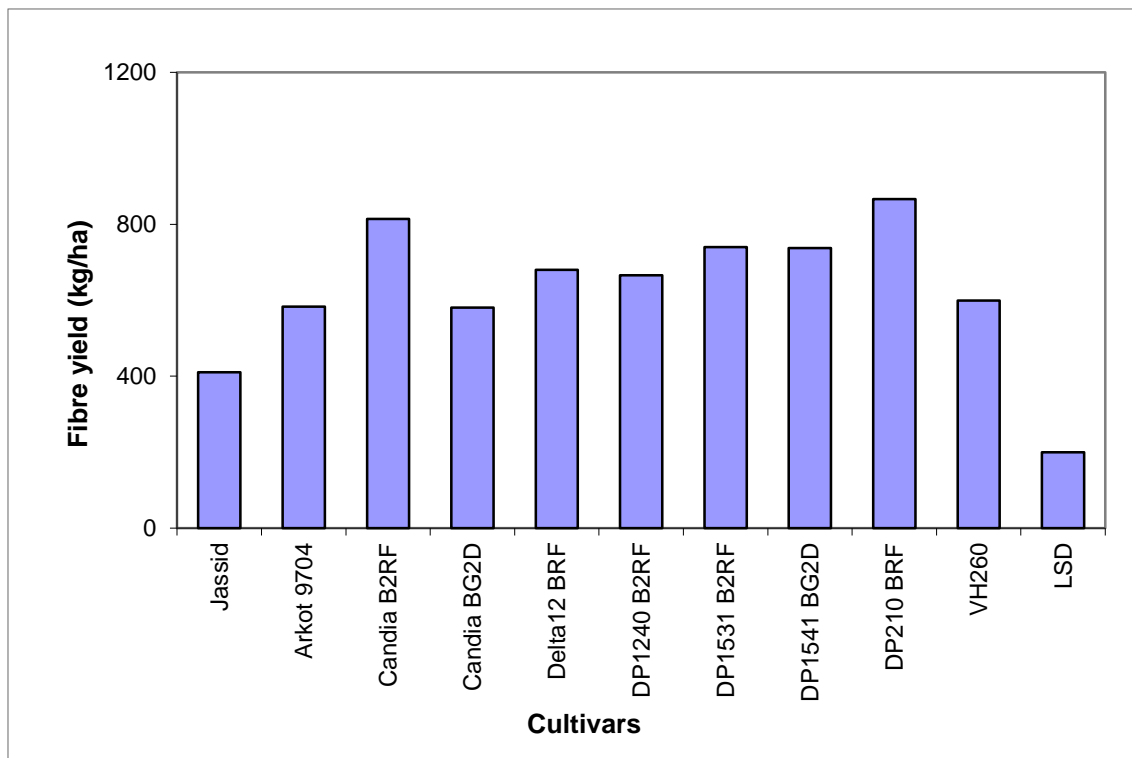


Figure 25. Fibre yield (kg/ha) of cotton cultivars planted under irrigation at Weipe, 2015/2016

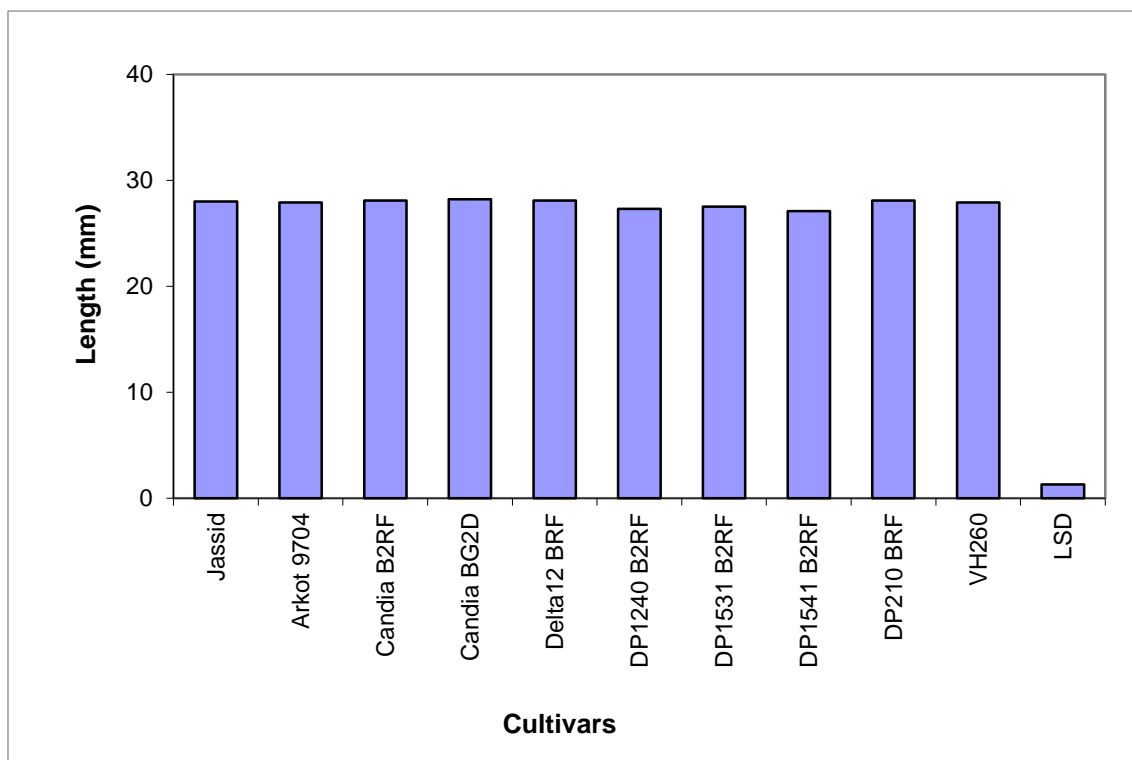


Figure 26. Length (mm) of cotton cultivars planted under irrigation at Weipe, 2015/2016

