2017

NATIONAL COTTON CULTIVAR EVALUATION TRIALS

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EXECUTIVE SUMMARY

Various cultivars gave high fibre yields at different localities. Using an AMMI analysis, DP1240 B2RF was identified as the most stable cultivar over two years (2015/2016 and 2016/2017) and four localities namely Loskop, Makhathini, Vaalharts and Upington.

For the past production season (2016/2017) the National Cotton Cultivar Trials (NCP) were successfully carried out at four localities, namely under irrigation at Loskop, Vaalharts and Upington, and under dryland at Makhathini. The two dryland localities Roedtan and Stella were written off due to drought and/or planting too deep. The planned January 2017 planting of the Weipe area did not realize due to adverse weather conditions throughout the month.

New tables included in the report are a summary per cultivar within the various localities involved, as well as the AMMI graph to recommend the most stable cultivar's performance that was achieved over the past two years.

New recommendations for the dryland trials for the 2017/2018 production year is that small hand planters will be used, with ARC-IC labour. Labour on dryland farms are not used to hand planting and might plant too deep. Supplementary irrigation with a watercar will be used as a last resort in order to secure dryland trial success and results. Two dryland plantings will be done in the Roedtan and Stella area, to ensure trial survival. An additional irrigation trial will also be planted in the Weipe area.

A word of thanks to the Northern Cape Department of Agriculture, Land Reform and Rural Development, by name Ms Annette Swanepoel and Mr Kobus Lategan. The ARC technicians and the farmers on whose farms the trials were planted are also thanked for their continuous support in planting the NCP trials.

Table 1. Trial localities, responsible person, irrigation regime and outcomes of the 2016/2017 NCP trials

Locality + Responsible person	Dryland / Irrigation	Outcome
Groblersdal C Fourie	Irrigation	This trial resulted in low yields due to an outbreak of cotton strainers. Weekly applications, as weather permitted, with synthetic pyrethroid lambda cyhalothrin (Karate and Lambda) and deltametrin and methomyl (not registered) could not control the high infestation of cotton strainers until mid March 2017.
Roedtan L Venter	Dryland	This trial was planted but emerged poorly because it was planted too deep. Continued drought after planting inhibited emergence.
Weipe J Willemse	Irrigation	Researchers decided together with Mr J Willemse on a January 2017 planting as he obtained 10 tons seedcotton yield per ha during his 2016 commercial cotton planting. Adverse weather conditions prevented planting in January 2017.
Makhathini J Steyn	Dryland	Good yields of up to 0.85 tons per hectare were obtained from cultivar DP 1531 B2RF
Upington K Lategan	Irrigation	The best performing cultivar was DP 1240 B2RF with 2.9 ton/ha fibre yield.
Vaalharts J Van Schalkwyk	Irrigation	The best performing cultivar was Candia BGRF with 2.1 ton/ha fibre yield.
Stella G Cilliers	Dryland	This trial was planted but emergence was poor due to drought and/or planting too deep.

Table 2. Entries used in the National Cotton Cultivar Trials (NCP) at the different localities under irrigation conditions

Loskop	**Vaalharts**	**Upington**
Candia BGRF	Candia BGRF	Candia BGRF
Carla	Carla	Carla
Delta 12 BRF	Delta 12 BRF	Delta 12 BRF
DP 1240 B2RF	DP 1240 B2RF	DP 1240 B2RF
DP 1531 B2RF	DP 1531 B2RF	DP 1531 B2RF
DP 1541 B2RF	DP 1541 B2RF	DP 1541 B2RF

Table 3. Entries used in the National Cotton Cultivar Trials (NCP) at the different localities under dryland conditions

Makhathini	**Roedtan**	**Stella**
Candia BGRF	Candia BGRF	Candia BGRF
Carla	Carla	Carla
Delta 12 BRF	Delta 12 BRF	Delta 12 BRF
DP 1240 B2RF	DP 1240 B2RF	DP 1240 B2RF
DP 1531 B2RF	DP 1531 B2RF	DP 1531 B2RF
DP 1541 B2RF	DP 1541 B2RF	DP 1541 B2RF
PM 3225 B2RF		

Origin of cultivars:

DeltaPine Monsanto:

Delta 12 BRF, DP 1240 B2RF, DP 1531 B2RF, DP 1541 B2RF, PM 3225 B2RF

Bayer:

Candia BGRF and Carla

Table 4. Minimum and maximum specifications for the various classes of cotton lint which are being used in the present grading system as applied by Cotton SA

GROUPS	Class X	Class O		Class 1			Class 2		Class 3		Class B
CLASSES	AX	AO	AOM	A1	A1M	A1L	A2	A2L	A3	A3L	B
Quality spec. Staple Length Mm/inches	30.2 (1 3/16")	28.6 (1 1/8")	28.6 (1 1/8")	27.8 (1 3/32")	27.8 (1 3/32")	27.8 (1 3/32")	26.9 (1 1/16")	26.9 (1 1/16")	26.9 (1 1/16")	26.9 (1 1/16")	25.4 (1")
Micronaire	3.50	3.50	3.30	3.50	3.30	3.00	3.50	3.30	3.50	3.30	3.00
Fibre Tenacity Gm/tex:1/8 gauge (HVI level)	26.0	26.0	26.0	26.0	26.0	24.50	24.50	23.0	22.0	22.0	22.0

BSG:

ANY GRADE	Below LFY but not below Good Ordinary
or STAPLE LENGTH	Shorter than 25.4 mm
or PRESSLEY	Below 70 000 pounds per square inch (psi) (22 gm/tex)
or MICRONAIRE	Below 3.0

LOSKOP

IRRIGATION

Yield performance at Loskop

A very high infestation of Cotton Stainers (*Dysdercus nigrofasciatus*) resulted in low yield at the NCP trial. Cotton strainers are rarely a problem in cotton because they are controlled by broad spectrum insecticides. However, enough moisture from rainfall and irrigation was present from December 2016 until February 2017 for the insect to thrive. These mild conditions in combination with a low broadcast of insecticides on neighboring ratoon cotton fields presented a very high infestation of cotton strainers on the NCP and other trials. As an occasional pest, there are only a few products registered for their control. Weekly applications, as weather permitted, with synthetic pyrethroid lambda cyhalothrin (Karate and Lambda) and deltametrin and methomyl (not registered) could not control the high infestation of cotton strainers until mid March 2017.

Although seed cotton yield did not differ significantly, DP 1240 B2RF gave the highest seed cotton yield of 2777 kg/ha, followed by DP 1541 B2RF with 2737 kg/ha (Table 5). Fibre percentages differed significantly with the best performer cultivar DP 1541 B2RF with 43.0 %, followed by Candia BGRF with 42.4%. Fibre yields differed significantly. The highest fibre yield was obtained with DP 1541 B2RF (1175 kg/ha), followed by DP 1240 B2RF with 1101 kg/ha (Fig. 1).

