

### Supplementary figures

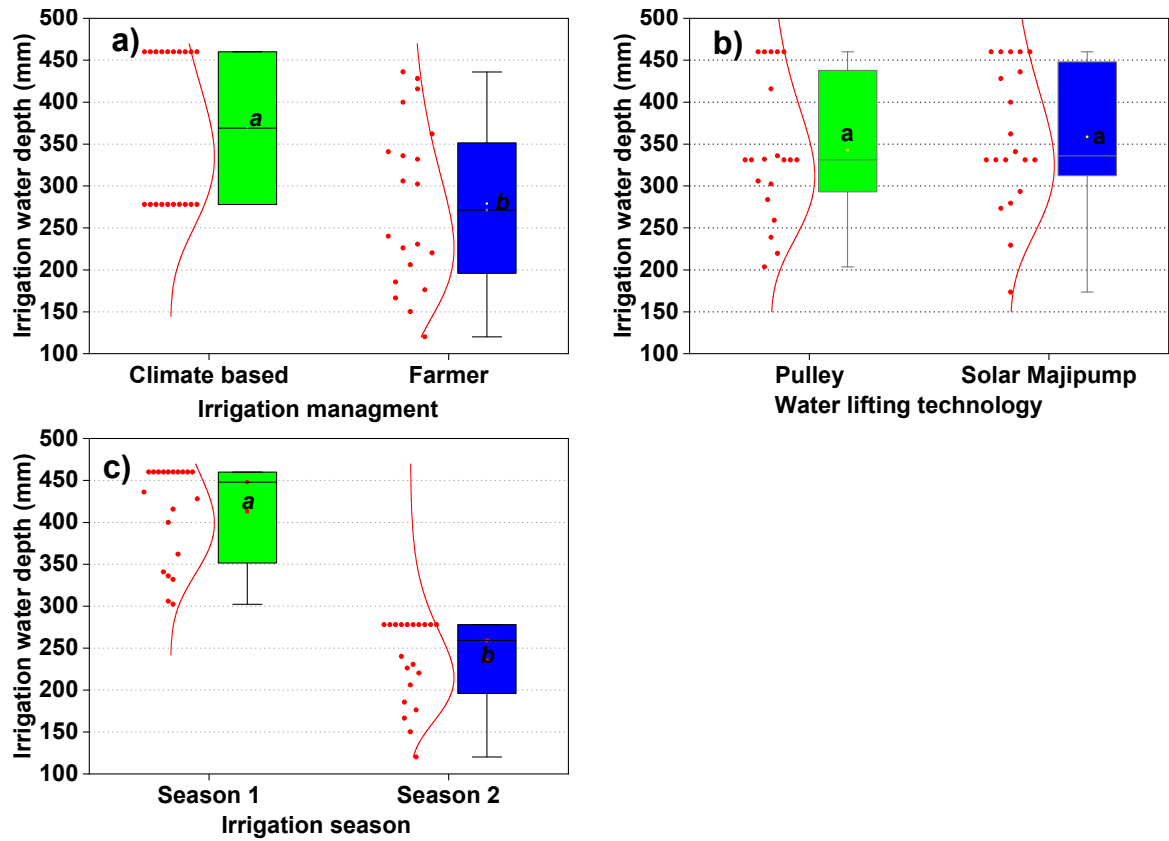


Figure S1 Effect of irrigation management on irrigation water applied (a), effect of water lifting technology on irrigation water applied (b), and effect of irrigation season on irrigation water applied (c)