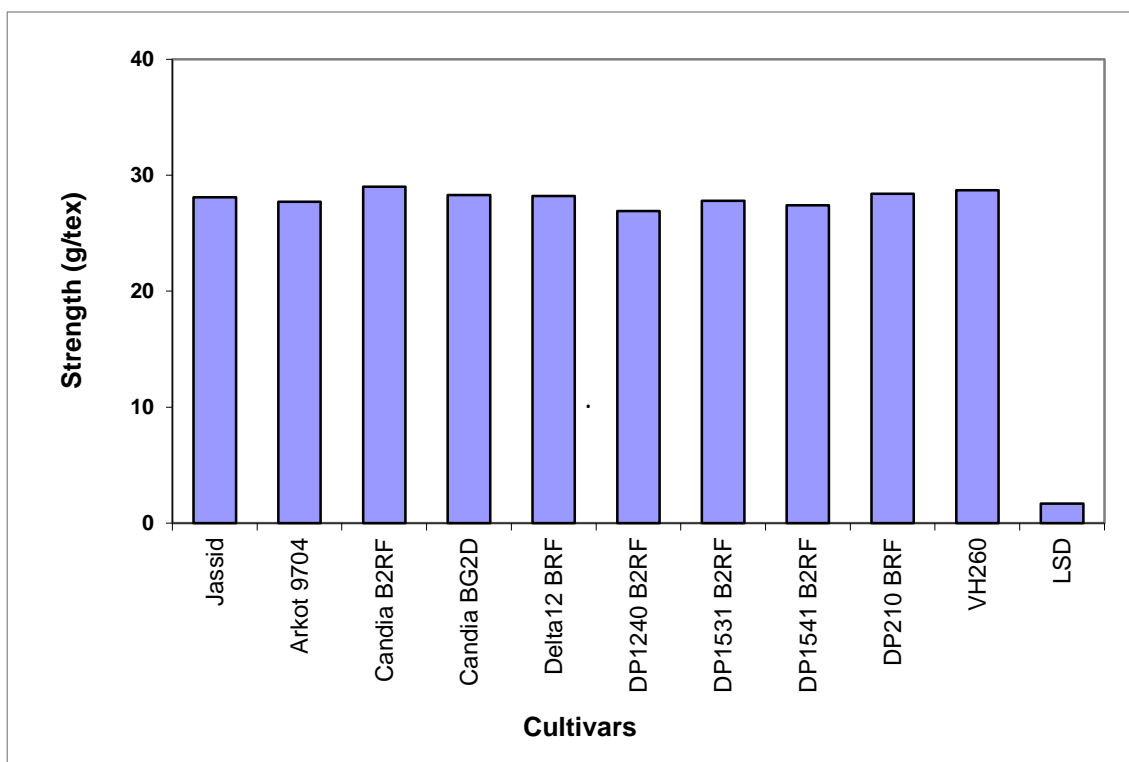


Figure 27. Strength (g/tex) of cotton cultivars planted under irrigation at Weipe, 2015/2016

