



RESEARCH REPORT: SOIL MOISTURE CONTENT 2020/2021 SEASON

Aims:

- i) To evaluate how soil moisture levels varies within soil profiles over two seasons under dryland conditions, and how much soil moisture is available to cotton.**
- ii) To determine which soil type conserves soil moisture and what the relation is to fibre quality and yield.**





Project Effect of soil forms on soil moisture and dryland cotton production
Producer J. du Plessis
Locality Sweizer-Reneke
Variety Candia, DP 1541, DP 1240
Layout 2 Cotton fields each season (4 in total): 4 main soil types in each cotton field with 3 repetitions of each
Plant date Pretorius Rust: 4 November 2019
 Schietfontein: 13 November 2019
 Hoekblok: 5 November 2020
 Teerpadblok: 2 November 2020

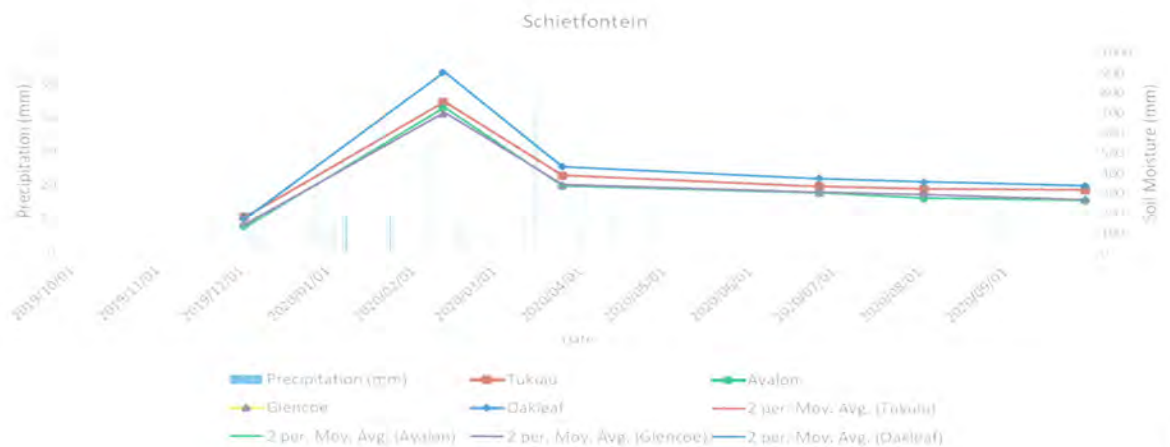
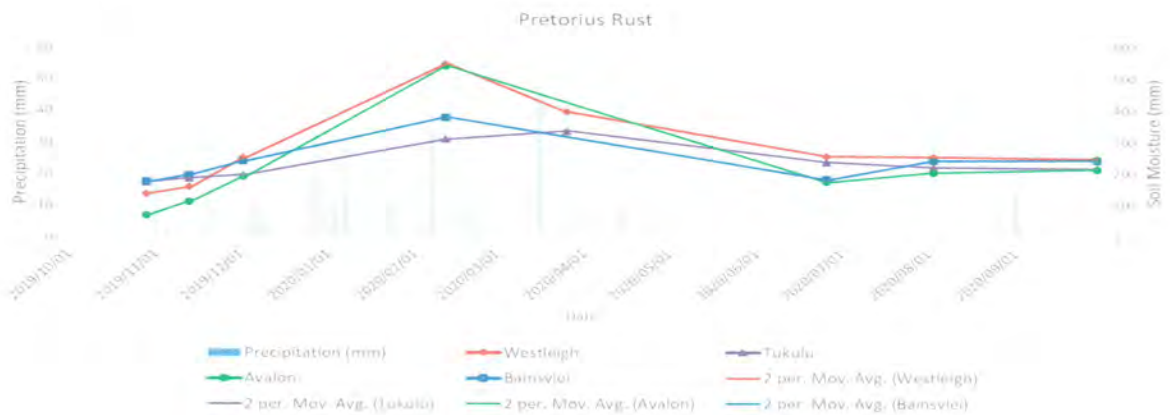
Project leader Ruan Gagiano



