

National Cotton Cultivar Trials

2012/2013



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ARC-Institute for Industrial Crops, Rustenburg

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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 were identified, namely:

Area 1: Lower Orange River (irrigation)

Area 2: Griqualand West (irrigation)

Area 3: North-West – Vryburg

Area 4: North-West – Rustenburg

Area 5: Limpopo Valley (irrigation)

Area 6: Loskop, Springbok Flats

Area 7: Lowveld (irrigation)

Area 8: KwaZulu-Natal

During the 2012/2013 season, eight to ten cultivars were tested at seven different localities namely: Loskop, Makhathini (Dryland), Marydale, Roedtan (dryland) Upington, Vaalharts and Weipe. The Vaalharts trial was destroyed by hail and the Roedtan trial by drought. The Marydale farmer had stand problems on his farm, and all cotton was replanted. Therefore there was not enough seed to replant the Marydale research trial. The Department of Agriculture and Land Reform: Northern Cape planted the trials at Marydale and Upington. When samples were transported from Makhathini to Rustenburg, some of the fibre samples fell off the trailer, therefore the Makhathini results of the fibre qualities of only a few samples was available. Fibre percentage results was not available for PM3225 BRF therefore fibre yield could not be determined. The past season more cultivars were tested in the National Cotton Cultivar Trials, namely, two cultivars from Australia (CandiaBG and Candia B2RF), and three lines from

the Agricultural Research Council-Institute for Industrial Crops (Gariiep VT1, Gariiep VT2 and A3). Other cultivars from DeltaPINE Monsanto were DP210 BRF, Delta 12 BRF, PM3225 B2RF, 13P3001 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.

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HOW TO USE THE RESULT BOOK:

Variety	DP 210 BRF	Delta 12 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	0.90	0.90	0.91	0.94

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
CV = Co-efficient of variance

See Appendix A at the back of the report for weather data of the localities where trials were conducted, as well as the soil sample reports.

Table 1. Trial localities and planting dates

Province	Locality	Cell number	Dryland / Irrigation	Planting date
Limpopo	Groblersdal	083 274 1951	Irrigation	29/10/2012
	C Fourie Roedtan		(Dryland)	13/12/2012
KwaZulu-Natal	Makhathini J Steyn	082 898 5471	Dryland	27/11/2012
Orange River	Upington	082 353 0069	Irrigation	08/11/2012
	K Lategan Marydale K Lategan			08/11/2012
Limpopo	Weipe J Willemse	083 236 7799	Irrigation	12/12/2012

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

Loskop (Irrigation)	Makhathini (Dryland)	Marydale Upington Vaalharts (Irrigation)	Weipe (Irrigation)	Roedtan (Dryland)
DP210 BRF	PM3225 B2RF	DP210 BRF	DP210 BRF	DP210 BRF
Delta 12 BRF	Delta 12 BRF	Delta 12 BRF	Delta 12 BRF	Delta 12 BRF
PM3225 B2RF	13P3001B2R2	PM3225 B2RF	PM3225 B2RF	PM3225 B2RF
13P3001 B2R2	Okra	13P3001B2R2	13P3001B2R2	13P3001B2R2
Okra	A3	Okra	Okra	Okra
A3	Gariep VT1	Gariep VT1	A3	A3
Gariep VT1	Gariep VT2	Gariep VT2	Gariep VT1	Gariep VT1
Gariep VT2	Candia BG	Candia B2RF	Gariep VT2	Gariep VT2
Candia B2RF	Candia B2RF		Candia B2RF	Candia B2RF
	DP210 BRF			

ORIGIN OF CULTIVARS:

DeltaPine Monsanto:

DP 210 BRF, Delta 12 BRF, PM3225 B2RF, 13P3001 B2R2 and Okra

ARC-IIC:

A3, Gariep VT1 and Gariep VT2

Bayer:

Candia BG and Candia B2RF

LOSKOP IRRIGATION



Coleen Fourie

Climatical conditions at Loskop during the past growing season were ideal for excellent cotton production. Pix were applied three times to reach a total of 1 liter per hectare. Record yields were harvested.

CROP SUMMARY

Planted	29/11/ 2012
Irrigation	Overheads – As needed
+Total insect sprays	7
Lambda	(4 x)
Mospilan	(3 x)
Picked (1)	02/05/2013
Picked (2)	24/06/2013
Rainfall	502
Nitrogen (kg/ha)	180
Phosphorus (kg/ha)	26
Potassium (kg/ha)	50

Table 3. Yield and fibre characteristics of the cotton cultivar trial planted under irrigation at Loskop, 2012/2013