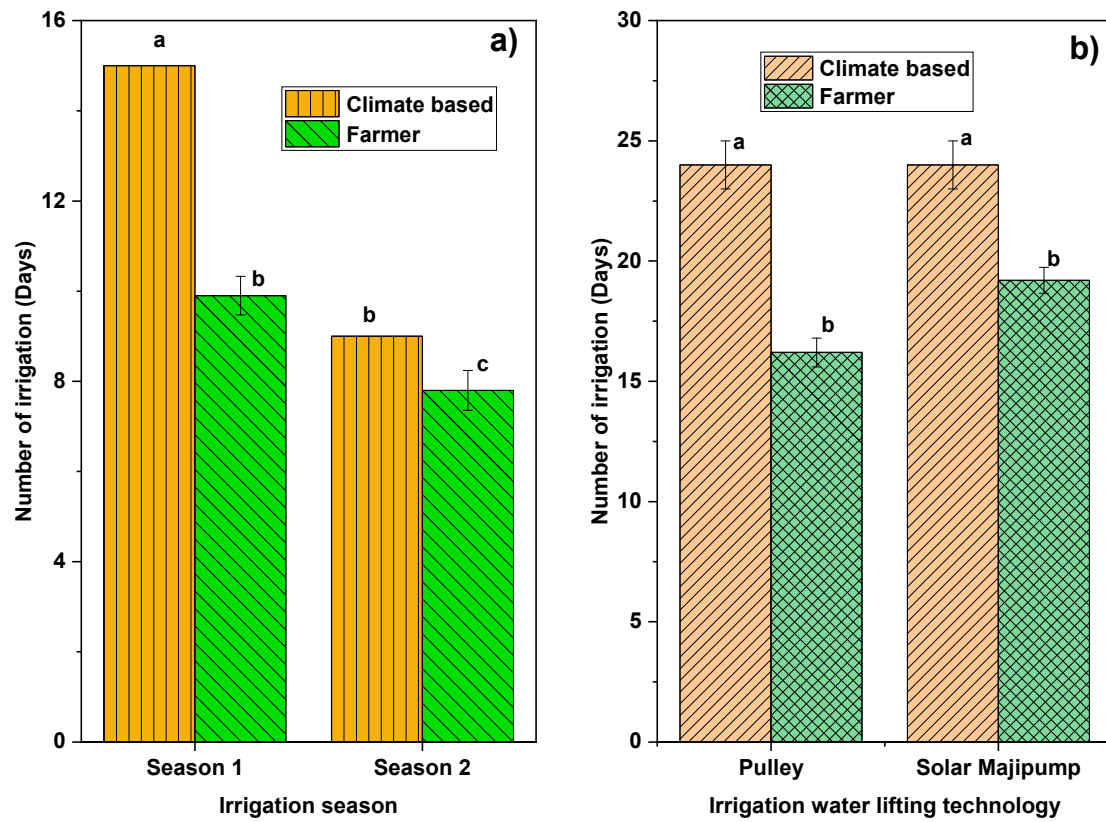


Figure S2 Interaction effect of irrigation management and season (a) and, irrigation management and water lifting technology (b) on the number of irrigation.