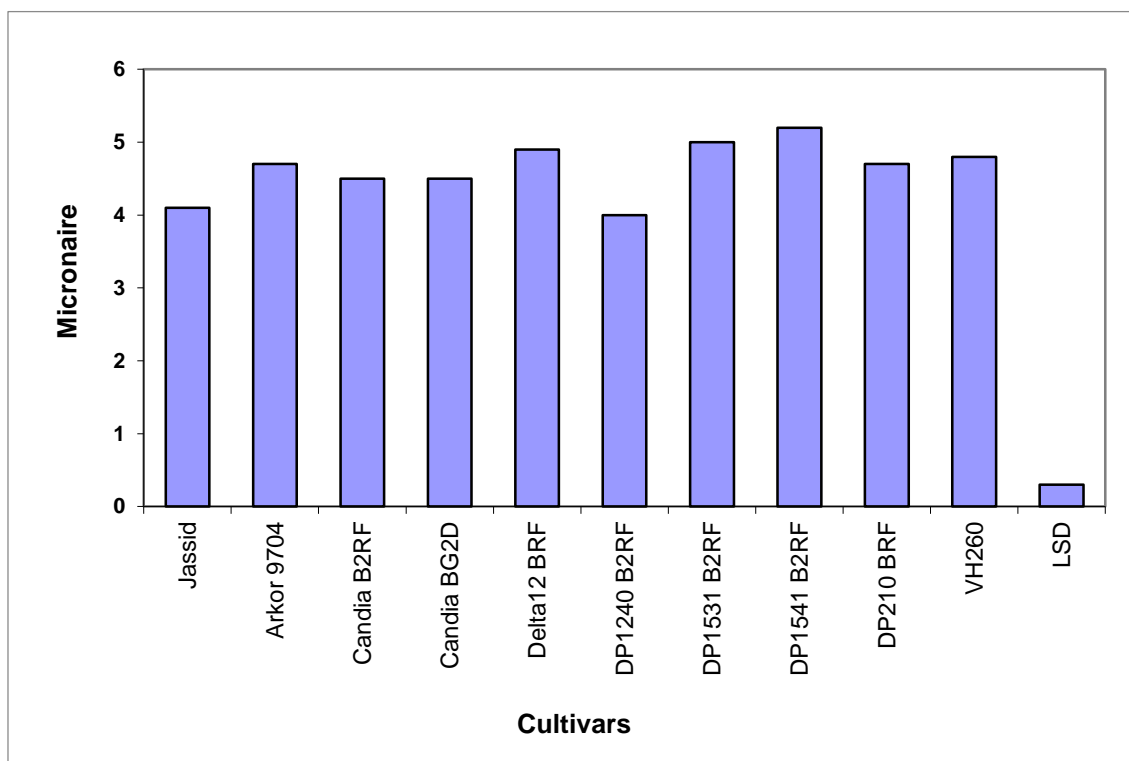


Figure 28. Micronaire of cotton cultivars planted under irrigation at Weipe, 2015/2016

UPINGTON IRRIGATION

Upington - Trial information	
Nitrogen (kg/ha)	160 N
Phosphorus (kg/ha)	30 P
Potassium (kg/ha)	60 K
Weed control	Manual
Irrigation	Central pivot

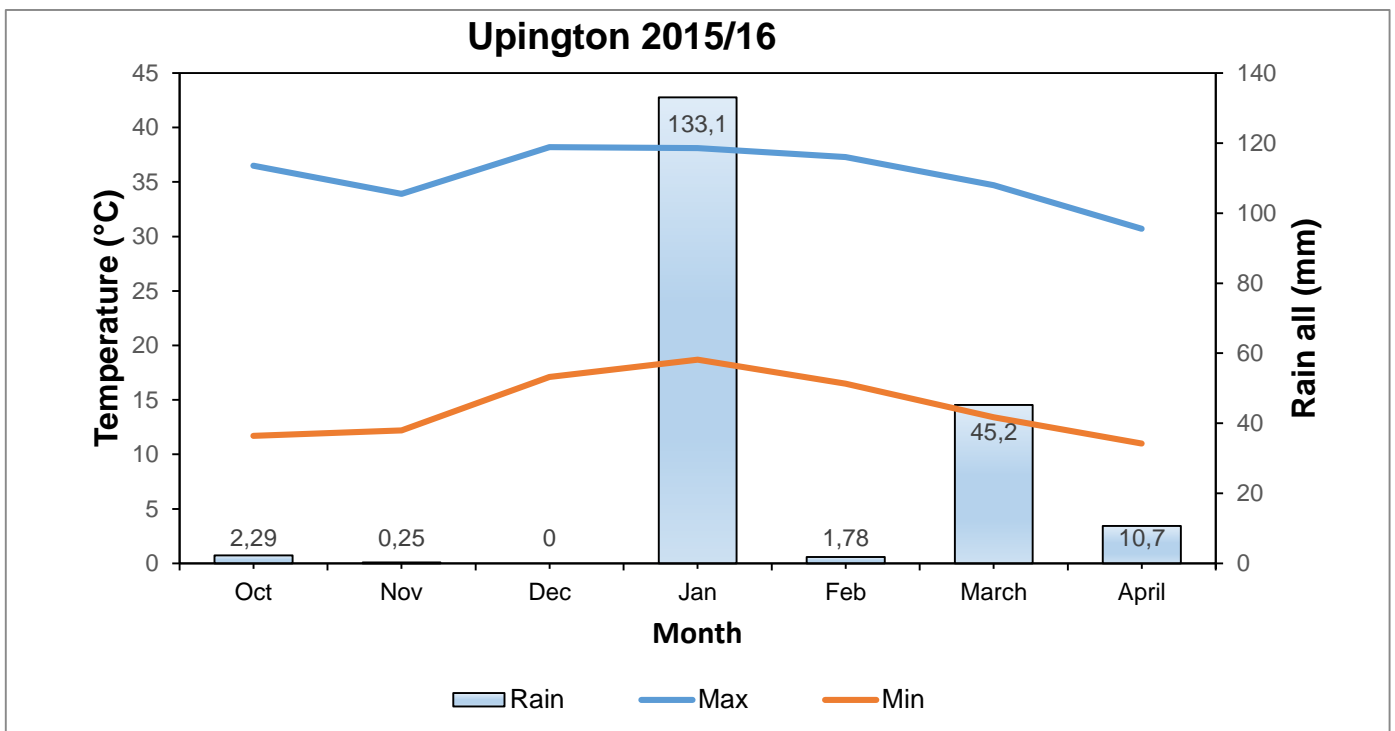


Figure 29. Minimum temperature (°C), maximum temperature (°C) and rainfall (mm) of the Upington trial, 2015/2016

Table 12. Fibre characteristics of the cotton cultivar trial planted under irrigation at Uppington, 2015/2016