Variety	DP210 BRF	Delta 12 BRF	PM 3225 B2RF	13P3001 B2R2	Okra	A3	Gariep VT1	Gariep VT2	Candia B2RF
Yield (kg/ha)	7273	6867	7586	7381	7348	6906	6933	5863	6894
Pick 1 %	94	97	97	98	78	73	52	46	96
Fibre %	42	40	44	44	44	38	39	39	45
Fibre Yield	3067	2719	3360	3267	3254	2622	2686	2306	3100
Length (mm)	32.6	29.1	29.5	30.3	30.3	30.1	29.1	28.5	31.6
Uniformity	83.8	83.4	85.8	86.0	83.5	85.2	86.4	85.5	85.1
Strength (g/tex)	30.5	28.1	33.2	30.8	28.3	31.0	32.3	33.2	29.4
Rd	79.1	79.1	76.1	78.2	78.0	77.5	78.1	78.5	78.9
Plus b	7.5	7.6	8.3	7.6	8.1	8.5	8.9	9.2	7.2
Micronaire	4.3	4.2	4.2	4.6	4.4	4.5	4.1	4.9	3.8
Maturity	0.92	0.89	0.89	0.90	0.90	0.93	0.91	0.96	0.88
Color grade	31-2	41-1	31-1	31-2	31-1	31-2	31-1	21-3	31-1

Parameter	Tukey's LSD (p<0.05)	CV (%)
Yield (kg/ha)	982.8	9.7
Pick 1 %	6.8	5.7
Fibre %	1.1	1.8
Fibre yield	448.1	10.5
Length	1.5	3.7
Uniformity	1.8	1.5
Strength	2.5	5.6
RD	2.1	1.9
+ B	0.79	6.7
Micronaire	0.5	8.0
Maturity	0.04	3.0

Yield parameters

From Table 3 it can be seen that, cultivars differed significantly regarding seed cotton yield. The cultivar, PM3225 B2RF produced the highest seed cotton yield of 7586 kg/ha followed by 13P3001 B2R2 with 7381 kg/ha. Cultivars differed significantly regarding pick 1 percentage. The cultivar, 13P3001 B2R2 produced the highest pick 1 percentage of 98%. Cultivars differed significantly regarding fibre percentage. The cultivar, Candia B2RF, produced the highest fibre percentage of 45%, followed by PM3225 B2RF, 13P3001 B2R2 and Okra with 44%. Cultivars differed significantly regarding fibre yield. The cultivar, PM3225 B2RF produced the highest fibre yield of 3360 kg/ha followed by 13P3001 B2R2 with 3267 kg/ha (Figures 1 – 3).

Quality parameters

From Table 3 it can be seen that cultivars differed significantly regarding fibre length (mm). The cultivar, DP 210 BRF produced the longest fibre of 32.6 mm followed by Candia B2RF with 31.6 mm. Cultivars differed significantly regarding fibre strength (g/tex). PM3225 B2RF and Gariep VT2 both produced the strongest fibre of 33.2 g/tex. Cultivars did not differ significantly regarding micronaire. All of the cultivars evaluated, fell within the acceptable limits of 3.5 to 4.5 except Gariep VT2 with 4.9 (Figures 3 - 6).

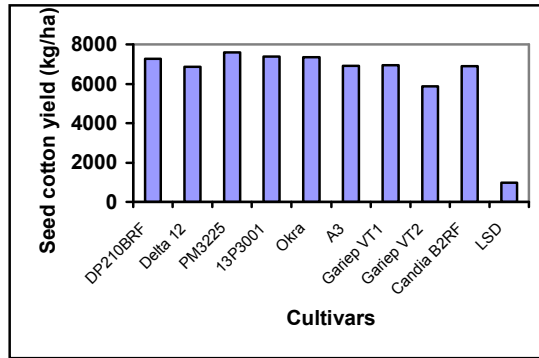


Figure 1. Seed cotton yield (kg/ha) of cotton cultivars planted under irrigation at Loskop, 2012/2013 season

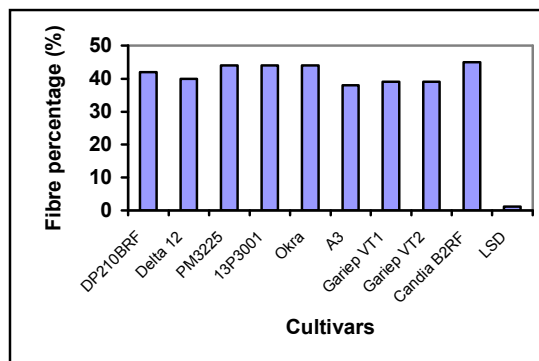


Figure 2. Fibre percentage (%) of cotton cultivars planted under irrigation at Loskop, 2012/2013 season

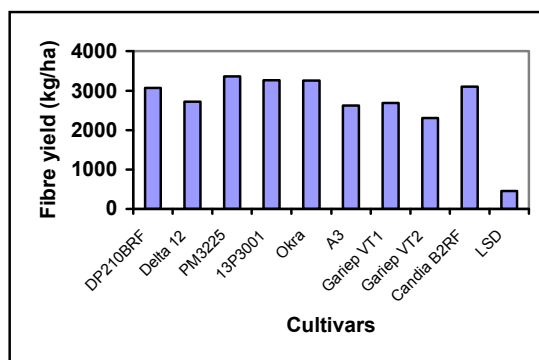


Figure 3. Fibre yield (kg/ha) of cotton cultivars planted under irrigation at Loskop, 2012/2013 season

