Table A3.1: Spearman's rank correlation for farmers' rainfall records (all correlation is significant at the 0.01 level (2-tailed)).

	Farm 1	Farm 2	Farm 3	Farm 4	Farm 6	Farm 7	Farm 8	Farm 9	Farm 10	Farm 11	Farm 12	Farm 13
Farm 1	1											
Farm 2	.817	1										
Farm 3		.880	1									
Farm 4	.802	.758	.823	1								
Farm 6		.867	.831	.784	1							
Farm 7	.738	.657	.721	.623	.772	1						
Farm 8	.686	.659		.578		.899	1					
Farm 9		.608	.619	.592	.630	.753		1				
Farm 10		.702	.711	.665	.761	.855	.910	.780	1			
Farm 11	.705	.686	.680	.642	.734	.802	.813	.734	.872	1		
Farm 12		.758	.773	.729	.798	.698		.641	.787	.758	1	
Farm 13	.668	.736	.811	.771	.828	.760	.732	.691	.835	.777	.855	1

Table A3.2: Spearman's rank correlation for rainfall recorded at official weather stations of the South African Weather Service (SAWS) and Agriculture Research Council (ARC) (all correlation is significant at the 0.01 level (2-tailed)).

	Albertinia	Blackdown	Breede	Goukou Dam	Heidelberg	Mon Desir	Riversdale ARC	Riversdale	Still Bay	Witsand
Albertinia SAWS	1									
Blackdown SAWS	.708	1								
Breede SAWS	.673	.717	1							
Goukou Dam	.611	.797	.647	1						
Heidelberg SAWS	.728	.842	.688	.755	1					
Mon Desir SAWS	.701	.844		.683	.847	1				
Riversdale ARC	.718	.772	.705	.709	.801	.803	1			
Riversdale SAWS	.730	.840		.811	.850	.796	.896	1		
Still Bay SAWS	.704	.664	.725	.676	.731	.578	.720	.712	1	
Witsand SAWS	.600	.586		.486	.619	.608	.615	.633	.680	1

Table A3.3: Spearman's rank correlation for rainfall recorded between farms and official weather stations (all correlation is significant at the 0.01 level (2-tailed)).

	Farm 1	Farm 2	Farm 3	Farm 4	Farm 6	Farm 7	Farm 8	Farm 9	Farm 10	Farm 11	Farm 12	Farm 13
Albertinia SAWS	.755	.736	.730	.683	.772	.669	.706	.574	.688	.733	.710	.759
Blackdown SAWS	.740	.729	.759	.648	.770	.845	.776	.859	.816	.738	.703	.694
Breede SAWS		.793	.804	.729	.655	.623		.528	.679	.646	.729	.812
Goukou Dam SAWS		.629	.640	.595	.715	.909	.894	.808	.839	.792	.699	.716
Heidelberg SAWS	.760	.751	.81	.705	.805	.816	.774	.553	.771	.731	.744	.702
Mon Desir SAWS	.779	.758	.741	.640		.749	.777		.737	.740	.636	.687
Riversdale SAWS	.759	.763	.803	.709	.980	.775	.830	.635	.778	.779	.791	.779
Riversdale ARC		.780	.777	.733	.851	.844	.902		.864	.839	.745	.855
Still Bay SAWS		.755	.790	.765	.782	.693	.541	.664	.690	.684	.794	.774
Witsand SAWS	.903	.709	.767	.640	.65	.521	.485		.546	.527	.629	.638

Table A3.4: Monthly rainfall according to three 'extreme' categories ((less than 10mm; 75th percentile; 95th percentile) divided up into catchment locations. Significance was tested between each time period for each category and group. Where significant, the t-test statistic was greater than 1.96 (corresponding p-value of less than 0.05) and hence was significant at the 95 percent significance level.

	< 10mm		
	Duiwenhoks/Breede	**Goukou**	**Goukou/Gouritz**
Period 1 (before-1981)	18 %^	6 %^	18 %*
Period 2 (1982-1995)	20 %	9 %	11 %^^
Period 3 (1996-2007)	19 %	7 %^	14 %^
Period 4 (2008-present)	23 %*	10 %*	16 %*
	75th percentile		
	Duiwenhoks/Breede	**Goukou**	**Goukou/Gouritz**
Period 1 (before-1981)	26 %	24 %	24 %
Period 2 (1982-1995)	24 %	24 %	27 %
Period 3 (1996-2007)	23 %	26 %	24 %
Period 4 (2008-present)	24 %	25 %	26 %
	95th percentile		
	Duiwenhoks/Breede	**Goukou**	**Goukou/Gouritz**
Period 1 (before-1981)	4 %	4 %	3 %^^
Period 2 (1982-1995)	6 %	5 %	6 %*
Period 3 (1996-2007)	5 %	6 %	5 %
Period 4 (2008-present)	5 %	5 %	6 %*

* indicates significance p<0.05; ^ indicates corresponding value for *

Table A3.5: Monthly rainfall according to three 'extreme' categories (less than 10mm; 75th percentile; 95th percentile) divided up into areas. Where significant, the t-test statistic was greater than 1.96 (corresponding p-value of less than 0.05) and hence was significant at the 95 percent significance level.

	< 10mm		
	Coast	**Vlakte**	**Mountain**
Period 1 (before-1981)	22 %	19 %*	10 %*
Period 2 (1982-1995)	21 %	15 %^	7 %^
Period 3 (1996-2007)	19 %	15 %^	6 %^
Period 4 (2008-present)	18 %	20 %*	7 %
	75th percentile		
	Coast	**Vlakte**	**Mountain**
Period 1 (before-1981)	24 %	25 %	25 %
Period 2 (1982-1995)	25 %	24 %	25 %
Period 3 (1996-2007)	25 %	24 %	24 %
Period 4 (2008-present)	26 %	26 %	24 %
	95th percentile		
	Coast	**Vlakte**	**Mountain**
Period 1 (before-1981)	4 %	4 %	4 %
Period 2 (1982-1995)	5 %	6 %	6 %
Period 3 (1996-2007)	5 %	5 %	6 %
Period 4 (2008-present)	5 %	5 %	5 %

* indicates significance p<0.05; ^ indicates corresponding value for *

Shapiro-Wilkinson tests for difference from normality indicate that P3 and P4 are normally distributed, whereas P2 is not. Therefore, Wilcoxon tests are used to test for significant differences between P2 vs. P3 and P2 vs. P4, and a Welch two-sample t-test is used to test for differences between P3 vs. P4. All these periods are different from one another.

Shapiro tests for normality - parametric

P2
Shapiro-Wilk normality test

data: F3_t$P2
W = 0.83482, p-value = 0.006346

P3
Shapiro-Wilk normality test

data: F3_t$P3
W = 0.95719, p-value = 0.5484

P4
Shapiro-Wilk normality test

data: F3_t$P4
W = 0.94289, p-value = 0.3541

Tests for significant difference between periods

P2/P3
Wilcoxon rank sum test

data: F3_t$P2 and F3_t$P3
W = 27, p-value = 6.29e-06
alternative hypothesis: true location shift is not equal to 0

P2/P4
Wilcoxon rank sum test

data: F3_t$P2 and F3_t$P4
W = 282, p-value = 3.857e-08
alternative hypothesis: true location shift is not equal to 0

P3/P4
Welch Two Sample t-test

data: F3_t$P3 and F3_t$P4
t = 12.748, df = 26.153, p-value = 9.931e-13
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 51.16319 70.82740
sample estimates:
mean of x mean of y
 29.49000 -31.50529

Box A3.1: Tests relating to Figure 3 (Rainfall variability between Old and New planting seasons).