Variety	DP210 BRF	Delta12 BRF	DP1531 B2RF	DP1541 B2RF	DP1240 B2RF	Gariep VT1	Gariep VT2	Candia BG2D	Candia B2RF	Jassid	Arkot 9704	VH260
Yield (kg/ha)	6912	6506	7494	7603	7045	6252	5721	5370	6272	6019	6002	7248
Fibre %	38.3	36.5	40.0	41.7	39.0	39.7	39.0	41.5	41.6	36.5	40.5	41.9
Fibre Yield	2650	2375	2998	3174	2745	2484	2235	2226	2601	2193	2431	3040
Length (mm)	31.8	30.5	31.3	30.2	30.7	30.0	29.2	30.9	31.0	29.8	29.4	29.2
Uniformity	83.3	82.4	84.5	82.9	84.3	84.3	84.9	82.9	83.4	84.3	84.1	83.1
Strength (g/tex)	26.7	29.2	30.6	30.1	32.2	30.7	31.8	28.9	28.8	31.8	29.3	27.7
Rd	80.7	79.4	80.6	79.1	79.5	79.4	79.8	82.4	80.8	80.1	79.6	78.3
Plus b	5.5	6.2	6.1	6.7	7.0	7.4	7.5	6.1	5.8	7.4	6.4	7.0
Micronaire	4.2	4.1	4.4	4.6	5.0	4.9	5.0	3.9	3.9	4.5	4.8	4.6
Maturity	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Parameter	Tukey's LSD (p<0.05)		CV (%)									
Yield (kg/ha)	411.4		7.4									
Fibre %	0.74		2.2									
Fibre Yield	164.4		7.5									
Length	1.4		3.2									
Uniformity	1.0		0.8									
Strength	1.7		3.9									
RD	1.1		0.9									
+ B	0.6		6.1									
Micronaire	0.4		6.1									
Maturity	0.01		0.9									

Table 13. Colour grades of the NCP cotton trial at Uppington, 2015/2016

Cultivar	Rep 1	Rep 2	Rep 3
DP210 BRF	41-1	41-1	41-1
Delta12 BRF	31-2	41-1	41-1
DP1531 B2RF	31-2	41-1	41-1
DP1541 B2RF	41-1	41-1	41-1
DP1240 B2RF	31-2	31-2	41-1
Gariep VT1	31-1	31-2	31-1
Gariep VT2	31-2	31-1	31-1
Candia BG2D	31-1	31-2	31-2
Candia B2RF	31-2	41-1	41-1
Jassid	31-1	31-2	21-2
Arkot 9704	41-1	41-1	31-2
VH 260	41-1	41-1	41-1

Yield parameters

From Table 12 it can be seen that cultivars differed significantly regarding seed cotton yield. The cultivar DP1541 B2RF produced the highest yield of 7603 kg/ha followed by DP1531 B2RF with 7494 kg/ha. Cultivar VH 260 produced the highest fibre percentage of 41.9 %, followed by DP1541 B2RF with 41.7 %. The cultivar DP1541 B2RF produced the highest fibre yield of 3174 kg/ha, followed by VH 260 with 3040 kg/ha (Figures 30 – 32).

Quality parameters

From Table 12 it can be seen that cultivars did not differ significantly regarding fibre length (mm). DP210 BRF produced the longest fibre of 31.8 mm. Cultivars differed significantly regarding fibre strength (g/tex). DP1240 B2RF produced the strongest fibre of 32.2 g/tex. Cultivars differed significantly regarding micronaire. All micronaire values of all cultivars evaluated fell within the acceptable limit of 3.5 to 4.9 except DP1240 B2RF and Gariep VT2 both with micronaire value of 5.0 (Figures 33 – 35).

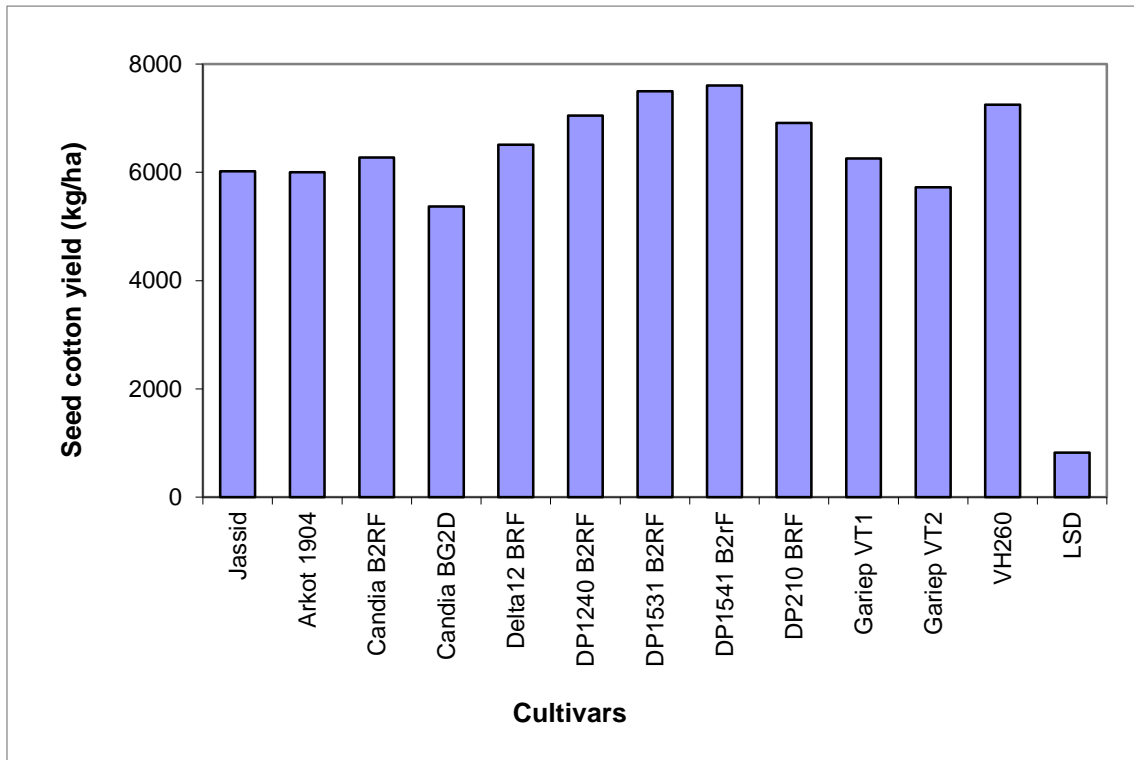


Figure 30. Seed cotton yield (kg/ha) of cotton cultivars planted under irrigation at Uppington, 2015/2016

