Appendices

Figure 1: Quinoa plant growth performance with respect to plant height at physiological maturity (cm) (a), panicle length (cm) (b), number of days to maturity (c) and grain yield (kg ha⁻¹) genotypes and varieties grown at Bunda and Bembeke sites under irrigated conditions from June to Mid October 2012.

Figure 2. Number of days to maturity in quinoa varieties evaluated in six different sites of Central Malawi during the 2014 irrigated season (May to August 2014) (F<sub>var</sub>≈0.536 for variety, <0.001 for sites).
Figure 3. Number of days to maturity in quinoa varieties evaluated in six different sites of Central Malawi during the 2015 irrigated season (May to August 2015) ($F_{\text{prob.}}$ = <0.001 for variety, <0.001 for sites, < 0.001 for Variety x Site interaction; SED=0.699).

Figure 4. Plant height (cm) at maturity stage of quinoa genotypes evaluated in six different sites of central Malawi during the 2015 (May to August 2015) irrigated conditions where (a) had $p$=0.001, SED=4.588, and LSD=9.050; (b) had $p$=0.815, SED=5.328, LSD=10.51, with a CV=21.1%.

Figure 5. Panicle length (cm) of quinoa varieties evaluated in six different sites of Central Malawi during the 2014 irrigated season (May to August 2014) ($F_{\text{prob.}}$ = 0.538 for variety, <0.001 for sites).
Figure 6. Panicle length (cm) of quinoa genotypes grown in six sites of Central Malawi under irrigation from May to August, 2015.

Figure 7. Grain yield (kg ha⁻¹) of quinoa varieties evaluated in six different sites of Central Malawi during the 2014 irrigated season (May to August 2014) (F_{prob} = 0.002 for Variety, <0.001 for sites).

Figure 8. Grain yield (kg ha⁻¹) of quinoa genotypes evaluated in six different sites of Central Malawi during the 2015 irrigated season (May to August 2015) (F_{prob} =<0.089 for variety, <0.001 for sites, <0.967 for Variety x Site interaction; SED=242; LSD=477.5).
Figure 9. Overall grain yield (kg ha⁻¹) of quinoa genotypes evaluated in six different sites of Central Malawi during the 2015 irrigated season (May to August 2015).

Figure 10. GGE-biplots showing varieties and their ideal environments for yield performance, where black and red numbers stand for varieties and environments (sites), respectively.
Figure 11. Days to harvesting, plant height, panicle length and Seed size of quinoa genotypes/varieties grown at Bunda Site under rainfed conditions in 2012/13 season.

Figure 12. Days to harvesting, plant height, panicle length and Seed size of quinoa genotypes/varieties grown at Bunda Site under rainfed conditions in 2013/14 season.

Figure 13. Grain yield and harvest index of genotypes/varieties of quinoa evaluated at Bunda under rainfed conditions during the 2012/13 rainy season.

Figure 14. Grain yield (kg ha⁻¹) and harvest index (HI) of genotypes/varieties of quinoa evaluated at Bunda under rainfed conditions during the 2013/14 rainy season.
Figure 13. Grain yield and harvest index of genotypes/varieties of quinoa evaluated at Bunda under rainfed conditions during the 2012/13 rainy season.

Figure 14. Grain yield (kg ha⁻¹) and harvest index (HI) of genotypes/varieties of quinoa evaluated at Bunda under rainfed conditions during the 2013/14 rainy season.