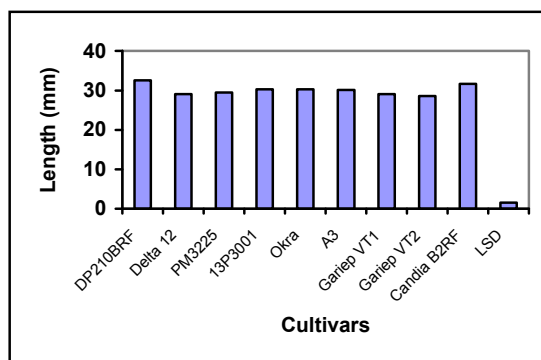


Figure 4. Length (mm) of cotton cultivars planted under irrigation at Loskop, 2012/2013 season

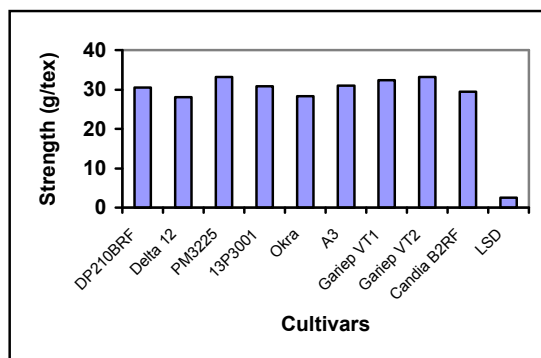


Figure 5. Strength (g/tex) of cotton cultivars planted under irrigation at Loskop, 2012/2013 season

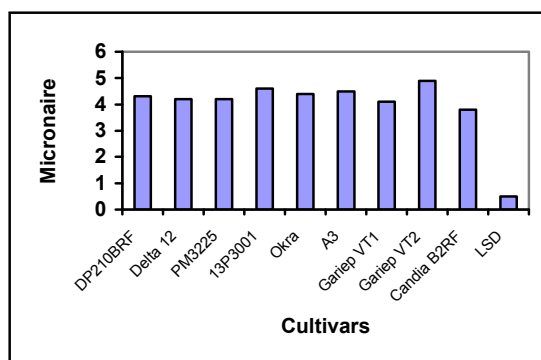


Figure 6. Micronaire of cotton cultivars planted under irrigation at Loskop, 2012/2013 season

**MAKHATHINI
DRYLAND**



Makhathini

No Fertilizer was applied as this was a dryland trial. Fibre results of Makhathini consist of only one replication as samples were lost during transport on a trailer to Rustenburg. Therefore statistical data is not available for Table 4 (Fibre qualities). The Makhathini trial received 518.9 mm of rain during the growing season.

CROP SUMMARY

Planted	27/11/2012
Irrigation	Dryland trial
Total insect sprays	4
Seizer + Mospilan	300 and 50 ml/ha
Talstar + Mospilan	200 and 50 ml/ha
Fastac + Mospilan	160 ml/ha
Fastac + Seizer + Mospilan	200 ml/ha Fastac
Picked (1)	16/04/2013
Picked (2)	07/05/2013
Rainfall	518.9
Nitrogen (kg/ha)	0
Phosphorus (kg/ha)	0
Potassium (kg/ha)	0

Table 4. Yield and fibre characteristics of the cotton cultivar trial planted under irrigation at Makhathini, 2012/2013

Variety	PM 3225 B2RF	Delta 12 RF	13P3001 B2R2	Okra	A3	Gariep VT1	Gariep VT2	Candia BG	Candia B2RF	DP210 BRF
Yield (kg/ha)	3202	2270	3155	2079	2321	2218	1893	2421	2873	2516
Fibre %		39.6	46.4			39.1	41.1		43.8	43.4
Fibre Yield		828.9	1463.9			867.2	778.0		1258.4	1091.9
Length (mm)		27.4	29.5			27.9	28.4		31.0	31.2
Uniformity		78.9	83.4			86.9	87.2		84.4	81.6
Strength (g/tex)		26.8	29.6			30.8	31.0		33.6	26.4
Rd		77.8	78.2			79.4	77.5		80.2	79.2
Plus b		8.4	8.3			8.8	9.1		8.0	7.6
Micronaire		3.8	4.4			3.6	4.2		3.9	2.8
Maturity		0.89	0.88			0.89	0.88		0.88	0.80
Color		31-1	31-1			21-1	21-4		21-2	31-1

Parameter	Tukey's LSD (p<0.05)	CV (%)
Yield (kg/ha)	NS	17.7
Fibre %		
Fibre yield		
Length		
Uniformity		
Strength		
RD		
+ B		
Micronaire		
Maturity		

Yield parameters

From Table 4 it can be seen that cultivars differed significantly regarding seed cotton yield. The cultivar, PM3225 B2RF produced the highest yield of 3202 kg/ha, followed by 13P3001 B2R2 with 3155 kg/ha. Cultivars differed significantly regarding fibre percentage. Not all cultivars could be tested for fibre percentages as some of the samples were lost during transport. The cultivar, 13P3001 B2R2 produced the highest fibre percentage of 46.4% followed by Candia B2RF with 43.8%. Fibre yield could not be determined for all cultivars due to the lost samples. (Figures 7 – 9).