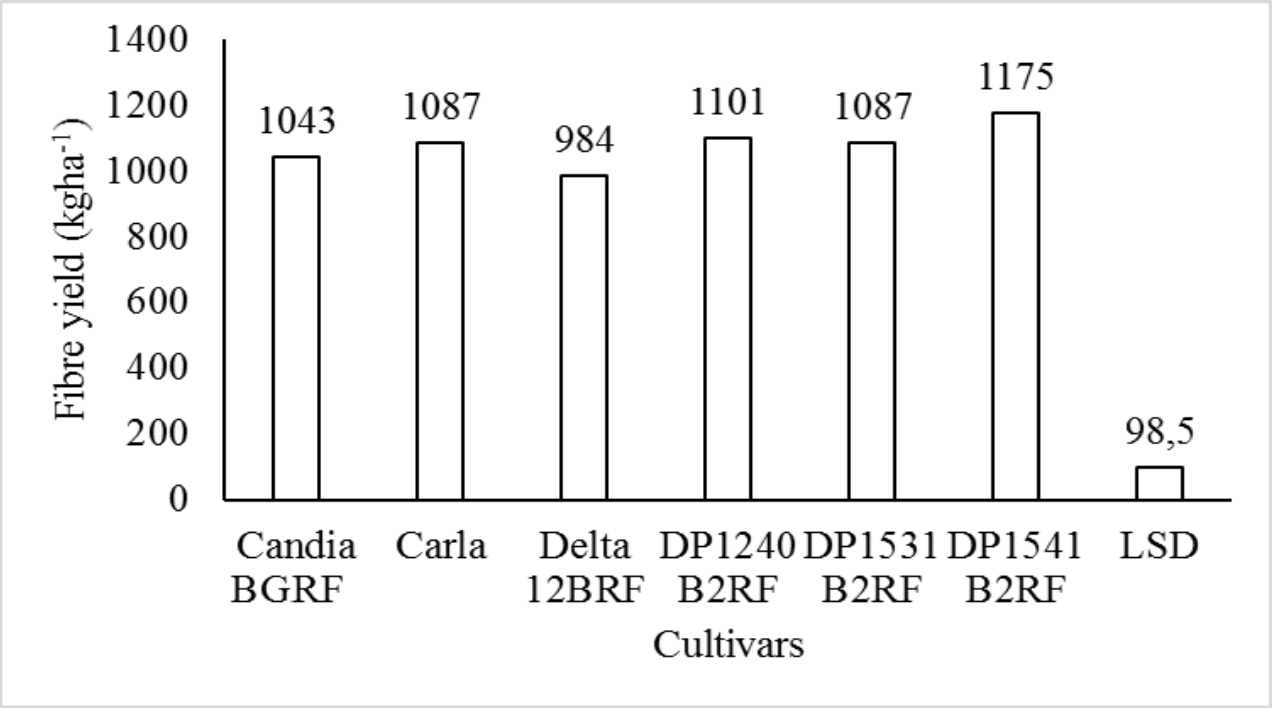

Figure 1. Fibre yield (kg/ha) of different cotton cultivars at Loskop, 2016/2017 season

Quality performance at Loskop

From Table 5 it can be seen that cultivars differed significantly regarding fibre length (mm). Candia BGRF gave the longest fibre of 28.7 mm, and DP 1541 B2RF gave the shortest fibre of 26.7 mm. Fibre strength did not differ significantly, but DP 1240 B2RF gave the strongest fibre of 28.0 g/tex. The weakest fibre was produced by Delta 12 BRF with 25.7 g/tex. Micronaire values were in the acceptable range except Candia BGRF with 3.4 and DP 1531 B2RF with 3.3 (Fig. 2). Discounts were in place for any cotton with a micronaire reading below 3.5 and/or above 4.9.

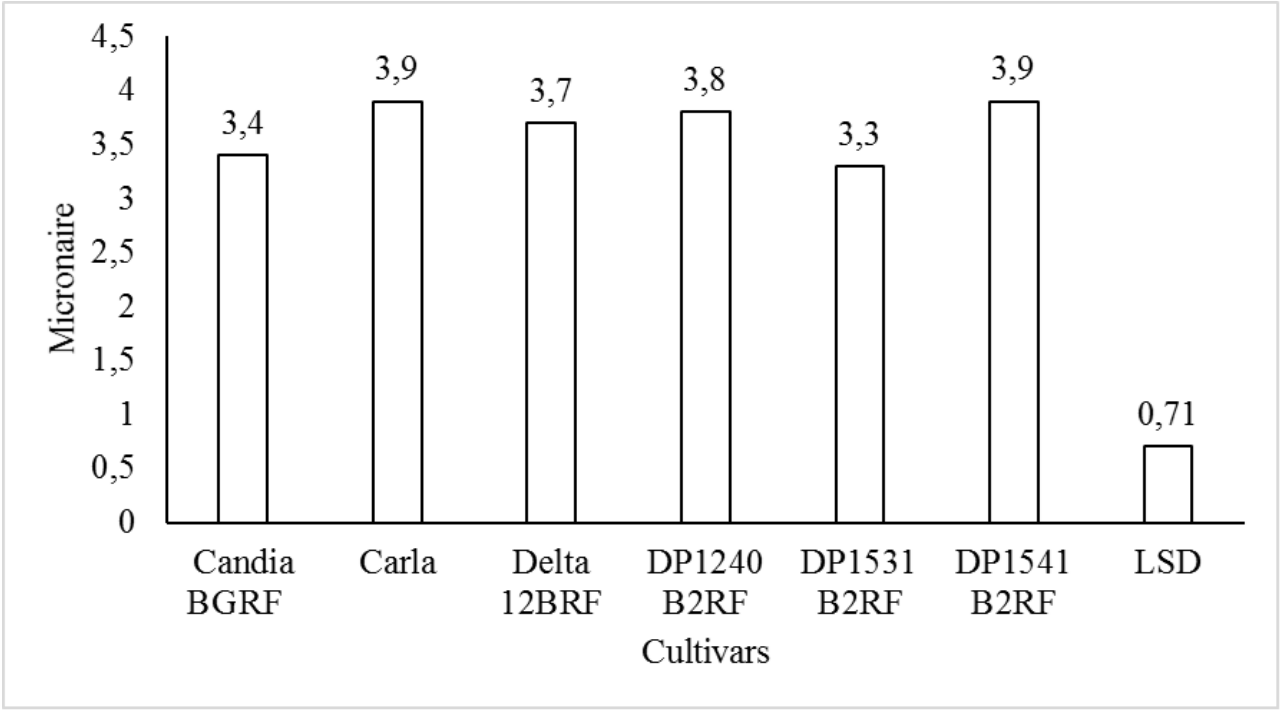

Figure 2. Micronaire of different cotton cultivars at Loskop, 2016/2017 season

Table 5. Summary of cultivar performance in Loskop (under irrigation), 2016/2017

Variety		Candia BGRF	Carla	Delta 12 BRF	DP 1240 B2RF	DP 1531 B2RF	DP 1541 B2RF
Yield (kg/ha)		2454	2573	2544	**2777**	2683	2737
Fibre %		42.4	42.1	38.8	39.6	40.6	**43.0**
Fibre yield (kg/ha)		1043	1087	984	1101	1087	**1175**
Length (mm)		**28.7**	27.9	27.3	27.7	28.1	26.7
Uniformity		81.5	81.7	81.3	81.1	82.4	81.5
Strength (g/tex)		26.3	26.7	25.7	**28.0**	27.0	26.7
Rd		76.0	79.7	75.1	72.3	75.9	74.2
Plus b		8.9	7.0	8.4	9.2	9.3	8.9
Micronaire		3.4	3.9	3.7	3.8	3.3	3.9
Maturity		85.0	85.8	85.8	85.6	84.6	85.6
Tukey's LSD (p<0.05)		**CV (%)**					
Yield (kg/ha)	NS	5.6					
Fibre %	2.3	3.3					
Fibre yield (kg/ha)	98.5	6.9					
Length (mm)	0.92	2.5					
Uniformity	1.7	1.5					
Strength (g/tex)	NS	4.3					
Rd	2.1	2.1					
Plus b	0.86	7.6					
Micronaire	NS	14.7					
Maturity	NS	1.4					

