

Annex 3: Selected Statistical Analyses Results

Greenhouse Experiments

Maize

Quadratic equations for curves ($y = \beta_0 + \beta_1 x + \beta_2 x^2$)

SDMY

CZH 00013 - $y = 2.95 - 0.43x + 0.017x^2$ $r^2 = 0.999$
 CZH 00017 - $y = 2.28 - 0.30x + 0.011x^2$ $r^2 = 0.992$
 DK 8031 - $y = 2.29 - 0.19x + 4.60e^{-3}x^2$ $r^2 = 0.91$
 SC 403 - $y = 1.37 - 0.08x + 2.05 e^{-3}x^2$ $r^2 = 0.91$
 SC 517 - $y = 4.03 - 0.51x + 0.02x^2$ $r^2 = 0.91$

Parameter	Cultivar	β_0	β_1	β_2	r^2
TRL	CZH 00013	3206	283.69	-21.75	0.68
	CZH 00017	1898	155.55	-14.96	0.82
	DK 8031	1842	314.36	19.75	0.88
	SC 403	1505	-27.43	2.45	0.20
	SC 517	2175	-134.32	1.92	0.67
SDMY	CZH 00013	2.95	-0.02	0.017	0.999
	CZH 00017	2.28	-0.30	0.011	0.99
	DK 8031	2.29	-0.19	$4.60e^{-3}$	0.91
	SC 403	1.37	-0.08	$2.05 e^{-3}$	0.56
	SC 517	4.03	-0.51	0.02	0.92
RDMY	CZH 00013	1.69	-0.14	$4.56 e^{-3}$	0.98
	CZH 00017	1.15	-0.02	$-1.56 e^{-4}$	0.46
	DK 8031	1.19	-0.03	$-6.86 e^{-4}$	0.96
	SC 403	0.86	-0.01	$4.77 e^{-4}$	0.03
	SC 517	2.08	-0.18	$5.83e^{-3}$	0.92
Total P shoots	CZH 00013	10.48	-1.90	0.082	0.97
	CZH 00017				
	DK 8031				
	SC 403				
	SC 517				
	CZH 00013				
	CZH 00017				
	DK 8031				
	SC 403				
	SC 517				
	CZH 00013				
	CZH 00017				
	DK 8031				
	SC 403				
	SC 517				

Soyabean

Variate: TRL_Plant

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Reps stratum	3	1334922.	444974.	4.89	

Reps.*Units* stratum					
Aluminium_Conc	3	24192982.	8064327.	88.71	<.001
Variety	2	3000480.	1500240.	16.50	<.001
Aluminium_Conc.Variety	6	9711064.	1618511.	17.80	<.001
Residual	33	2999908.	90906.		
Total	47	41239356.			

Season 2 Field trials

Grain yield at Chisuko site

***** Analysis of variance *****

Variate: Grain_Yield_12%_moisture_tons_ha

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Rep stratum	3	1.4618	0.4873	0.69	
Rep.Lime stratum					
Lime	1	1.3254	1.3254	1.89	0.263
Residual	3	2.1064	0.7021	3.71	
Rep.Lime.Variety stratum					
Variety	4	5.5566	1.3891	7.35	<.001
Lime.Variety	4	0.4689	0.1172	0.62	0.652
Residual	24	4.5362	0.1890		

Total 39 15.4553

*** Least significant differences of means (5% level) ***

Table	Lime	Variety	Lime Variety
rep.	20	8	4
l.s.d.	0.8433	0.4486	0.8377
d.f.	3	24	11.30
Except when comparing means with the same level(s) of			
Lime			0.6345
d.f.			24

Grain yield at Domboshawa sand site

***** Analysis of variance *****

Variate: Grain_Yield_12%_moisture_tons_ha

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Rep stratum	3	0.3027	0.1009	0.10	
Rep.Lime stratum					
Lime	1	3.0361	3.0361	3.05	0.179
Residual	3	2.9895	0.9965	3.97	