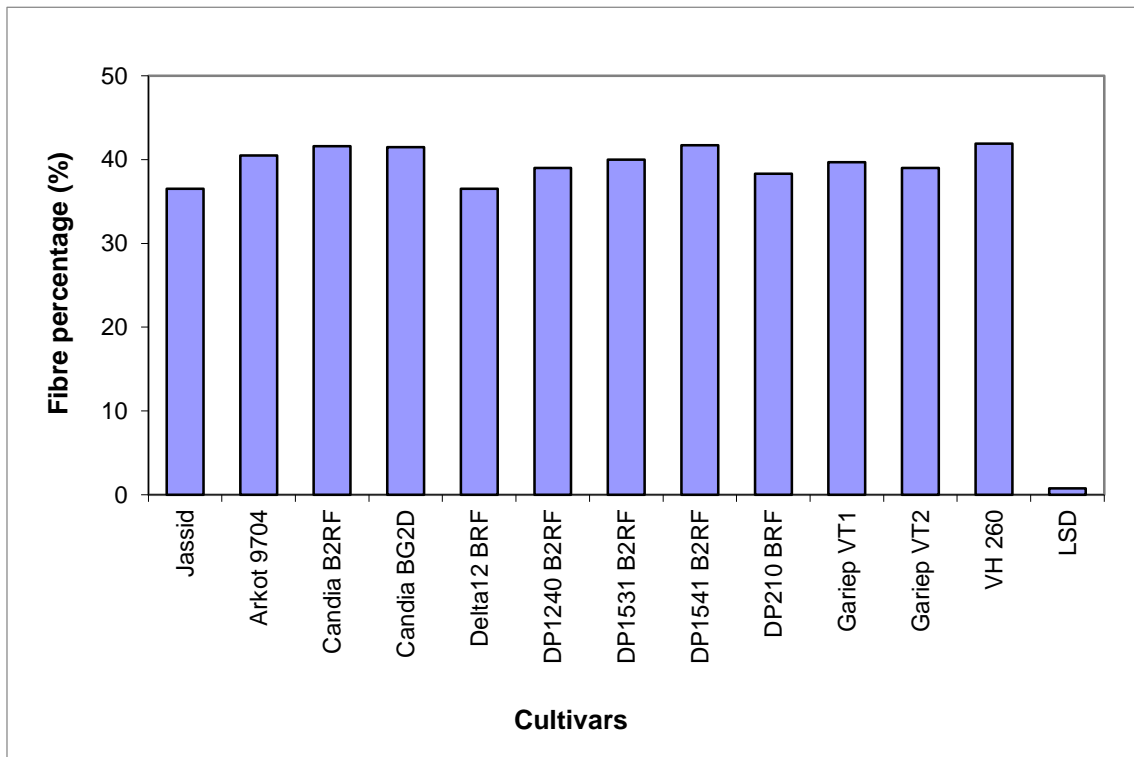


Figure 31. Fibre percentage (%) of cotton cultivars planted under irrigation at Uppington, 2015/2016