NS = Non significantly different

Table 6. Colour grades of the NCP cotton trial at Loskop, 2016/2017

Rep	Cultivar	Colour Grade
1	Candia BGRF	31-3
1	Carla	31-2
1	Delta 12 BRF	41-1
1	DP 1240 B2RF	32-1
1	DP 1531 B2RF	31-1
1	DP 1541 B2RF	32-1
2	Candia BGRF	31-1
2	Carla	31-1
2	Delta 12 BRF	31-4
2	DP 1240 B2RF	42-2
2	DP 1531 B2RF	32-1
2	DP 1541 B2RF	41-3
3	Candia BGRF	31-1
3	Carla	31-2
3	Delta 12 BRF	31-1
3	DP 1240 B2RF	42-1
3	DP 1531 B2RF	31-3
3	DP 1541 B2RF	31-2
4	Candia BGRF	31-3
4	Carla	31-2
4	Delta 12 BRF	41-3
4	DP 1240 B2RF	42-1
4	DP 1531 B2RF	32-2
4	DP 1541 B2RF	42-1

Note: 31 = middling white, whereas 41 and 42 refers to Strict Low Middling white and light spotted

MAKHATHINI

DRYLAND

Yield performance at Makhathini

Seed cotton yield did not differ significantly, but DP 1531 B2RF gave the highest seed cotton yield of 2083 kg/ha, followed by DP 1541 B2RF with 2008 kg/ha (Table 7). Fibre percentages differed significantly with the highest percentage obtained from DP 1541 B2RF (40.9 %), followed by DP 1531 B2RF with 40.5%. Fibre yields did not differ significantly but the highest fibre yield was obtained with DP 1531 B2RF (852 kg/ha), followed by DP 1541 B2RF with 831 kg/ha (Fig. 3).

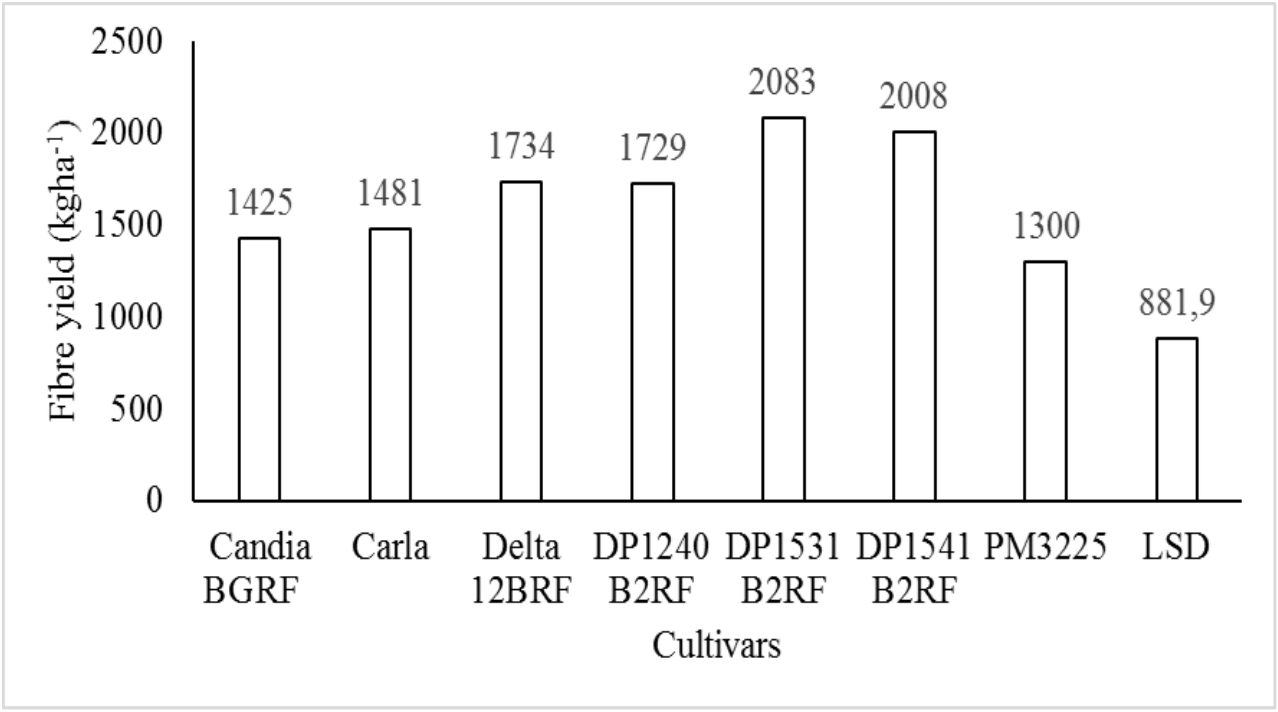

Figure 3. Fibre yield (kg/ha) of different cotton cultivars at Makhathini, 2016/2017 season

Quality performance at Makhathini

In Table 7 it can be seen, that fibre length differed significantly. DP 1531 B2RF gave the longest fibres of 31.2 mm versus Delta 12 BRF with the shortest fibres of 29.4 mm. Strength differed significantly with DP 1240 B2RF having the strongest fibre of 32.2 g/tex. The weakest fibre was found with cultivar Carla with 29.2 g/tex. Micronaire differed significantly. DP 1541 B2RF had the highest micronaire of 3.7, followed by DP 1531 B2RF with 3.6. Cultivars DP 1240 B2RF, Carla, Delta 12 BRF, PM 3225 BG2RF and Candia BGRF did not obtain the acceptable micronaire of 3.5 (Fig. 4). Any cotton below a micronaire value of 3.00

is regarded as immature cotton. (Heavy discounted). Discounts are also maintained with cotton below 3.5 as it also indicate that some immature cotton is involved.