Quality parameters

From Table 4 it can be seen that cultivars differed significantly regarding fibre length (mm). The cultivar, DP 210 BRF produced the longest fibre of 31.2 mm followed by Candia B2RF with fibre lengths of 31.0 mm. Cultivars differed significantly regarding fibre strength (g/tex). Candia B2RF produced the strongest fibre of 33.6 g/tex. Cultivars Delta 12 BRF and DP210 BRF had fibre strengths of below 28 g/tex, which is the acceptable norm for fibre strengths. Cultivars did not differ significantly regarding micronaire. All of the cultivars evaluated, fell within the acceptable limits of 3.5 to 4.5, except DP210 BRF with a micronaire of 2.8 (Figures 10 – 12).

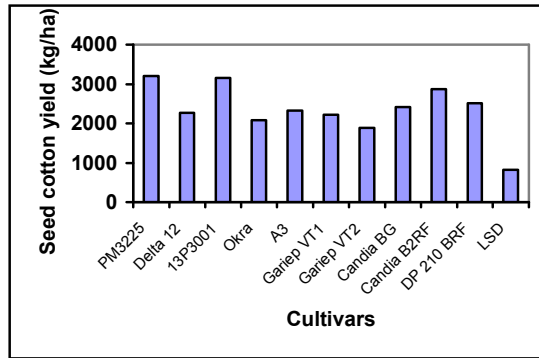


Figure 7. Seed cotton yield (kg/ha) of cotton cultivars planted under irrigation at Makhathini, 2012/2013 season

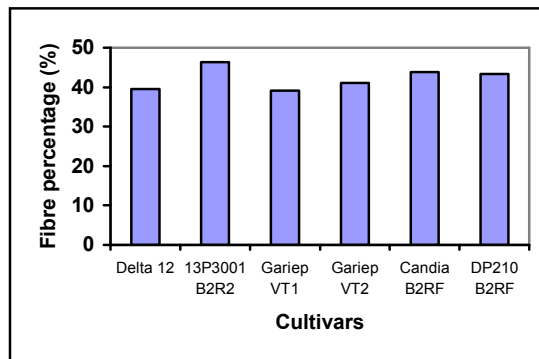


Figure 8. Fibre percentage (%) of cotton cultivars planted under irrigation at Makhathini, 2012/2013 season

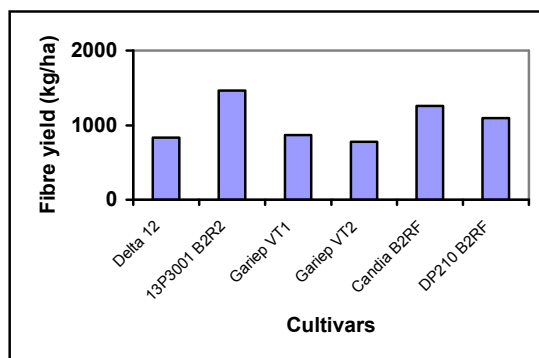


Figure 9. Fibre yield (kg/ha) of cotton cultivars planted under irrigation at Makhathini, 2012/2013 season

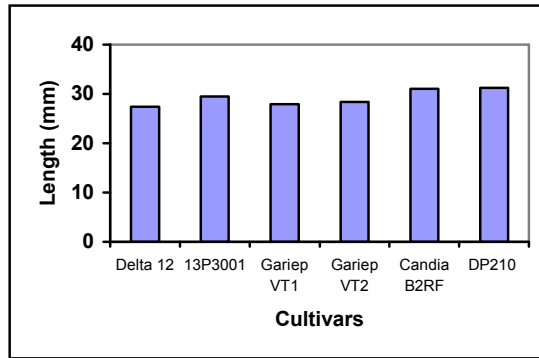


Figure 10. Length (mm) of cotton cultivars planted under irrigation at Makhathini, 2012/2013 season

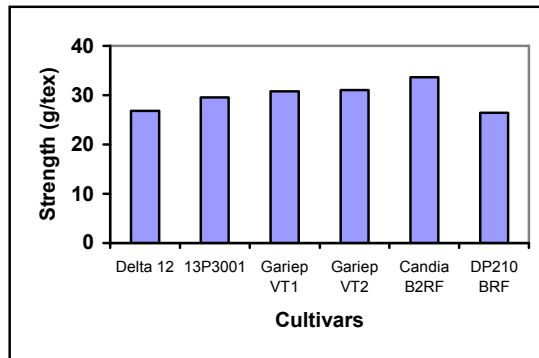


Figure 11. Strength (g/tex) of cotton cultivars planted under irrigation at Makhathini, 2012/2013 season

