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RESEARCH REPORT: GLYPHOSATE TRIAL

REPORT 2020/2021 SEASON

Aim: To evaluate different glyphosate applciations and their effect on cotton with regards to fibre quality and yield, on all commercial cotton cultivars, as well as PM 3225.

Producers requested this trial to investigate if the discolouration on cotton that is sometimes observed, can be as a result of phytotoxicity caused by exceeding the dosage of a herbicide called glyphosate, or whether it is a similar phenomenon to red-death.

Project	**Glyphosate resistant trial**	**Project leader**	**Steyns' Agricultural Services**
Producer	Contractor		
Locality	Makhathini Experimental Farm	Irrigation:	141 mm
Variety	Candia, DP 1531, DP 1541, DP 1240 PM3225	Rain:	548 mm
Layout	Randomized block design with 5 repetitions		
Plant date	2020/12/15		
Thinning	2020/12/28		
Plot size:	$16m^2$		

Growth regulator treatments

Treatments (glyphosate in different dosages)	Dosages per ha (liters)				
Varieties	**DP1531**	**DP1541**	**DP1240**	**Candia**	**MP3225**
Control	0	0	0	0	0
3 liters/ha x 4	3	3	3	3	3
4 liters /ha x 4	4	4	4	4	4
5 liters/ha x 4	5	5	5	5	5

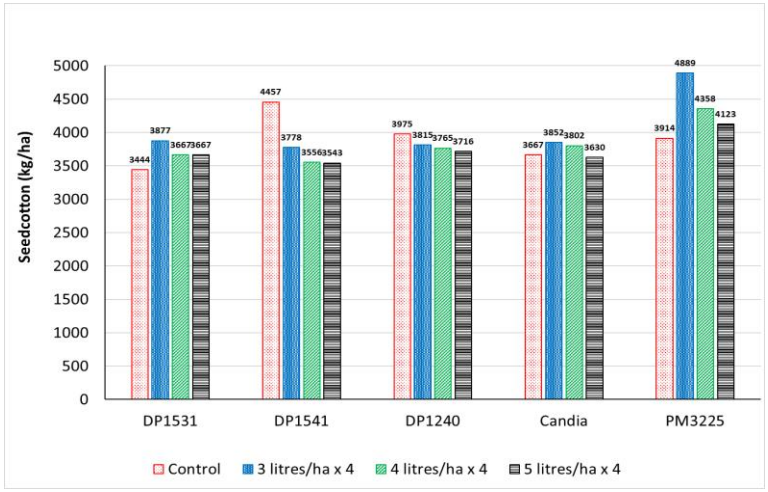
Dates of treatments

1st treatment	2/01/2021 & handweed control & 29/12/2020
2nd treatment	23/01/2021 & handweed of control
3rd treatment	15/02/2021 & handweed of control
4th treatment	20/03/2021 & handweed of control

Symptoms of overdosage of glyphosate

* Yellow discolouration of leaves of all cultivars - not in control

Results



Conclusions:

*Sign. diff (ANOVA), comparing yield and cultivar (df = 80; LSD = 413.5191) (interaction with treatments, n.s)
*Effect of cultivar on yield (p = 0.02) meaning cultivars determine yield.
*PM3225 on average gave a higher yield than the other cultivars.
*One can predict yield per cultivar.
*One can not say treatments differ significantly with regards to yield overall
*Glyphosate at high dosages (> 12l/ha) shows phytotoxicity on all cultivars, especially PM3225

* PM3225 showed some wilting, but still highest overall yield

* Leaf damage due to glyphosate - not in control, present on all cultivars

Project Glysphosate tolerance trial **Project leader** Steyns' Agricultural Services

Micronaire

Treatments	DP1531	DP1541	DP1240	Candia	PM3225
Control	4.02	4.35	4.24	3.70	3.69
3 litres/ha x 3	4.11	4.34	4.56	3.87	3.79
4 litres per ha x 3	4.02	4.44	4.32	3.46	3.77
5 litres per ha x 3	4.20	4.28	3.84	3.68	3.83

Fibre strength (g/tex)

Treatments	DP1531	DP1541	DP1240	Candia	PM3225
Control	31.6	30.6	32.8	31.6	32.7
3 litres/ha x 3	31.0	31.1	33.3	32.0	32.8
4 litres per ha x 3	30.9	32.0	33.1	30.8	32.1
5 litres per ha x 3	30.9	30.7	31.7	31.2	32.4

Length (inches)

Treatments	DP1531	DP1541	DP1240	Candia	PM3225
Control	1"7/32	1"7/32	1"3/16	1"7/32	1"5/32
3 litres/ha x 3	1"7/32	1"3/16	1"3/16	1"7/32	1"5/32
4 litres per ha x 3	1"3/16	1"5/32	1"7/32	1"3/26	1"5/33
5 litres per ha x 3	1"3/16	1"3/16	1"7/32	1"3/16	1"3/16

The effect of delaying harvesting on micronaire

Conclusions:

1. Micronaire of all cultivars showed the same tendency to be lower of seedcotton picked later
Example shown is for DP1541 but was similar in all cultivars
2. Micronaire is lower due to mixing of ripe and unripe fibre from old and young bolls
3. The higher the % bolls that are open and remain on the same plant,
the less influence it will have on micronaire - to bring the micronaire of the crop down.