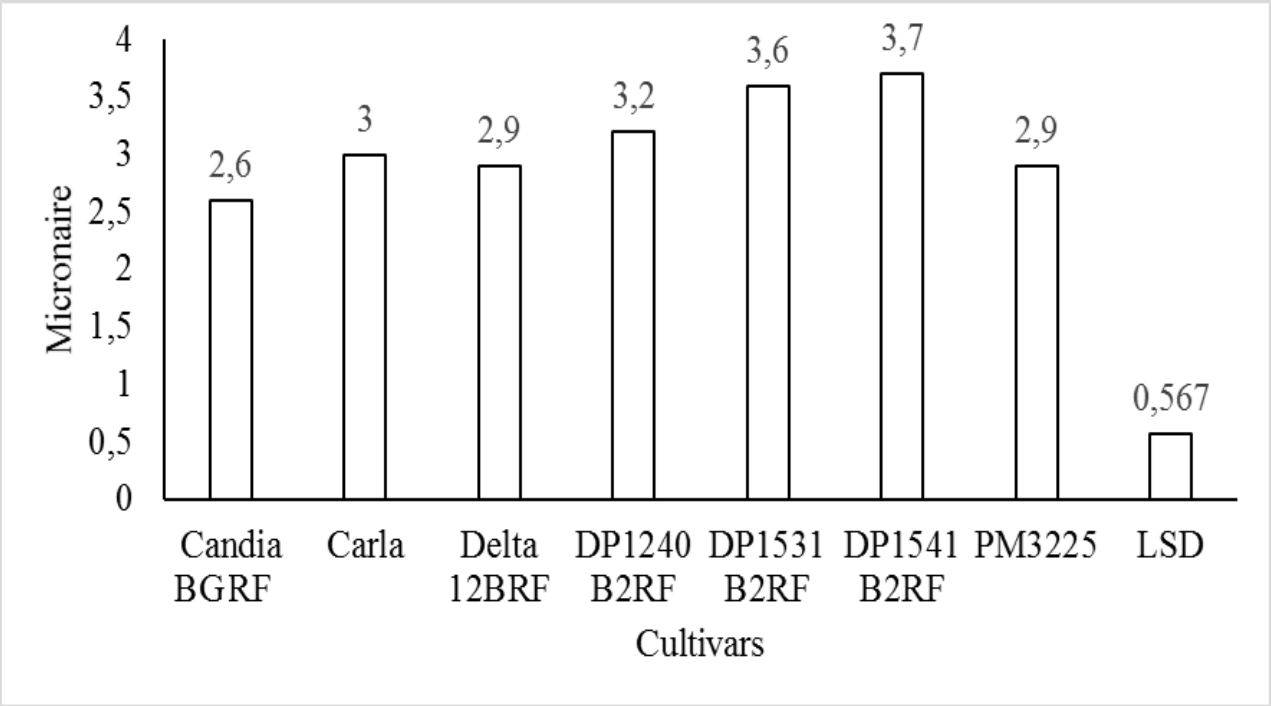

Figure 4. Micronaire of different cotton cultivars at Makhathini, 2016/2017 season

Table 7. Summary of cultivar performance at Makhathini under dryland conditions, 2016/2017

Variety	Candia BGRF	Carla	Delta 12 BRF	DP 1240 B2RF	DP 1531 B2RF	DP1541 B2RF	PM 3225 B2RF
Yield (kg/ha)	1425	1481	1734	1729	**2083**	2008	1300
Pick 1 %	41.6	55.7	53.9	47.8	38.7	37.2	46.5
Fibre %	37.8	37.6	36.2	36.2	40.5	**40.9**	36.7
Fibre yield (kg/ha)	539	557	644	624	852	831	477
Length (mm)	**31.2**	30.6	29.4	31.0	31.1	30.9	29.6
Uniformity	84.6	85.1	83.5	85.1	85.4	85.2	85.2
Strength (g/tex)	29.8	29.2	29.5	**32.2**	30.9	31.6	30.4
Rd	84.3	82.4	84.4	82.5	83.8	82.5	81.5
Plus b	8.0	8.7	7.7	8.8	8.1	8.8	8.9
Micronaire	2.6	3.0	2.9	3.2	3.6	3.7	2.9
Maturity	81.8	82.4	82.6	83.4	84.2	84.4	82.0

Tukey's LSD (p<0.05)		**CV (%)**
Yield (kg/ha)	NS	40.2
Pick 1 %	NS	23.3
Fibre %	1.5	3.1
Fibre yield (kg/ha)	NS	44
Length (mm)	0.80	2.0
Uniformity	NS	1.2
Strength (g/tex)	1.6	4.1
Rd	NS	1.6
Plus b	0.7	6.3
Micronaire	0.6	13.9
Maturity	0.01	1.3

NS = Non significantly different

Table 8. Colour grades of the NCP cotton trial at Makhathini, 2016/2017

Rep	Cultivar	Colour Grade
1	Candia BGRF	11-1
1	Carla	11-1
1	Delta 12 BRF	11-1
1	DP 1240 B2RF	11-1
1	DP 1531 B2RF	11-1
1	DP 1541 B2RF	11-1
1	PM 3225 BG2RF	11-1
2	Candia BGRF	11-1
2	Carla	11-1
2	Delta 12 BRF	11-1
2	DP 1240 B2RF	11-1
2	DP 1531 B2RF	11-1
2	DP 1541 B2RF	11-1
2	PM 3225 BG2RF	11-1
3	Candia BGRF	11-1
3	Carla	11-1
3	Delta 12 BRF	11-1
3	DP 1240 B2RF	11-1
3	DP 1531 B2RF	11-1
3	DP 1541 B2RF	11-1
3	PM 3225 BG2RF	21-1
4	Candia BGRF	11-1
4	Carla	11-2
4	Delta 12 BRF	11-1
4	DP 1240 B2RF	11-1
4	DP 1531 B2RF	11-1
4	DP 1541 B2RF	11-1
4	PM 3225 BG2RF	21-1

Colour grade (11-1) refers to Good Middling / white cotton which is the highest/best USDA STANDARD GRADE

VAALHARTS
IRRIGATION

Yield performance at Vaalharts

Although seed cotton yield did not differ significantly (Table 9), DP 1240 B2RF gave the highest seed cotton yield of 4886 kg/ha, followed by Delta 12 BRF with 4703 kg/ha. Fibre percentages differed significantly with the best performing cultivar being Candia BGRF with 45.6 % followed by DP 1531 B2RF with 44.3 %. Fibre yields (varied) differed significantly. The highest fibre yield was obtained with Candia BGRF (2141 kg/ha), followed by DP 1240 B2RF with 2074 kg/ha. (Fig. 5).