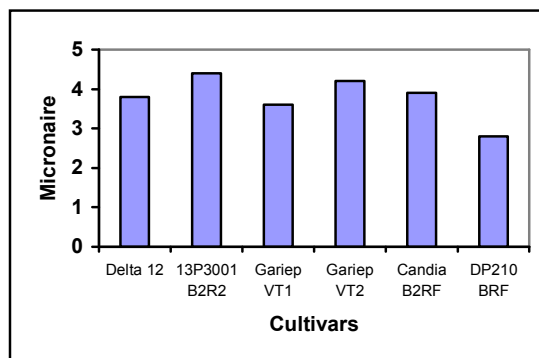


Figure 12. Micronaire of cotton cultivars planted under irrigation at Makhathini, 2012/2013 season

UPINGTON IRRIGATION



Upington

The trial was planted on 8 November 2013. The Marydale and Upington trials are planted and maintained by the Department of Agriculture and Land Reform: Northern Cape.

CROP SUMMARY

Planted	08/11/2012
Irrigation	Flood
No. of Heliothis sprays	MSMA
Total insect sprays	Thionax 3 sprays
Picked	20/05/2013
Rainfall	547.2
Nitrogen (kg/ha)	136 kg/ha
Phosphorus (kg/ha)	30 kg/ha
Potassium (kg/ha)	90 kg/ha

Table 5. Yield and fibre characteristics of the cotton cultivar trial planted under irrigation at Uppington, 2012/2013

Variety	DP210 BRF	Delta 12 BRF	PM 3225 B2RF	13P3001 B2R2	Okra	Gariep VT1	Gariep VT2	Candia B2RF
Yield (kg/ha)	6771	6115	7134	6605	7791	6756	6635	7042
Fibre %	42.3	39.5	44.8	43.8	43.8	41.0	41.0	43.8
Fibre Yield	2762	2426	3205	3047	3382	2729	2660	3159
Length (mm)	30.8	30.4	29.8	30.4	30.1	29.9	29.0	30.9
Uniformity	82.9	83.1	84.5	83.8	83.7	86.1	85.7	82.3
Strength (g/tex)	30.6	30.8	36.2	31.4	30.9	35.4	35.0	31.2
Rd	81.4	78.8	77.9	79.4	80.3	78.7	79.6	81.8
Plus b	6.3	6.5	7.7	6.6	7	7.8	7.9	6.8
Micronaire	4.2	4.0	4.8	4.4	4.5	4.3	4.9	4.2
Maturity	0.88	0.87	0.94	0.89	0.90	0.91	0.93	0.88
Color	21-2	31-1	31-1	31-1	41-1	21-1	11-2	21-2

Parameter	Tukey's LSD (p<0.05)	CV (%)
Yield (kg/ha)	NS	23.3
Fibre %	NS	4.5
Fibre yield	NS	24.0
Length	NS	3.4
Uniformity	NS	2.1
Strength	2.6	5.6
RD	NS	3.3
+ B	0.75	7.3
Micronaire	NS	7.0
Maturity	0.03	2.2

Yield parameters

Although cultivars did not differ significantly regarding any of the yield parameters, the cultivar Okra produced the highest yield of 7791 kg/ha followed by PM3225 B2RF with 7134 kg/ha (Table 5). The cultivar, PM 3225 B2RF produced the highest fibre percentage of 44.8%, followed by 13P3001B2R2 and Candia B2RF both with 43.8. Okra produced the highest fibre yield of 3382 kg/ha followed by PM3225 B2RF with 3205 kg/ha (Figures 13 – 15).

Quality parameters

From Table 5 it can be seen that, cultivars differed significantly regarding fibre length (mm). The cultivar, CandiaB2RF produced the longest fibre of 30.9 mm followed by DP210 BRF with 30.8 mm. Cultivars differed significantly regarding fibre strength (g/tex). PM3225 B2RF produced the strongest fibre of 36.2 g/tex. Gariep VT1 was second with 35.4 g/tex. Cultivars did not differ significantly regarding micronaire. All of the cultivars evaluated fell within the acceptable limits of 3.5 to 4.5 (Figures 16 - 18).

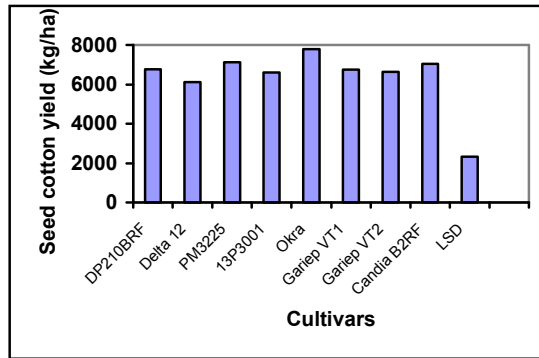


Figure 13. Seed cotton yield (kg/ha) of cotton cultivars planted under irrigation at Uppington, 2012/2013 season