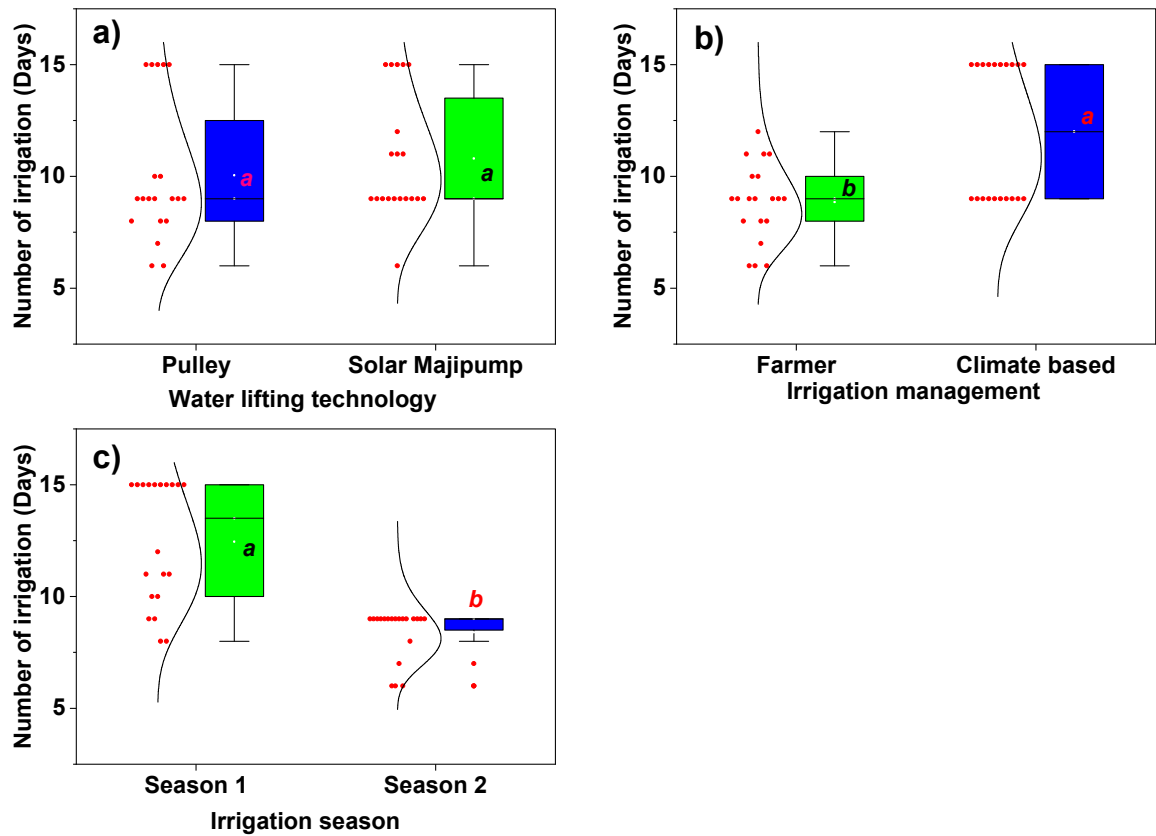


Figure S3 Effect of water lifting technology on the number of irrigations (a), effect of irrigation management on the number of irrigations (b), and effect of irrigation season on the number of irrigations (c)