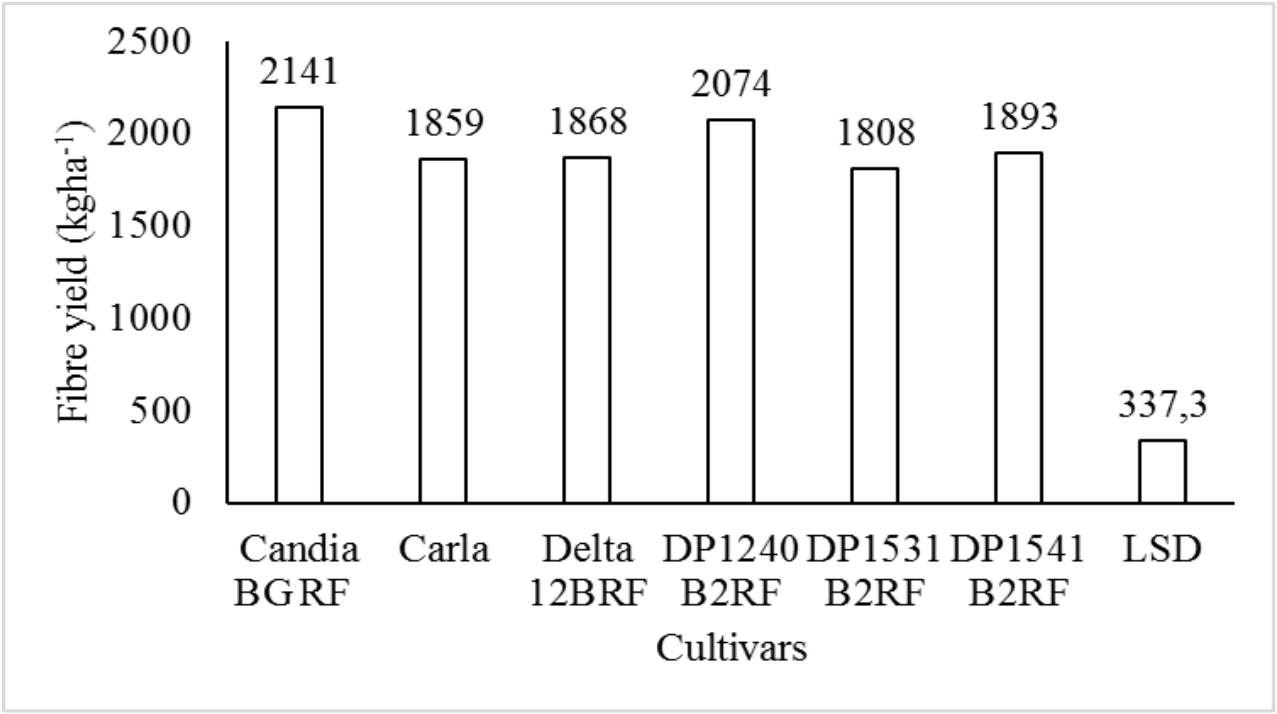

Figure 5. Fibre yield (kg/ha) of different cotton cultivars at Vaalharts, 2016/2017 season

Quality performance at Vaalharts

The various fibre properties of the cultivars tested, performed exceptionally well except for Carla with a low strength value which in fact is a strange phenomenon. Although fibre length, strength and micronaire differed significantly (Table 9) it was performing well within the international accepted values. The longest fibre of 30.7 mm was obtained with Carla, and the shortest fibres (29.5 mm) with both DP 1531 B2RF and DP 1541 B2RF. The strongest fibre was obtained with DP 1240 B2RF of 30.4 g/tex. The weakest fibre was found at Carla (25.9 g/tex). Micronaire of all cultivars was within the acceptable norm of 3.5 to 4.9. (Fig 6).

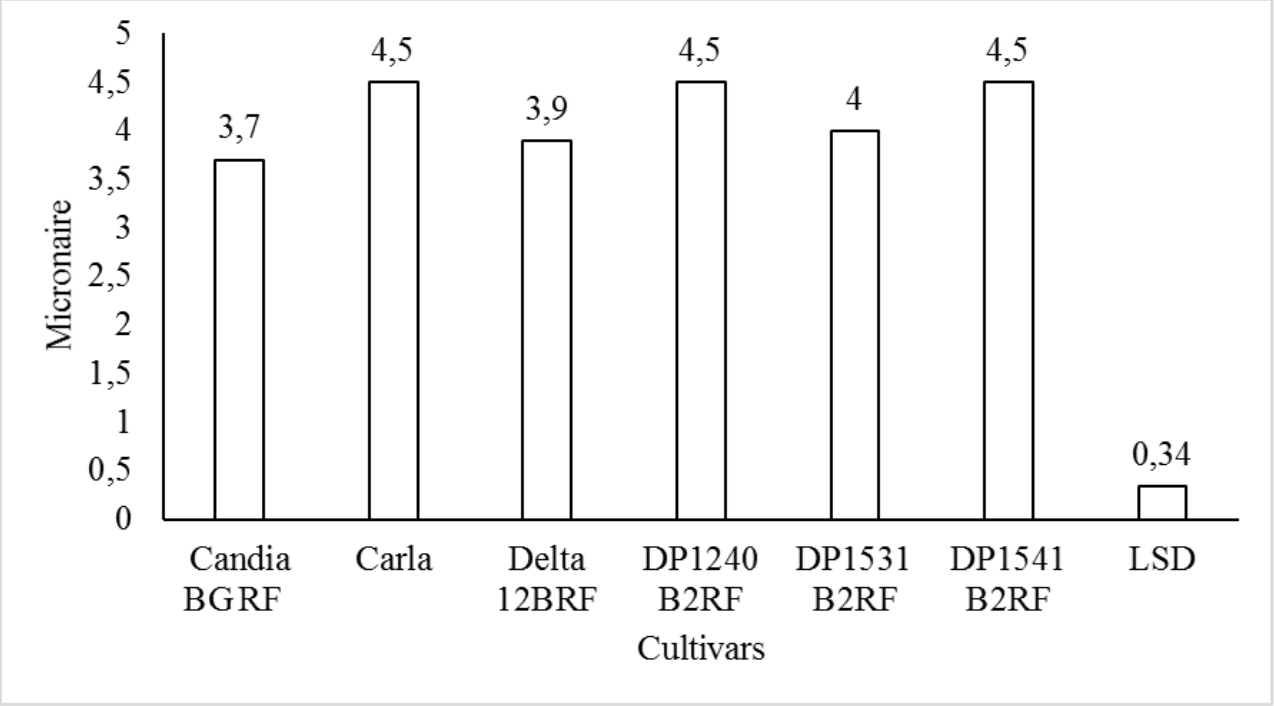

Figure 6. Micronaire of different cotton cultivars at Vaalharts, 2016/2017 season

Table 9. Summary of cultivar performance at Vaalharts (under irrigation), 2016/2017

Variety		Candia BGRF	Carla	Delta 12 BRF	DP 1240 B2RF	DP 1531 B2RF	DP 1541 B2RF
Yield (kg/ha)		4694	4369	4703	**4886**	4074	4327
Fibre %		**45.6**	42.6	39.7	42.5	44.3	43.8
Fibre yield (kg/ha)		**2141**	1859	1868	2074	1808	1893
Length (mm)		30.4	**30.7**	28.9	29.6	29.5	29.5
Uniformity		83.8	85.0	82.5	83.5	83.4	83.2
Strength (g/tex)		28.8	25.9	26.9	**30.4**	27.3	28.1
Rd		76.7	76.9	76.9	74.2	77.3	75.3
Plus b		7.6	8.2	7.2	8.4	7.1	8.3
Micronaire		3.7	4.5	3.9	4.5	4.0	4.5
Maturity		84.4	85.4	85.0	86.2	84.8	86.0
Tukey's LSD (p<0.05)		**CV (%)**					
Yield (kg/ha)	NS	13.0					
Fibre %	1.9	3.3					
Fibre yield (kg/ha)	NS	13.2					
Length (mm)	0.7	1.8					
Uniformity	0.9	0.8					
Strength (g/tex)	1.7	4.5					
Rd	1.6	1.6					
Plus b	0.6	2.5					
Micronaire	0.3	6.2					
Maturity	0.01	0.9					

NS = Non significantly different

Table 10. Colour grades of the NCP cotton trial at Vaalharts, 2016/2017

Rep	Cultivar	Colour Grade
1	Candia BGRF	41-1
1	Carla	31-2
1	Delta 12 BRF	31-2
1	DP 1240 B2RF	41-2
1	DP 1531 B2RF	31-2
1	DP 1541 B2RF	41-3
2	Candia BGRF	41-1
2	Carla	31-2
2	Delta 12 BRF	41-1
2	DP 1240 B2RF	41-3
2	DP 1531 B2RF	41-1
2	DP 1541 B2RF	41-1
3	Candia BGRF	41-1
3	Carla	31-2
3	Delta 12 BRF	41-1
3	DP 1240 B2RF	31-2
3	DP 1531 B2RF	41-1
3	DP 1541 B2RF	31-1
4	Candia BGRF	41-1
4	Carla	31-1
4	Delta 12 BRF	41-1
4	DP 1240 B2RF	42-1
4	DP 1531 B2RF	41-4
4	DP 1541 B2RF	31-2

The colour grades refer from Middling to Strict Low Middling cottons, which is much lower, compared to the colour values obtained from the MAKHATHINI area.

