Longitudinal analysis of a long-term Conservation Agriculture experiment in Malawi and lessons for future experimental design

Supplementary material

Table S1. Maize varieties used in the trial over the 10 years study period.

Year number	Growing season	Maize variety	Seed source
1	2007–2008	SC 627	Seed Co
2	2008–2009	SC 627	Seed Co
3	2009–2010	SC 627	Seed Co
4	2010–2011	DKC 8033	Monsanto
5	2011–2012	DKC 8033	Monsanto
6	2012–2013	DKC 9053	Monsanto
7	2013–2014	DKC 9053	Monsanto
8	2014–2015	DKC 9089	Monsanto
9	2015–2016	DKC 9089	Monsanto
10	2016–2017	DKC 9090	Monsanto

Table S2. Summary statistics for exploratory residuals.

Data set	n	Mean	Median	Standard deviation	Skewness	Octile skewness
Original	280	0	0.10	0.94	0.89	0.09
Outliers removed	279	0	0.08	0.86	0.43	0.07

Figure S1. Seasonal rainfall distribution in all cropping seasons from day of planting in 2007-2017 at Chitedze Research Station, Malawi.
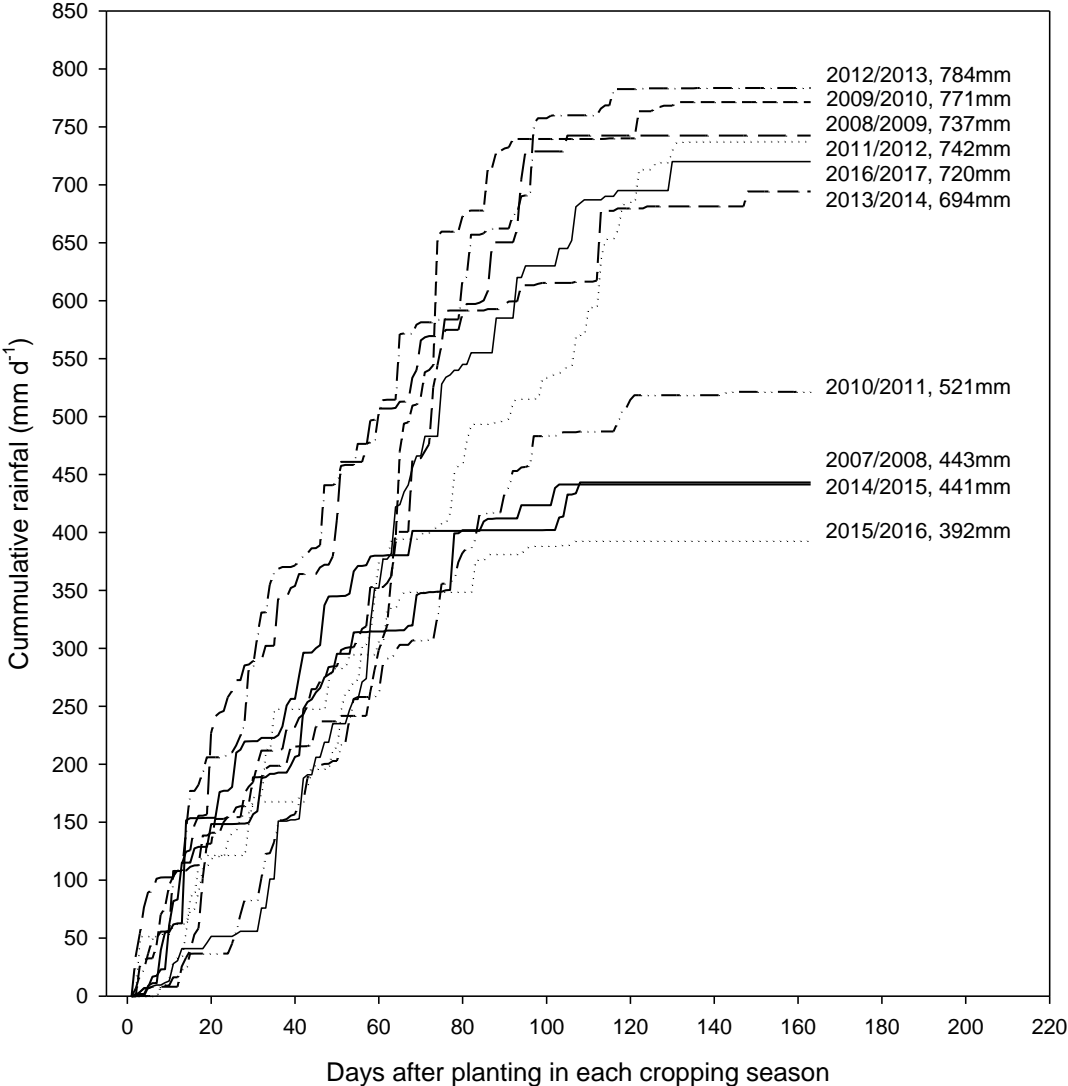
Figure S2. (a) histogram for residuals from an exploratory model with a box-and-whisker plot after removal of probable outlier. (b) plot of empirical and normal quantiles for residuals with normal line. (c) plot of residuals vs fitted values.
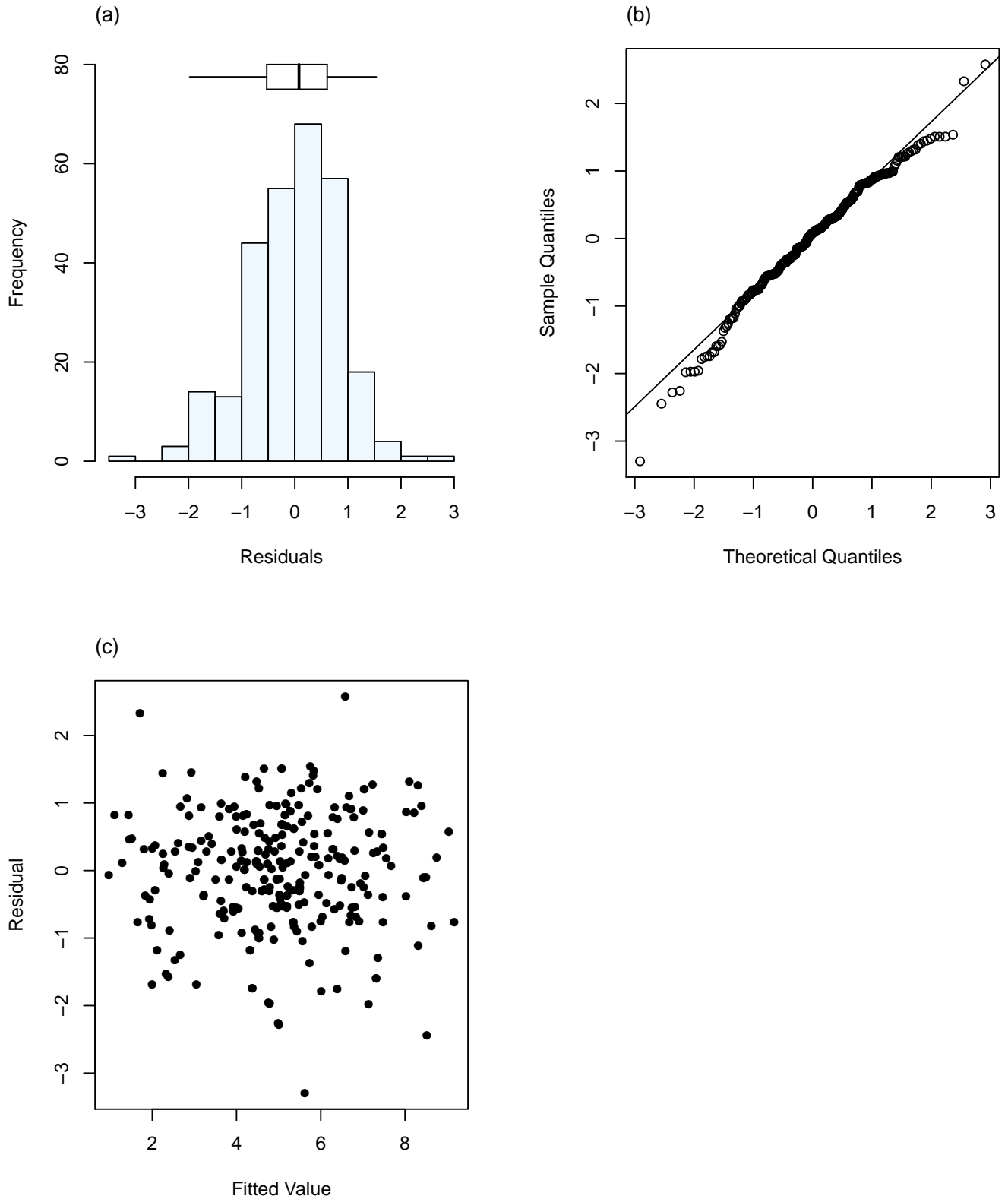
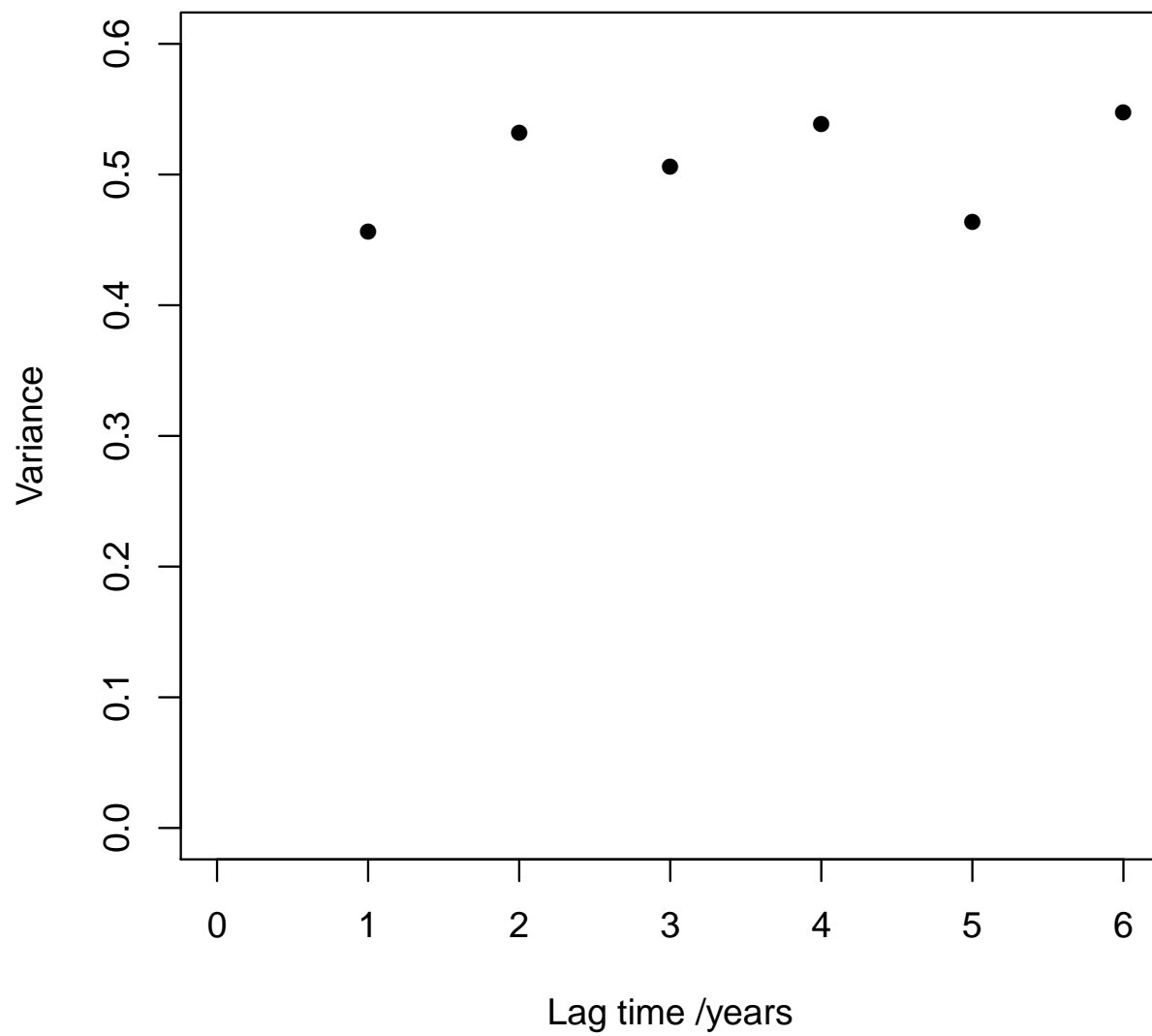**Figure S3**. Empirical temporal variogram of residuals from an exploratory model fit.