Layout

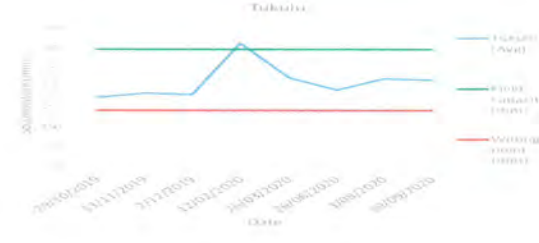
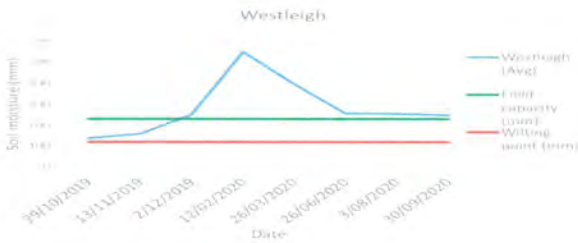
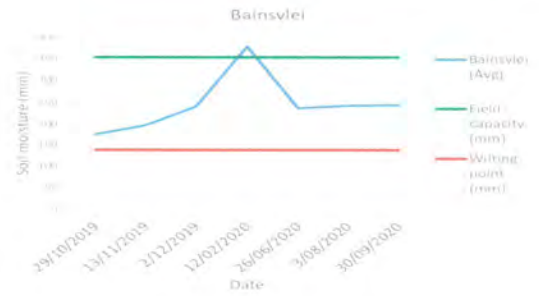
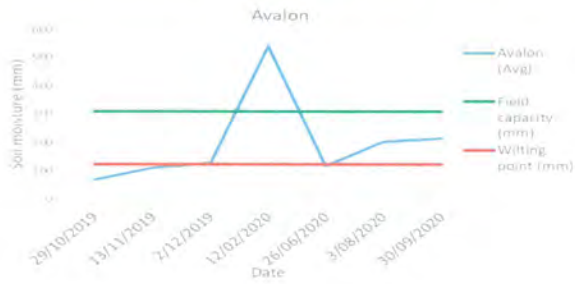
Cotton field	Soil types	Field capacity (mm)	Wilting point (mm)	Plant available water (mm)
Pretorius Rust	Westleigh	227.6836	120.4568	107.2268
	Tukulu	293.9258	142.57	151.3558
	Bainsvlei	353.3942	139.3413	214.0529
	Avalon	310.3674	122.3833	187.9841
Schietfontein	Tukulu	298.6754	107.6906	190.9847
	Oakleaf	284.4476	91.3583	193.0892
	Glencoe	264.0364	100.6734	163.363
	Avalon	396.8305	167.3067	229.5237
Hoekblok	Bainsvlei			
	Bloemdal			
	Sepane			
	Westleigh			
Teerpadblok	Tukulu			
	Westleigh			
	Oakleaf			
	Avalon			