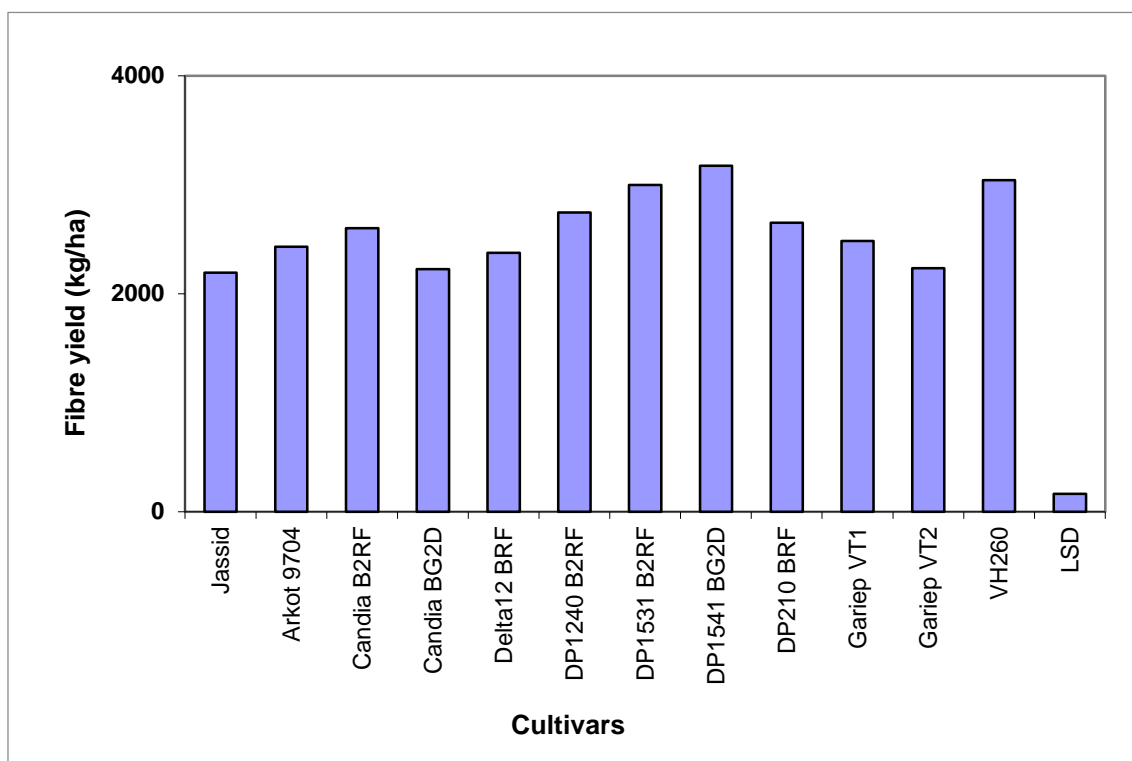


Figure 32. Fibre yield (kg/ha) of cotton cultivars planted under irrigation at Uppington, 2015/2016

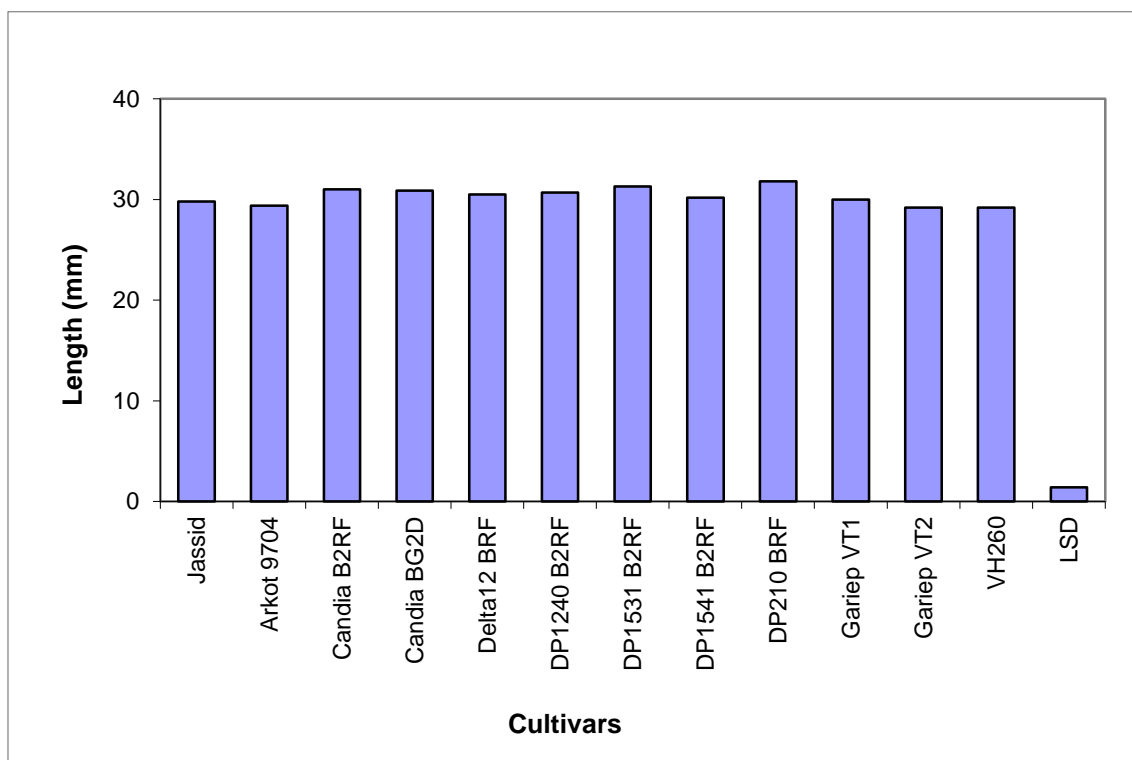


Figure 33. Length (mm) of cotton cultivars planted under irrigation at Uppington, 2015/2016