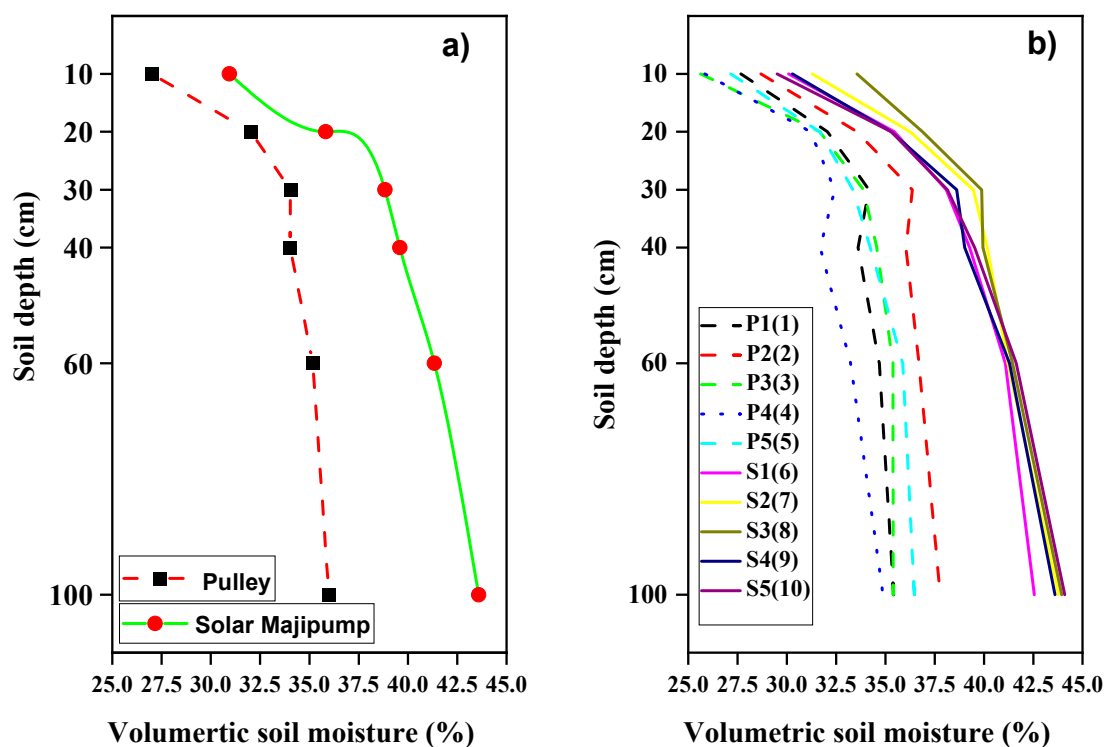


Figure S4 The average soil moisture content at different depths for the two water lifting technologies (a) and the average soil moisture for the different plots (b). Plots irrigated using a pulley are designated as P1-P5 (dashed lines) and plots irrigated using a solar pump as S1-S5 (solid lines).

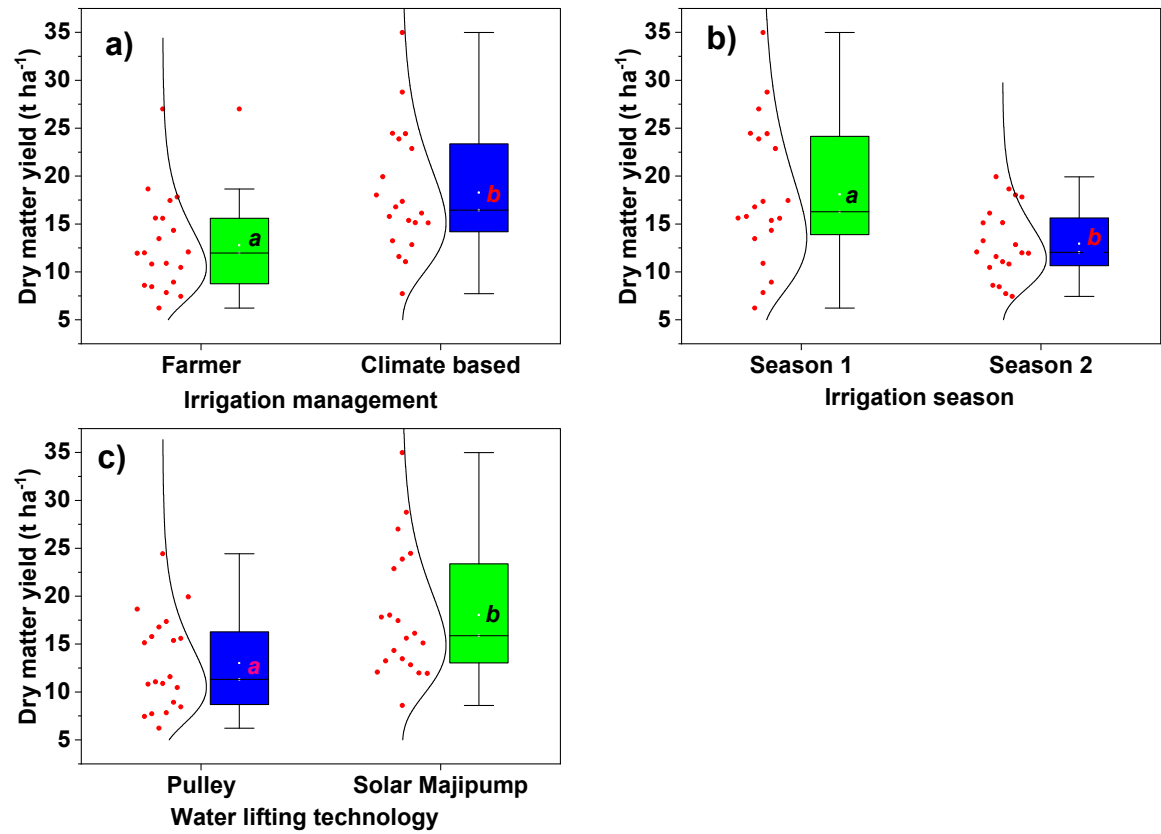


Figure S5 Effect of irrigation management on dry matter yield of Napier grass (a), effect of irrigation season on dry matter yield of Napier grass (b), and effect of water lifting technology on dry matter yield of Napier grass (c)