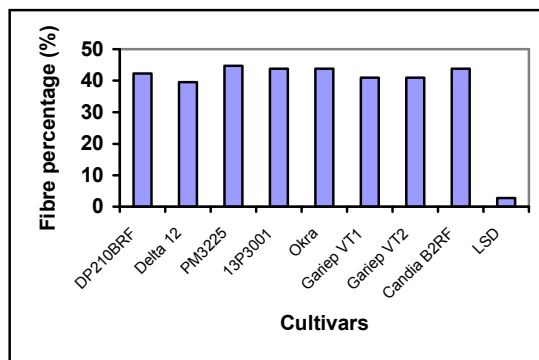


Figure 14. Fibre percentage (%) of cotton cultivars planted under irrigation at Uppington, 2012/2013 season

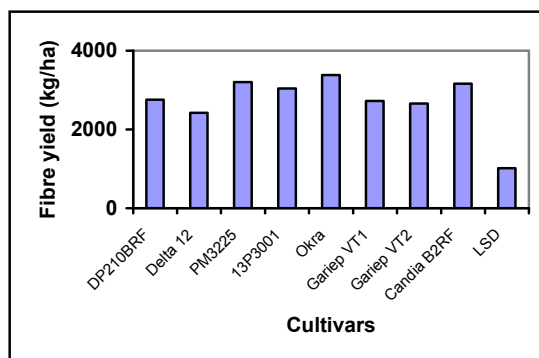


Figure 15. Fibre yield (kg/ha) of cotton cultivars planted under irrigation at Uppington, 2012/2013 season

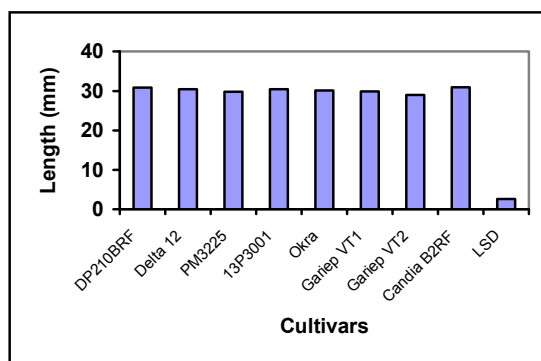


Figure 16. Length (mm) of cotton cultivars planted under irrigation at Uppington, 2012/2013 season

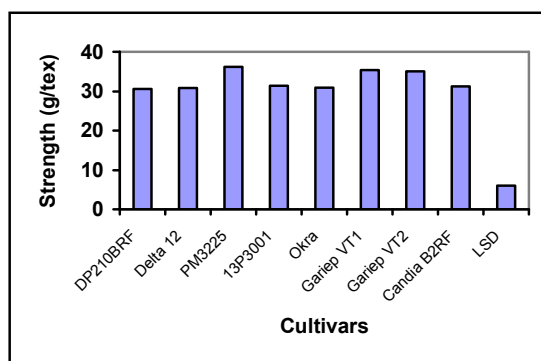


Figure 17. Strength (g/tex) of cotton cultivars planted under irrigation at Uppington, 2012/2013 season

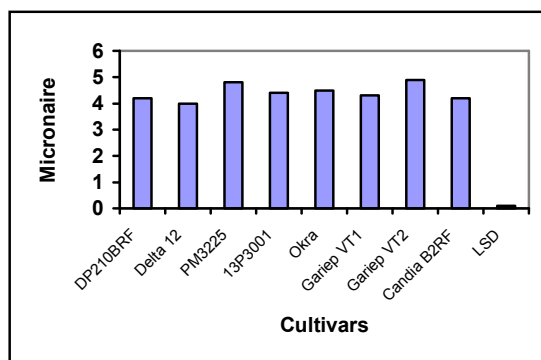


Figure 18. Micronaire of cotton cultivars planted under irrigation at Uppington, 2012/2013 season

WEIPE IRRIGATION



Weipe

The trial was planted on the 12 December 2012. The Willemse's waited for rain and the river, as the irrigation pump cannot work when the river level is too low. Two cultivars resulted in seed cotton yields of above 5 000 kg/ha, which is excellent for a December planting date.

CROP SUMMARY	
Planted	12/12/2012
Irrigation	Drip
Total insect sprays	No insecticides
Picked	23/07/2012
Rainfall	578.6
Nitrogen (kg/ha)	160 N
Phosphorus (kg/ha)	30 P
Potassium (kg/ha)	50 K

Table 6. Yield and fibre characteristics of the cotton cultivar trial planted under irrigation at Weipe, 2012/2013

Variety	DP210 BRF	Delta 12 BRF	PM 3225 B2RF	13P3001 B2R2	Okra	A3	Gariep VT1	Gariep VT2	Candia B2RF
Yield (kg/ha)	3372	4908	3898	5317	1704	2176	1931	1937	5816
Fibre %	37	38	34	41	45	36	38	36	46
Fibre Yield	1232	1920	1378	2164	796	789	746	695	2825
Length (mm)	30.6	29.7	30.6	30.4	28.4	29.2	27.9	29.3	31.5
Uniformity	81.3	82.2	85.3	83.8	82.4	85.3	85.7	83.4	85.0
Strength (g/tex)	26.4	26.0	30.5	27.5	26.4	28.0	28.7	27.2	27.3
Rd	81.7	81.6	77.9	82.4	82.8	82.6	82.9	82.4	84.1
Plus b	6.7	6.6	7.2	6.5	6.9	6.7	7.9	7.0	6.7
Micronaire	3.4	3.7	3.3	3.7	3.5	3.7	3.3	3.5	3.5
Maturity	0.82	0.83	0.88	0.84	0.82	0.84	0.85	0.83	0.83
Color	31-2	31-1	41-2	31-1	21-2	11-2	21-2	21-2	21-1