Rep.Lime.Variety stratum					
Variety	4	6.7859	1.6965	6.77	<.001
Lime.Variety	4	3.7856	0.9464	3.77	0.016
Residual	24	6.0178	0.2507		
Total					
	39	22.9177			

*** Least significant differences of means (5% level) ***

Table	Lime	Variety	Lime Variety
rep.	20	8	4
l.s.d.	1.0046	0.5167	0.9873
d.f.	3	24	10.72
Except when comparing means with the same level(s) of			
Lime			0.7308
d.f.			24

Grain yield at Mudzengerere site

***** Analysis of variance *****

Variate: Grain_Yield_12%_moisture_tons_ha

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Reps stratum	3	2.4567	0.8189	1.19	
Reps.Lime stratum					
Lime	1	23.5649	23.5649	34.10	0.010
Residual	3	2.0729	0.6910	4.27	
Reps.Lime.Variety stratum					
Variety	4	9.7507	2.4377	15.06	<.001
Lime.Variety	4	2.1605	0.5401	3.34	0.026
Residual	24	3.8838	0.1618		
Total					
	39	43.8895			

*** Least significant differences of means (5% level) ***

Table	Lime	Variety	Lime Variety
rep.	20	8	4
l.s.d.	0.8365	0.4151	0.8136
d.f.	3	24	10.14
Except when comparing means with the same level(s) of			
Lime			0.5871
d.f.			24

Grain yield at Chitsike site

***** Analysis of variance *****

Variate: Grain_Yield_12%_moisture

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Rep stratum	3	1.1005	0.3668	0.49	

Rep.Lime stratum					
Lime	1	7.7483	7.7483	10.38	0.049
Residual	3	2.2394	0.7465	3.55	
Rep.Lime.Variety stratum					
Variety	4	1.3970	0.3493	1.66	0.192
Lime.Variety	4	3.6635	0.9159	4.35	0.009
Residual	24	5.0484	0.2104		
Total					
	39	21.1971			

*** Least significant differences of means (5% level) ***

Table	Lime	Variety	Lime Variety
rep.	20	8	4
l.s.d.	0.8695	0.4733	0.8706
d.f.	3	24	11.71
Except when comparing means with the same level(s) of			
Lime			0.6693
d.f.			24

Grain yield at Domboshawa Red site

***** Analysis of variance *****

Variate: Grain_Yield_12%_moisture_tons_ha

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Reps stratum					
	3	5.2402	1.7467	5.51	
Reps.Lime stratum					
Lime	1	15.6922	15.6922	49.48	0.006
Residual	3	0.9514	0.3171	0.33	
Reps.Lime.Variety stratum					
Variety	4	8.0534	2.0134	2.11	0.111
Lime.Variety	4	2.8020	0.7005	0.73	0.578
Residual	24	22.9353	0.9556		

Total 39 55.6745

*** Least significant differences of means (5% level) ***

Table	Lime	Variety	Lime Variety
rep.	20	8	4
l.s.d.	0.567	1.009	1.321
d.f.	3	24	26.68
Except when comparing means with the same level(s) of			
Lime			1.427
d.f.			24

Grain yield at the soyabean site

***** Analysis of variance *****

Variate: Grain_yield_11%_moisture_tons_ha

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Reps stratum	3	0.9770	0.3257	1.21	
Reps.Lime stratum					
Lime	1	5.0923	5.0923	18.87	0.023
Residual	3	0.8097	0.2699	1.56	
Reps.Lime.Variety stratum					
Variety	3	1.0644	0.3548	2.05	0.143
Lime.Variety	3	1.1960	0.3987	2.30	0.112
Residual	18	3.1159	0.1731		
Total	31	12.2552			

*** Least significant differences of means (5% level) ***

Table	Lime	Variety	Lime Variety
rep.	16	8	4
l.s.d.	0.5846	0.4371	0.6663
d.f.	3	18	15.86
Except when comparing means with the same level(s) of			
Lime			0.6181
d.f.	18		