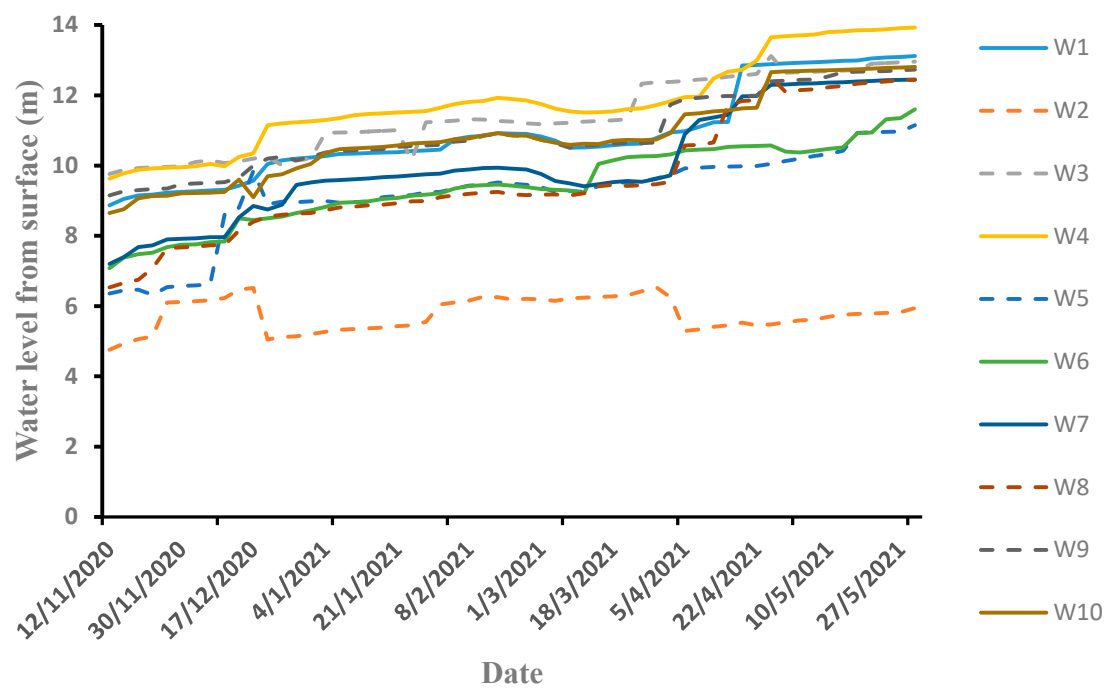


Figure S6 Water surface levels of the different wells during the study period (dashed lines represent pulley users and solid lines represent solar Majipump users)