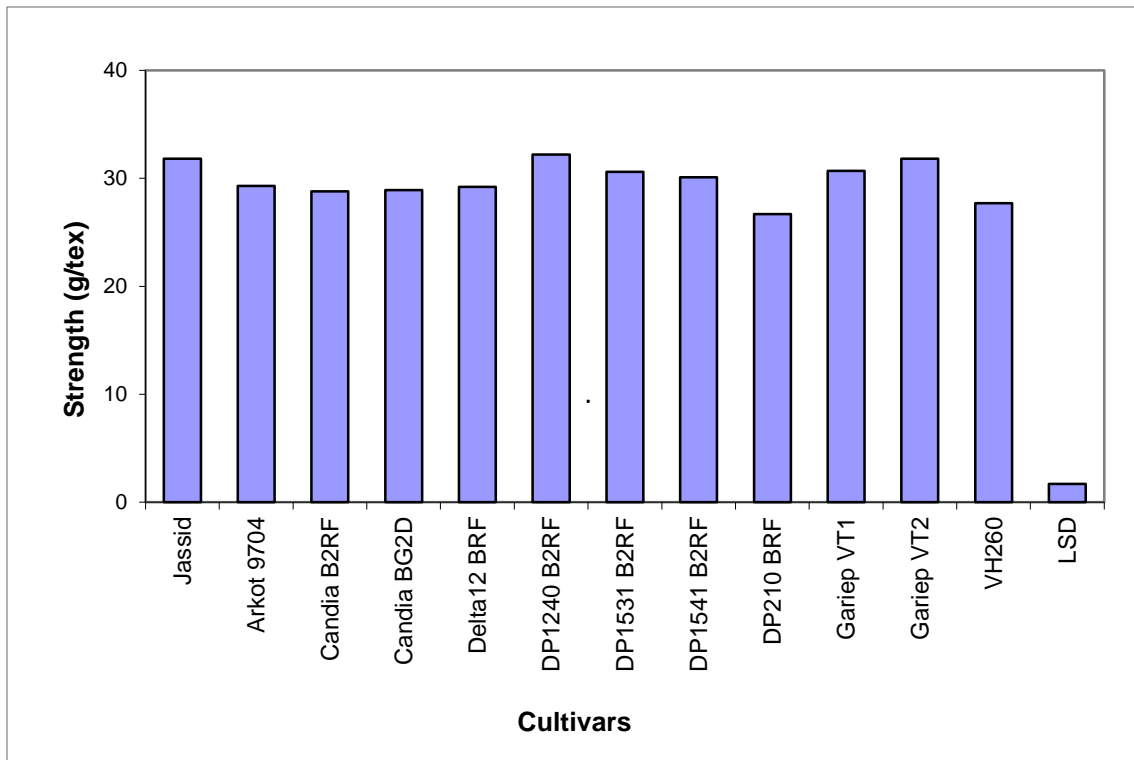


Figure 34. Strength (g/tex) of cotton cultivars planted under irrigation at Upington, 2015/2016

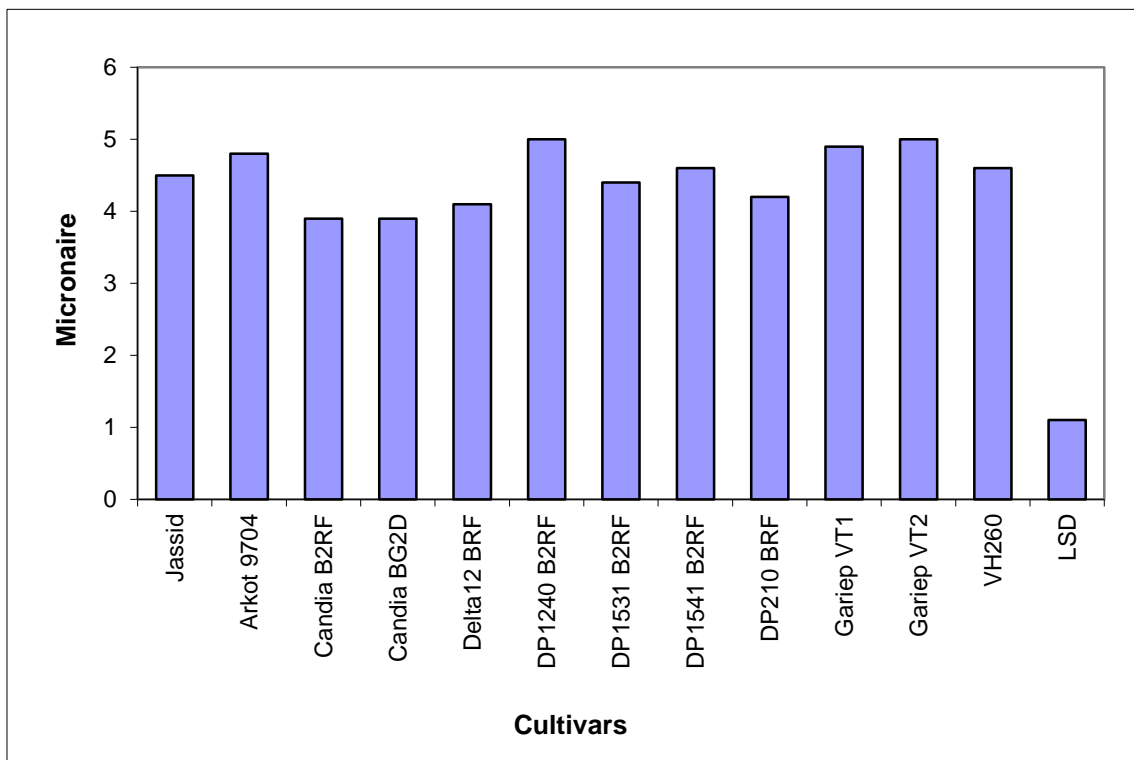


Figure 35. Micronaire of cotton cultivars planted under irrigation at Upington, 2015/2016

Appendix A

Table 14. Weather data of Loskop, 2015/2016

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2015	October	33.4	15.0	28.2	22.9	5.4	438.2
2015	November	32.7	15.6	45.2	24.7	5.6	334.7
2015	December	34.6	19.2	37.6	25.4	5.9	517.8
2016	January	33.7	18.7	56.9	24.7	5.5	483.5
2016	February	34.3	19.1	72.4	23.3	5.3	468.1
2016	March	31.8	17.2	50.8	20.2	4.3	422.5
2016	April	30.8	13.3	41.2	18.8	3.9	340.9