UPINGTON

IRRIGATION

Trial was conducted by the Northern Cape Department of Agriculture, Land Reform and Rural Development

Yield performance at Upington

Seed cotton yield did not differ significantly at Upington (Table 11). The highest seed cotton yield was obtained with DP 1240 B2RF (6 919 kg/ha) followed by DP 1531 B2RF (6 622 kg/ha). Cultivar Carla gave the lowest seed cotton yield of 5969 which was 1 ton less than DP 1240 B2RF. Fibre percentages did not differ significantly, but Candia BGRF gave the highest fibre % of 43.5, followed by DP 1531 B2RF with 42.9 %. Fibre yield also did not differ significantly. The two best performers regarding fibre yield were DP 1240 B2RF (2887 kg/ha) and DP 1531 B2RF (2842 kg/ha). The lowest fibre yield was obtained with Delta 12 BRF (2414 kg/ha) (Fig. 7).

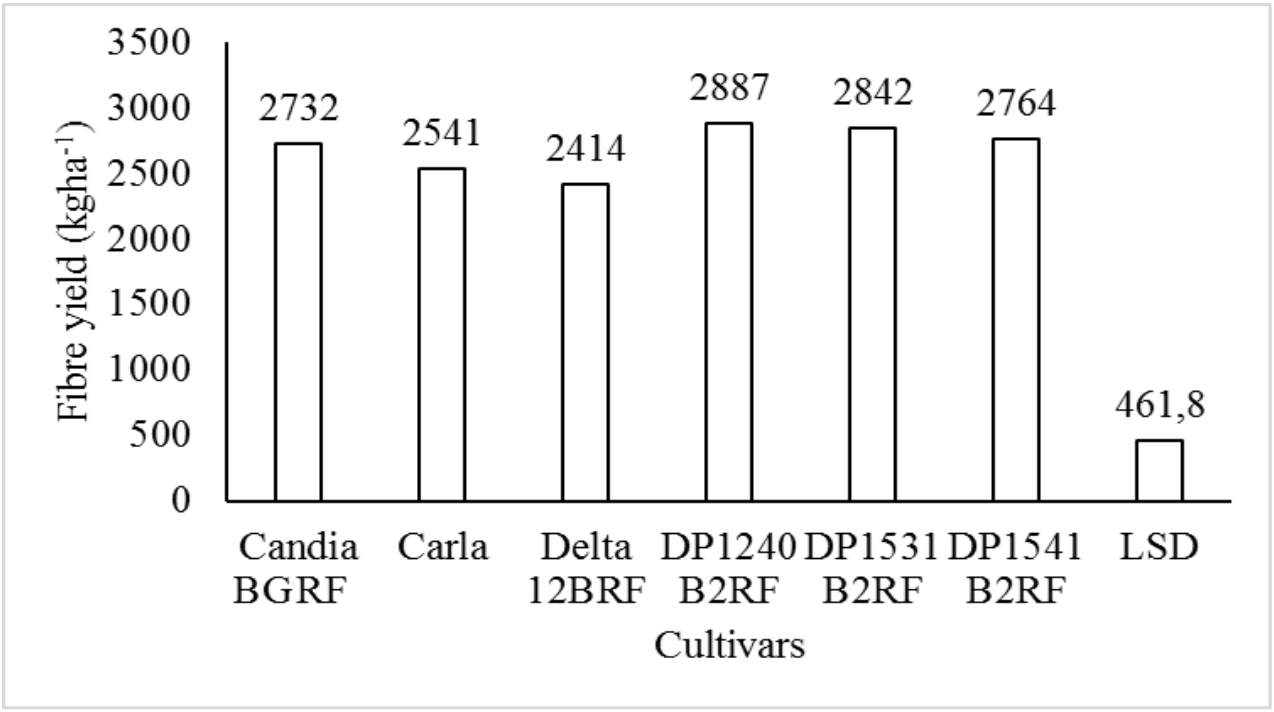

Figure 7. Fibre yield (kg/ha) of different cotton cultivars at Upington, 2016/2017 season

Quality performance at Upington

From Table 11, it can be seen that fibre length, strength and micronaire did not differ significantly. The longest fibre of 32.7 mm was obtained with Candia BGRF. The shortest fibre was obtained with cultivar DP 1541 B2RF (31.0 mm). The strongest fibre was obtained with DP 1240 B2RF (31.9 g/tex) and the weakest fibre from Carla with 29.4 g/tex. Cultivars were within the acceptable range for micronaire which is 3.5 – 4.9. The premium range for micronaire is 3.8 to 4.2. DP 1240 B2RF had the highest micronaire of 4.9 (Fig. 8).