Parameter	Tukey's LSD (p<0.05)	CV (%)
Yield (kg/ha)	1996	25.3
Fibre %	NS	15.0
Fibre yield	915.8	28.6
Length	NS	3.4
Uniformity	NS	2.3
Strength	NS	6.7
RD	NS	2.0
+ B	NS	7.8
Micronaire	NS	9.5
Maturity	NS	2.5

Yield parameters

From Table 6 it can be seen that cultivars differed significantly regarding seed cotton yield. The cultivar Candia B2RF produced the highest yield of 5816 kg/ha followed by 13P3001 B2R2 with 5317 kg/ha. Cultivars differed significantly regarding fibre percentage. The cultivar Candia B2RF produced the highest fibre percentage of 46%, followed by Okra with 45%. Cultivars differed significantly regarding fibre yield. The cultivar Candia B2RF produced the highest fibre yield of 2825 kg/ha followed by 13P3001 B2R2 with 2164 kg/ha (Figures 19 – 21).

Quality parameters

From Table 6 it can be seen that cultivars differed significantly regarding fibre length (mm). The cultivar Candia B2RF produced the longest fibre of 31.5 mm. DP210 BRF and PM3225 B2RF came second, both with 30.6 mm. Cultivars differed significantly regarding fibre strength (g/tex). PM3225 B2RF produced the strongest fibre of 30.5 g/tex. Gariep VT1 was second with 28.7 g/tex. Cultivars did not differ significantly regarding micronaire. Some cultivars evaluated had too low micronaire values and this may be due to the late planting date. DP210 BRF, PM3225 B2RF and Gariep VT1 resulted in low values of 3.3 (Figures 22 – 24).

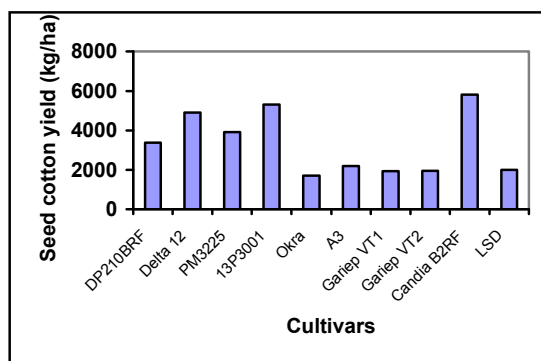


Figure 19. Seed cotton yield (kg/ha) of cotton cultivars planted under irrigation at Weipe, 2012/2013 season

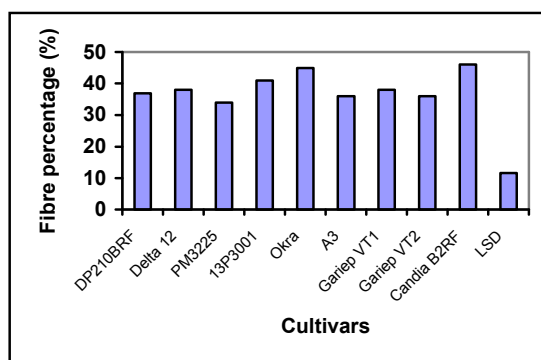


Figure 20. Fibre percentage (%) of cotton cultivars planted under irrigation at Weipe, 2012/2013 season

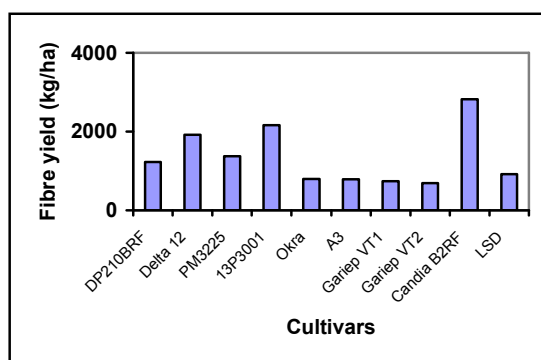


Figure 21. Fibre yield (kg/ha) of cotton cultivars planted under irrigation at Weipe, 2012/2013 season

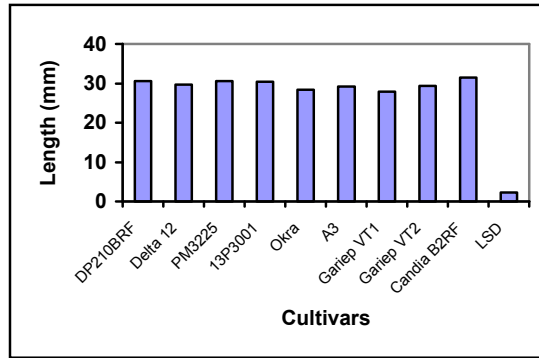


Figure 22. Length (mm) of cotton cultivars planted under irrigation at Weipe, 2012/2013 season