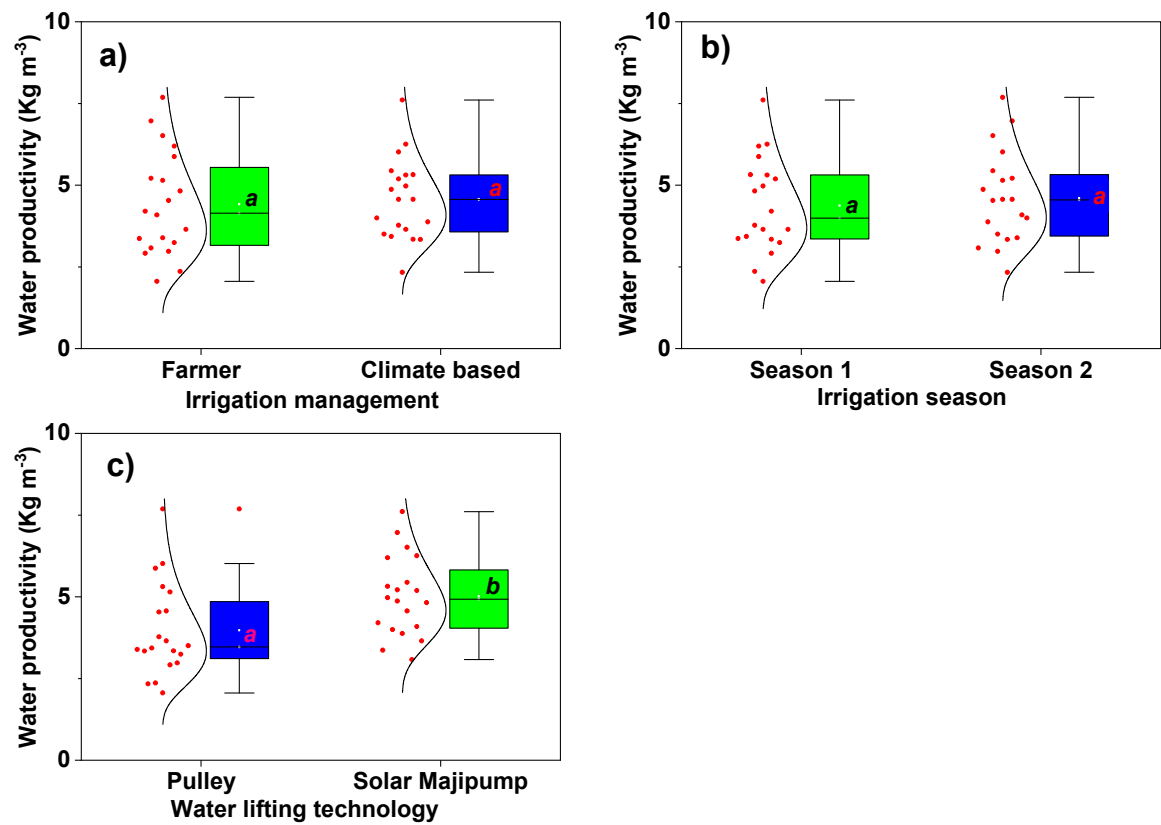


Figure S7 Effect of irrigation management on water productivity of Napier grass (a), effect of irrigation season on water productivity of Napier grass (b), and effect of water lifting technology on water productivity of Napier grass (c)