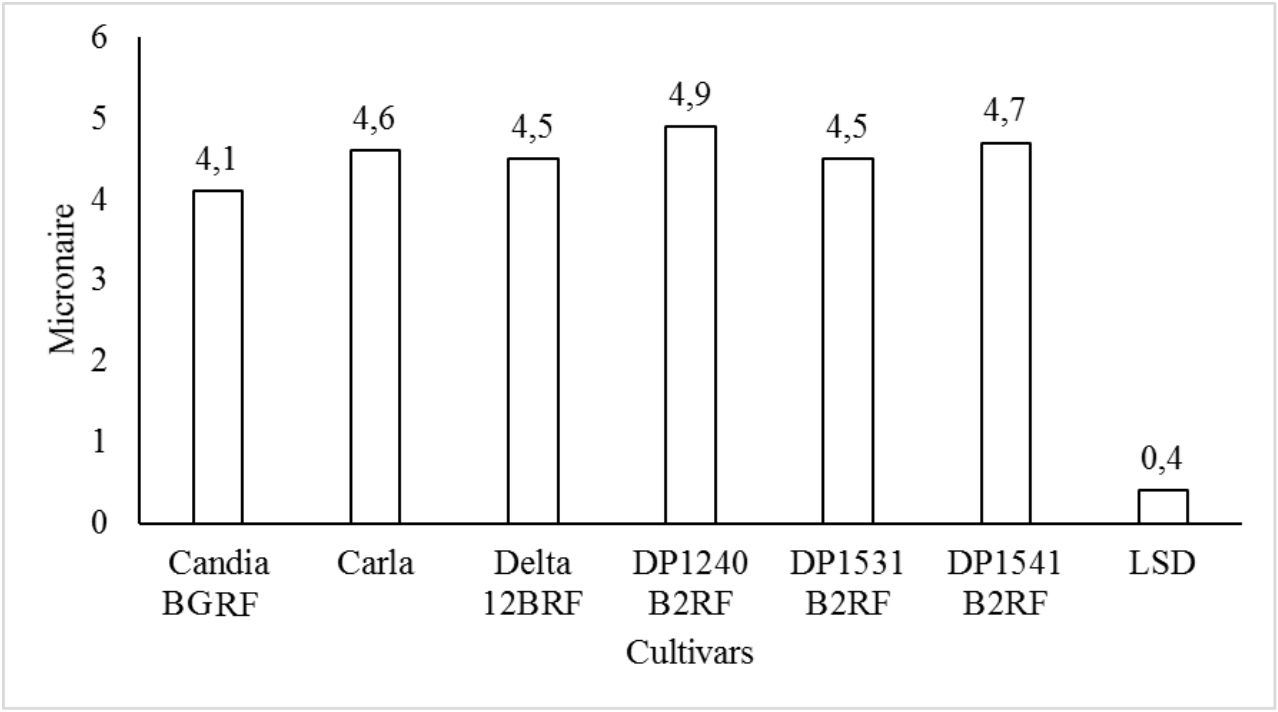

Figure 8. Micronaire of different cotton cultivars at Upington, 2016/2017 season

Table 11. Summary of cultivar performance at Upington (under irrigation), 2016/2017

Variety		Candia BGRF	Carla	Delta 12 BRF	DP 1240 B2RF	DP 1531 B2RF	DP 1541 B2RF
Yield (kg/ha)		6273	5969	6084	**6919**	6622	6546
Fibre %		**43.5**	42.6	39.4	41.8	42.9	42.2
Fibre yield (kg/ha)		2732	2541	2414	**2887**	2842	2764
Length (mm)		**32.7**	31.5	31.2	31.2	31.2	31.0
Uniformity		84.4	86.1	83.9	84.6	84.1	84.7
Strength (g/tex)		31.1	29.4	29.9	**31.9**	29.9	31.5
Rd		83.0	81.7	82.2	79.5	80.2	80.4
Plus b		6.7	7.6	7.1	7.1	6.6	7.4
Micronaire		4.1	4.6	4.5	4.9	4.5	4.7
Maturity		86.6	87.4	87.4	88.0	87.6	87.8
Tukey's LSD (p<0.05)		**CV (%)**					
Yield (kg/ha)	NS	10.5					
Fibre %	NS	4.7					
Fibre yield (kg/ha)	NS	13.0					
Length (mm)	NS	2.3					
Uniformity	NS	1.1					
Strength (g/tex)	NS	5.1					
Rd	NS	2.4					
Plus b	NS	6.5					
Micronaire	NS	6.7					
Maturity	NS	0.7					

NS = Non significantly different

Table 12. Colour grades of the NCP cotton trial at Upington, 2016/2017

Rep	Cultivar	Colour Grade
1	Candia BGRF	11-2
1	Carla	11-1
1	Delta 12 BRF	21-1
1	DP 1240 B2RF	31-1
1	DP 1531 B2RF	11-2
1	DP 1541 B2RF	21-1
2	Candia BGRF	31-1
2	Carla	21-2
2	Delta 12 BRF	21-1
2	DP 1240 B2RF	41-1
2	DP 1531 B2RF	41-1
2	DP 1541 B2RF	41-2
3	Candia BGRF	11-2
3	Carla	21-1
3	Delta 12 BRF	31-1
3	DP 1240 B2RF	11-2
3	DP 1531 B2RF	31-2
3	DP 1541 B2RF	21-1
4	Candia BGRF	41-1
4	Carla	41-1
4	Delta 12 BRF	31-2
4	DP 1240 B2RF	41-1
4	DP 1531 B2RF	41-1
4	DP 1541 B2RF	31-2

Colour grades: The USDA Colour Grades of which the norm is the same when compared with the OFFICIAL USDA GRADING STANDARDS can be summarized as follows: 11 = Good Middling / white. 21 = Strict Middling / White. 31 = Middling white, 41 = Strict Low Middling / white. 51 = Low Middling / White.

Table 13. Candia BGRF summarized within localities, NCP trials 2016/2017

	Candia BGRF			
	Loskop	**Makhathini**	**Upington**	**Vaalharts**
Seed cotton yield (kg/ha)	2454	1425	6273	4694
Fibre %	42.4	37.8	43.5	45.6
Fibre yield (kg/ha)	1043	539	2732	2141
Length (mm)	28.7	31.2	32.7	30.4
Strength (g/tex)	26.3	29.8	31.1	28.8
Micronaire	3.4	2.6	4.1	3.7

Table 14. Carla summarized within localities, NCP trials 2016/2017

	Carla			
	Loskop	**Makhathini**	**Upington**	**Vaalharts**
Seed cotton yield (kg/ha)	2573	1481	5969	4369
Fibre %	42.1	37.6	42.6	42.6
Fibre yield (kg/ha)	1087	557	2541	1859
Length (mm)	27.9	30.6	31.5	30.7
Strength (g/tex)	26.7	29.2	29.4	25.9
Micronaire	3.9	3.0	4.6	4.5

Table 15. Delta 12 BRF summarized within localities, NCP trials 2016/2017

	Delta 12 BRF			
	Loskop	**Makhathini**	**Upington**	**Vaalharts**
Seed cotton yield (kg/ha)	2544	1734	6084	4703
Fibre %	38.8	36.2	39.4	39.7
Fibre yield (kg/ha)	984	644	2414	1868
Length (mm)	27.3	29.4	31.2	28.9
Strength (g/tex)	25.7	29.5	29.9	26.9
Micronaire	3.7	2.9	4.5	3.9

Table 16. DP 1240 B2RF summarized within localities, NCP trials 2016/2017

	DP 1240 B2RF			
	Loskop	**Makhathini**	**Upington**	**Vaalharts**
Seed cotton yield (kg/ha)	2777	1729	6919	4886
Fibre %	39.6	36.2	41.8	42.5
Fibre yield (kg/ha)	1101	624	2887	2074
Length (mm)	27.7	31.0	31.2	29.6
Strength (g/tex)	28.0	32.2	31.9	30.4
Micronaire	3.8	3.2	4.9	4.5

Table 17. DP 1531 B2RF summarized within localities, NCP trials 2016/2017

	DP 1531 B2RF			
	Loskop	**Makhathini**	**Upington**	**Vaalharts**
Seed cotton yield (kg/ha)	2683	2083	6622	4074
Fibre %	40.6	40.5	42.9	44.3
Fibre yield (kg/ha)	1087	852	2842	1808
Length (mm)	28.1	31.1	31.2	29.5
Strength (g/tex)	270	30.9	29.9	27.3
Micronaire	3.3	3.6	4.5	4.0

Table 18. DP 1541 B2RF summarized within localities, NCP trials 2017

	DP 1541 B2RF			
	Loskop	**Makhathini**	**Upington**	**Vaalharts**
Seed cotton yield (kg/ha)	2737	2008	6546	4327
Fibre %	43.0	40.9	42.2	43.8
Fibre yield (kg/ha)	1175	831	2764	1893
Length (mm)	26.7	30.9	31.0	29.5
Strength (g/tex)	26.7	31.6	31.5	28.1
Micronaire	3.9	3.7	4.7	4.5