Figure S4 . Residual mean square for separate analyses of yield data for each season in turn
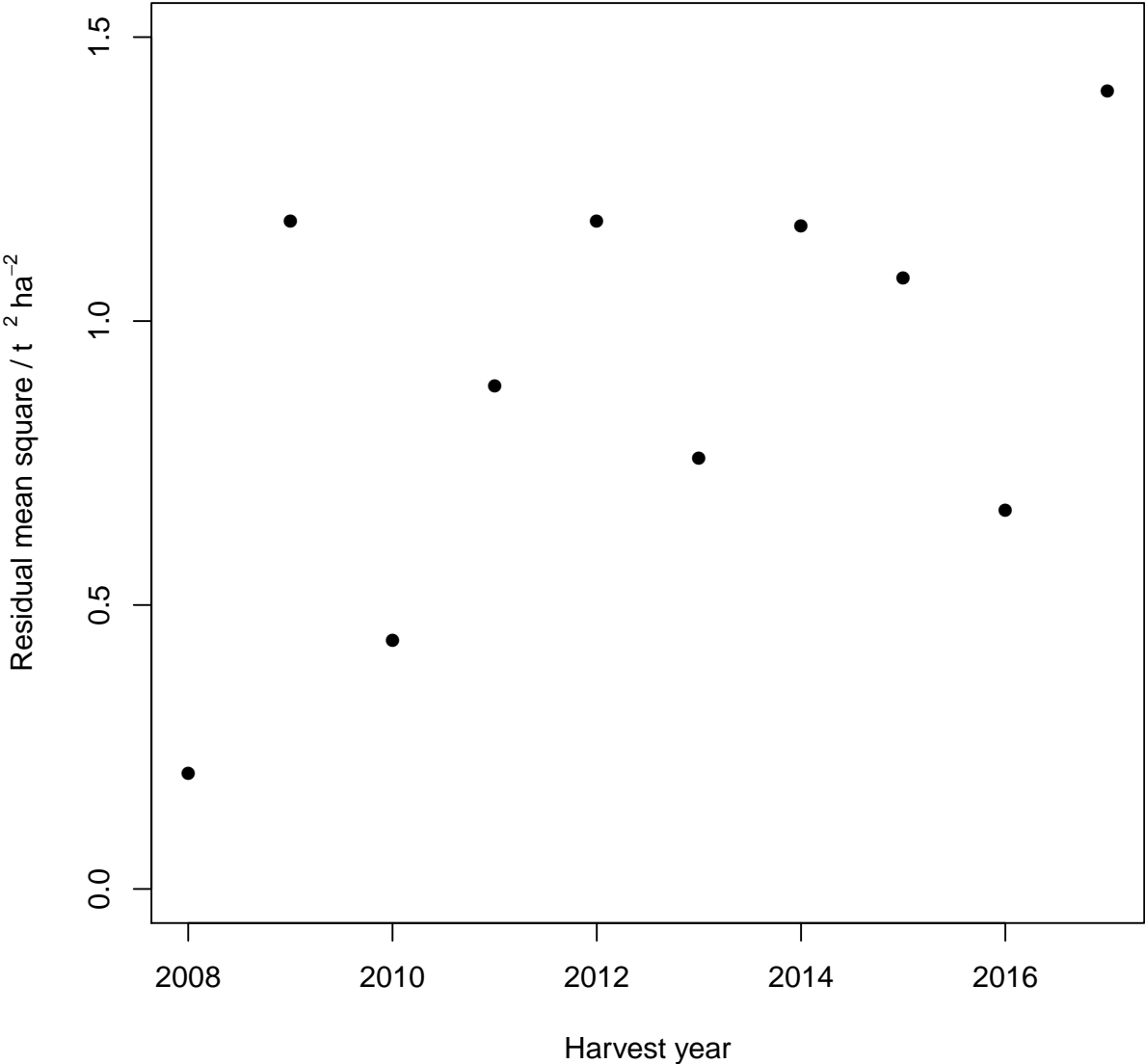
Figure S5. Power estimates based on observed residual mean square from the Chitedze experiment for a two-treatment experiment and with a target yield effect of 1.16 tonne ha-1. Power is shown for differing numbers of blocks.