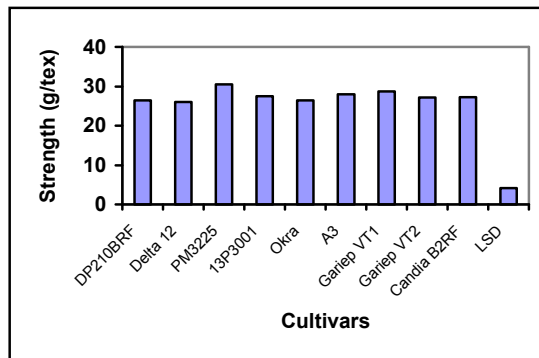


Figure 23. Strength (g/tex) of cotton cultivars planted under irrigation at Weipe, 2012/2013 season

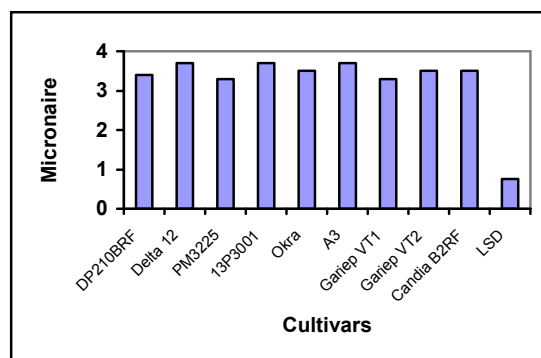


Figure 24. Micronaire of cotton cultivars planted under irrigation at Weipe, 2012/2013 season

APPENDIX A.

Table 1. Weather data of Loskop, 2012/2013 season

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2012	October	29.3	13.6	88.4	22.1	4.6	11.2
2012	November	31.2	15.0	46.2	25.7	5.4	12.8
2012	December	31.6	17.6	116.8	25.5	5.4	13.8
2013	January	32.8	18.2	93.5	25.2	5.4	14.8
2013	February	34.3	17.6	26.9	25.6	5.6	15.2
2013	March	31.6	15.7	36.1	21.4	4.5	12.9
2013	April	28.2	11.1	75.4	18.1	3.6	8.9
2013	May	26.2	6.2	18.8	28.0	3.1	5.3

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

Table 2. Weather data of Makhathini, 2012/2013 season

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2012	October	27.0	17.9	183.1	13.4	2.7	11.62
2012	November	28.3	18.3	48.5	16.5	3.3	12.4
2012	December	31.4	20.4	65.5	20.5	4.3	14.8
2013	January	31.4	21.2	156.5	18.8	4.0	15.4
2013	February	32.3	20.7	8.1	21.5	4.5	15.4
2013	March	31.0	19.9	29.2	16.5	3.5	14.3
2013	April	29.3	16.2	19.6	14.7	3.0	11.7
2013	May	28.0	14.3	8.4	12.5	2.9	10.0

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

Table 3. Weather data of Upington, 2012/2013 season

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2012	October	32.2	10.2	5.6	25.0	5.5	11.2
2012	November	37.2	12.2	20.6	28.1	6.6	15.1
2012	December	36.5	16.6	36.3	26.5	6.3	16.2
2013	January	39.4	17.6	21.8	29.1	7.0	18.8
2013	February	39.3	15.8	2.0	27.0	6.5	17.7
2013	March	36.6	14.9	83.8	21.3	5.1	15.4
2013	April	30.4	7.6	0	18.8	3.8	7.9
2013	May	28.1	5.3	0	14.8	3.2	5.8

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

Table 4. Weather data of Weipe, 2012/2013 season

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2012	October	31.2	17.7	77.7	20.0	4.6	14.6
2012	November	32.6	18.2	45.5	23.6	5.3	15.5
2012	December	34.8	21.6	10.9	25.2	6.0	18.2
2013	January	32.6	21.9	389.4	20.7	4.8	16.8
2013	February	33.0	20.5	4.1	24.6	5.4	16.7
2013	March	31.5	19.2	13.7	21.3	4.6	15.2
2013	April	28.8	13.6	37.3	18.5	3.7	10.9
2013	May	27.8	8.4	0	17.1	3.2	7.6

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

Table 5. Soil sample analysis of Loskop and Makhathini (National Cotton Cultivar Trials), 2012/2013

Measured parameter	Loskop	Makhathini
	0 - 30 cm	0 - 30 cm
pH	5.91	6.07
Resistance (ohms)	705	1130
mg/kg		
N	8	8
P	35	35
K	373	383
Ca	1280	548
Mg	475	175
Na	33	43
S Value	11.43	5.36
Ca %	56.0	51.2
Mg %	34.4	27.0
K %	8.4	18.3
Na %	1.3	3.5
Sand	60	
Slik	10	
Clay	30	

Table 6. Soil sample analysis of Uppington (National Cotton Cultivar Trials), 2012/2013

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