Results Soil moisture

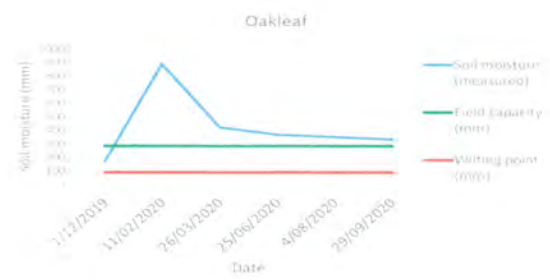
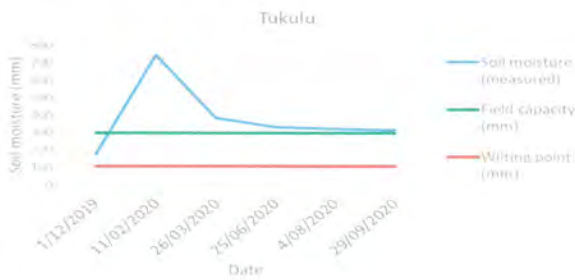
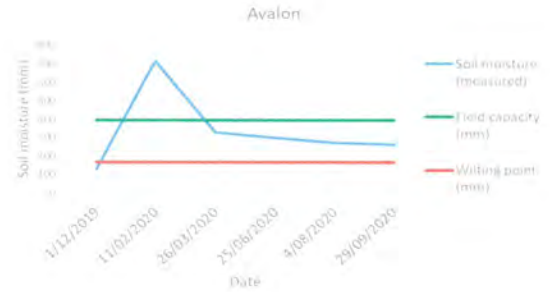
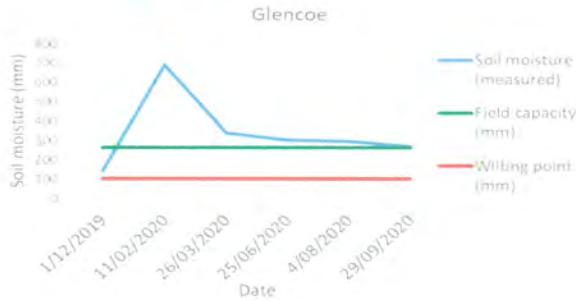




Water retention curves Pretorius Rust



Schietfontein



Fibre Quality

Cotton field	Soilform	UHML	Strength	Micronaire	Class	Price	Price "Differential"
Pretorius Rust	Westleigh	1.16	26.89	3.7	AO+	R22.70	14.5
	Tukulu	1.18	26.44	3.5	AO+	R22.70	14.5
	Avalon	1.16	26.26	3.3	AOM	R22.20	11
	Bainsvlei	1.15	26.51	3.4	AOM	R22.20	11
Schietfontein	Tukulu	1.17	27.50	4.3	AX	R23.20	16
	Avalon	1.18	28.07	4.0	AX	R23.20	16
	Glencoe	1.20	27.35	3.8	AX	R23.20	16
	Oakleaf	1.16	27.34	4.0	AO+	R22.90	14.5
Hoekblok	Bainsvlei	1.13	28.08	4.5	AO	R22.70	13.5
	Bloemdal	1.18	31.55	4.7	AO+	R22.90	14.5
	Sepane	1.15	30.05	4.6	AO	R22.70	13.5
	Westleigh	1.13	28.75	4.5	AO	R22.70	13.5
Teerpadblok	Avalon	1.15	28.48	4.1	AO	R22.70	13.5
	Tukulu	1.15	28.83	4.2	AO	R22.70	13.5
	Oakleaf	1.14	28.36	4.3	AO	R22.70	13.5
	Westleigh	1.17	29.80	4.4	AO+	R22.90	14.5

Cotton Yield

Cotton field	Soilform	Yield (Tonne/ha)
Pretorius Rust	Westleigh	3.25
	Tukulu	2.93
	Bainsvlei	3.65
	Avalon	3.96
	Tukulu	2.04
Schietfontein	Oakleaf	2.61
	Glencoe	2.32
	Avalon	2.50
	Bainsvlei	2.75
Hoekblok	Bloemdal	3.06
	Sepane	2.59
	Westleigh	2.31
	Avalon	2.70
Teerpadblok	Tukulu	3.20
	Oakleaf	3.60
	Westleigh	3.50



Conclusions

- 1 Turf soils has the highest water holding capacity - except water table soils
- 2 Typical soil moisture usage trend observed in both cotton fields
- 3 Turf soils produce the best quality cotton - even when oversaturated
- 4 "Sandy" soils produce highest yield of cotton
- 5 Wet season - over saturation throughout season - more soil moisture left post harvest