Tx = Maximum temperature, Tn = Minimum temperature, Rs = Radiation, ETO = Evapotranspiration, HU = Heat Units

Table 15. Weather data of Makhathini, 2015/2016

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2015	November	33.3	18.35	30.3	18.7	4.54	459.4
2015	December	33.5	18.5	17.4	19.7	4.9	447.4
2016	January	37.2	14.9	80.6	19.8	1.21	462.1
2016	February	35.7	9.3	41.7	20.0	0	374.4
2016	March	34.7	15.5	28.2	19.6	0.7	377.4
2016	April	33.2	5.4	79	17.1	4.0	360.6
2016	May	31.8	4.9	27.6	14.1	3.2	320.0

Tx = Maximum temperature, Tn = Minimum temperature, Rs = Radiation, ETO = Evapotranspiration, HU = Heat Units

Table 17. Weather data of Vaalharts, 2015/2016

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2015	November	35.2	13.3	8.9	23.6	5.6	416.4
2015	December	33.7	13.0	40.9	25.8	6.1	354.8
2016	January	38	16.8	32.8	24.6	6.3	505.0
2016	February	35.0	18.4	81.8	22.4	5.3	454.7
2016	March	36.1	17.7	19.6	20.9	5.2	436.8
2016	April	33.1	14.2	54.9	19.5	4.4	384.0
2016	May	28.6	10.9	103.4	16.2	3.4	285.7

Tx = Maximum temperature, Tn = Minimum temperature, Rs = Radiation, ETO = Evapotranspiration, HU = Heat Units

Table 18. Weather data of Weipe, 2015/2016

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2015	November	39.1	18.1	33.8	20.5	4.6	450.5
2015	December	32.5	18.1	52.4	22.3	5.1	450.7
2016	January	35.1	22.0	29	23.1	5.4	562.9
2016	February	32.8	21.1	60.4	20.8	4.8	511.1
2016	March	33.4	21.6	43.6	19.5	4.5	492.3
2016	April	31.9	20.3	101.4	18.0	3.9	479.4
2016	May	30.5	17.4	1	15.0	3.3	402.2

Tx = Maximum temperature, Tn = Minimum temperature, Rs = Radiation, ETO = Evapotranspiration, HU = Heat Units

Table 19. Weather data of Upington, 2015/2016

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2015	November	36.5	11.7	2.29	24.6	5.7	439.3
2015	December	33.9	12.2	0.25	28.4	6.2	397.5
2016	January	38.2	17.1	0	26.7	6.6	559.8
2016	February	38.1	18.7	133.1	25.2	6.1	565.1
2016	March	37.3	16.5	1.78	25.1	5.8	490.6
2016	April	34.7	13.4	45.2	22.7	5.0	417.3
2016	May	30.7	11.0	10.7	17.2	3.6	302.3

Tx = Maximum temperature, Tn = Minimum temperature, Rs = Radiation, ETO = Evapotranspiration, HU = Heat Units

Appendix B

Table 20. Soil sample analysis of Loskop (National Cotton Cultivar Trials), 2015/2016

Measured parameter	Loskop		
	0 – 30 cm	30 – 60 cm	60 – 90 cm
pH	6.14	6.27	6.22
Resistance (ohms)	780	1580	1070
mg/kg			
N	14.58		
P	28	24	33
K	235	195	253
Ca	558	543	570
Mg	215	210	218
Na	20	18	15
S Value	5.26	5.03	5.37
Ca %	53.1	54.0	53.1
Mg %	33.8	34.5	33.6
K %	11.5	9.9	12.1
Na %	1.7	1.6	1.2
Sand	78		
Silk	3		
Clay	19		

Table 21. Soil sample analysis of Douglas (National Cotton Cultivar Trials), 2015/2016

Measured parameter	Douglas	
	0 – 30 cm	30 – 60 cm
pH	7.15	7.38
Resistance (ohms)	540	515
mg/kg		
N	4	6
P (Bray 1)	80	58
K	128	73
Ca	690	645
Mg	320	335
Na	95	100
S-Value	6.84	6.62
Ca%	50.5	48.7
Mg%	38.7	41.8
K%	4.8	2.8
Na%	6.0	6.6

Table 22. Soil sample analysis of Vaalharts (National Cotton Cultivar Trials), 2015/2016

Measured parameter	Vaalharts
	0 – 30 cm
pH(KCl)1:2:3	5.75
Resistance (ohms)	
mg/kg	
N-NO ₃	4.48
N-NH ₄	0.45
P (Bray 1)	26
P (Bray 2)	33
K	130
Ca	450
Mg	140
Na	3
Cl	1
Fe	6.12
Cu	0.52
Zn	22.44
Mn	11
s-(SO ₄)	8
C%	0.36
S-Value	3.753
Ca%	59.9
Mg%	30.8
K%	8.9
Na%	0.36
%Sand	91
%Silk	1
%Clay	8

Table 23. Soil sample analysis of Weipe (National Cotton Cultivar Trials), 2015/2016

Measured parameter	Weipe	
	0 – 30 cm	30 – 60 cm
pH	7.77	7.48
Resistance (ohms)	280	195
mg/kg		
N	17	33
P (Bray 2)	108	100
K	620	520
Ca	2820	2680
Mg	553	588
Na	193	158
S-Value	21.09	20.28
Ca%	66.8	66.1
Mg%	21.7	24.0
K%	7.5	6.6
Na%	4.0	3.4