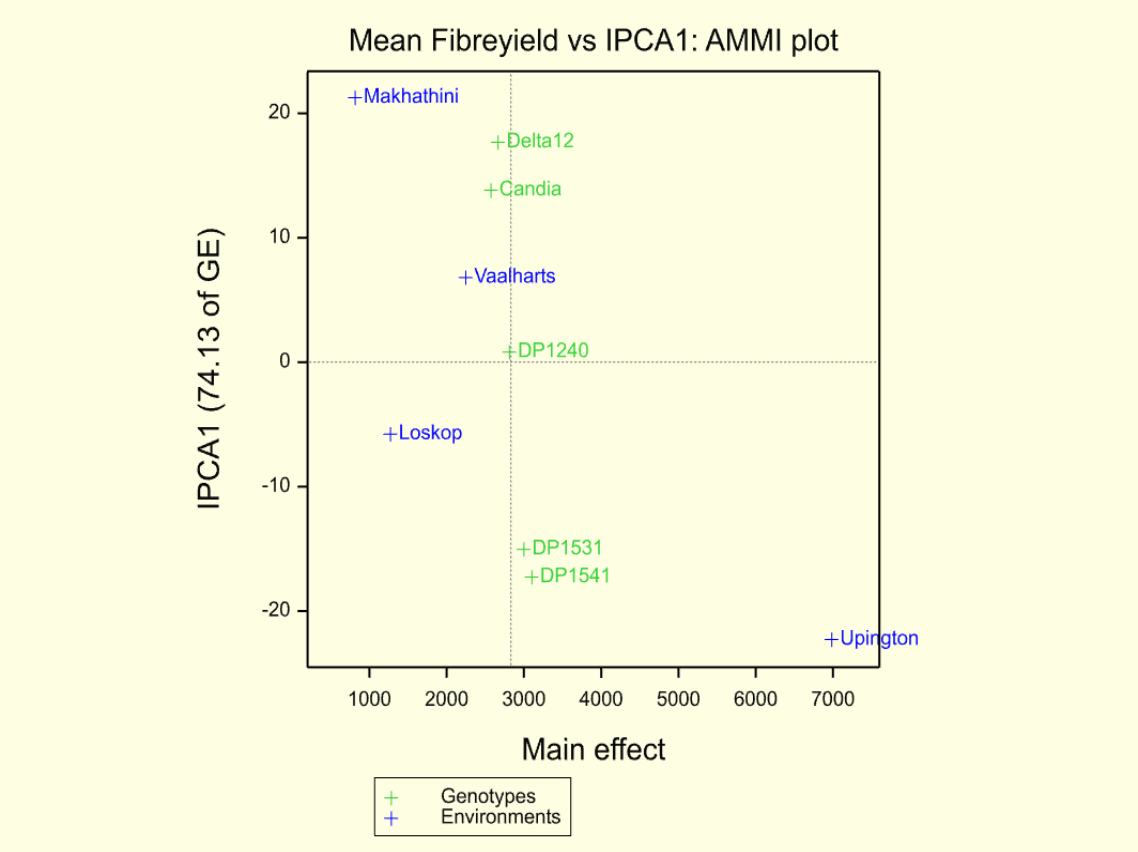

Figure 9. AMMI analyses over two years, four localities and five cultivars

Figure 9 is a summary of results for two seasons (2015/2016 and 2016/2017) of five different cotton cultivars (Delta 12 BRF, Candia BGRF, DP1240 B2RF, DP 1531 B2RF and DP1541 B2RF) planted at four localities (Loskop, Makhathini, Vaalharts and Upington). As cultivar DP 1240 B2RF is close to the zero line, it is an indication that DP 1240 B2RF is the most stable cultivar. Although a cultivar is identified as most stable, it does not mean that this cultivar always gives the highest yields but means that the cultivar will do well over years even if climatic conditions are not favourable. In Figure 9, DP 1541 B2RF gave above average yields, followed by DP 1531 B2RF. DP 1240 B2RF gave average yields, whereas Candia BGRF and Delta 12 B2RF gave below average yields.

Table 19. Cultivation practices at the different NCP localities, 2016/2017

Locality	Fertilizer (N)	Fertilizer (P)	Fertilizer (K)	Weed control	Irrigation
Loskop	300 kg per hectare LAN	350 kg 4:3:4 (33)		Manual	Central Pivot
Makhathini	0	0	0	Manual	Rainfed
Vaalharts	130 kg/ha before planting, Top-dressed with 60 kg N at 5-6 weeks as well as 7-8 weeks after planting.	70 P/ha	100 K/ha	Manual	Flood
Upington	150 N/ha	30 P/ha	40 K/ha	Manual and Roundup	Flood

Table 20. Weather data, Loskop, 2016/2017

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2016	October	32.6	16.2	160.3	697.7	155.7	442.9
2016	November	31.2	18.3	144.8	602.2	128.7	386.2
2016	December	31.4	19.5	69.1	725.5	153.1	464.2
2017	January	31.9	19.5	76.7	704.6	151.8	466.9
2017	February	31.8	19.9	38.1	577.6	129.9	429.9
2017	March	31.9	16.8	11.2	603.5	127.5	395.6
2017	April	29.2	14.6	24.6	494.1	99.6	342.9

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

Table 21. Weather data, Makhathini, 2016/2017

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2016	November	30.0	19.5	107.4	496.9	106.6	406.7
2016	December	34.3	21.1	43.9	624.0	141.6	499.4
2017	January	32.9	21.0	80.5	650.2	142.0	490.7
2017	February	33.2	21.9	70.9	519.1	114.7	458.9
2017	March	32.8	20.2	83.8	605.4	128.4	475.9
2017	April	31.2	18.3	37.3	462.8	97.8	403.6

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

Table 22. Weather data, Vaalharts, 2016/2017

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2016	November	36.0	15.9	36.2	814.9	191.8	449.9
2016	December	36.9	17.7	70.6	876	202.1	505.0
2017	January	32.3	16.3	136.4	786	165.9	420.7
2017	February	31.1	17.7	125.9	579.7	121.9	364.4
2017	March	33.6	12.7	4.6	686.1	148.1	383.6
2017	April	28.6	8.8	19.05	490.8	98.7	233.4

Tx = Maximum temperature, Tn = Minimum temperature395.7, Rs = Radiation, ETO = Evapotranspiration, HU = Heat Units

Table 23. Weather data, Upington, 2016/2017

Year	Month	Tx	Tn	Rain	Rs	ETO	HU
2016	November	36.7	13.1	1.78	842.7	198.1	460.5
2016	December	39.1	16.1	0	927.9	225.6	561.9
2017	January	36.6	17.7	78.2	830.2	190.2	515.2
2017	February	36.3	19.2	40.9	665.6	155.5	480.1
2017	March	36.5	15.0	7.1	701.8	162.3	474.6
2017	April	31.9	11.6	40.9	545.1	116.9	324.5

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

Table 24. Soil analysis of Loskop (National Cotton Cultivar Trials), 2016/2017

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 25. Soil analysis of Upington (National Cotton Cultivar Trials), 2016/2017

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 26. Soil analysis of Vaalharts (National Cotton Cultivar Trials), 2016/2017

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