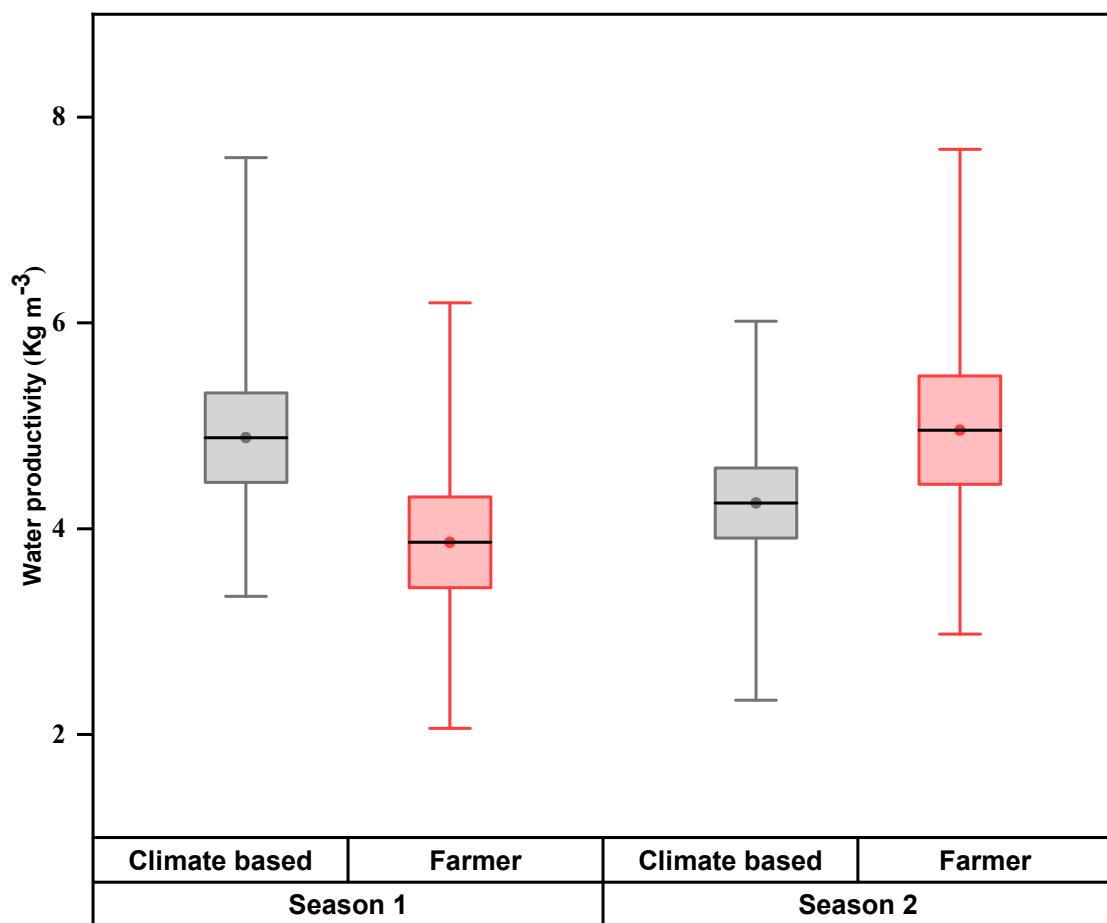


Figure S8 Interaction effect of irrigation management and season on water productivity of Napier grass



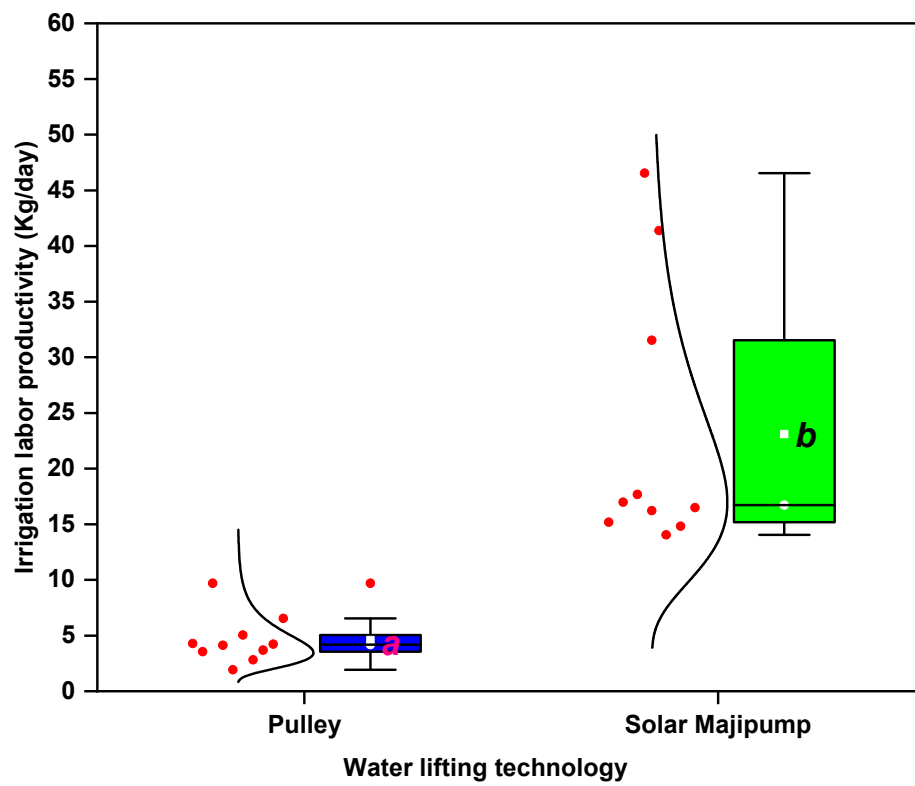


Figure S9 Effect of water lifting technology on irrigation labor productivity of Napier grass

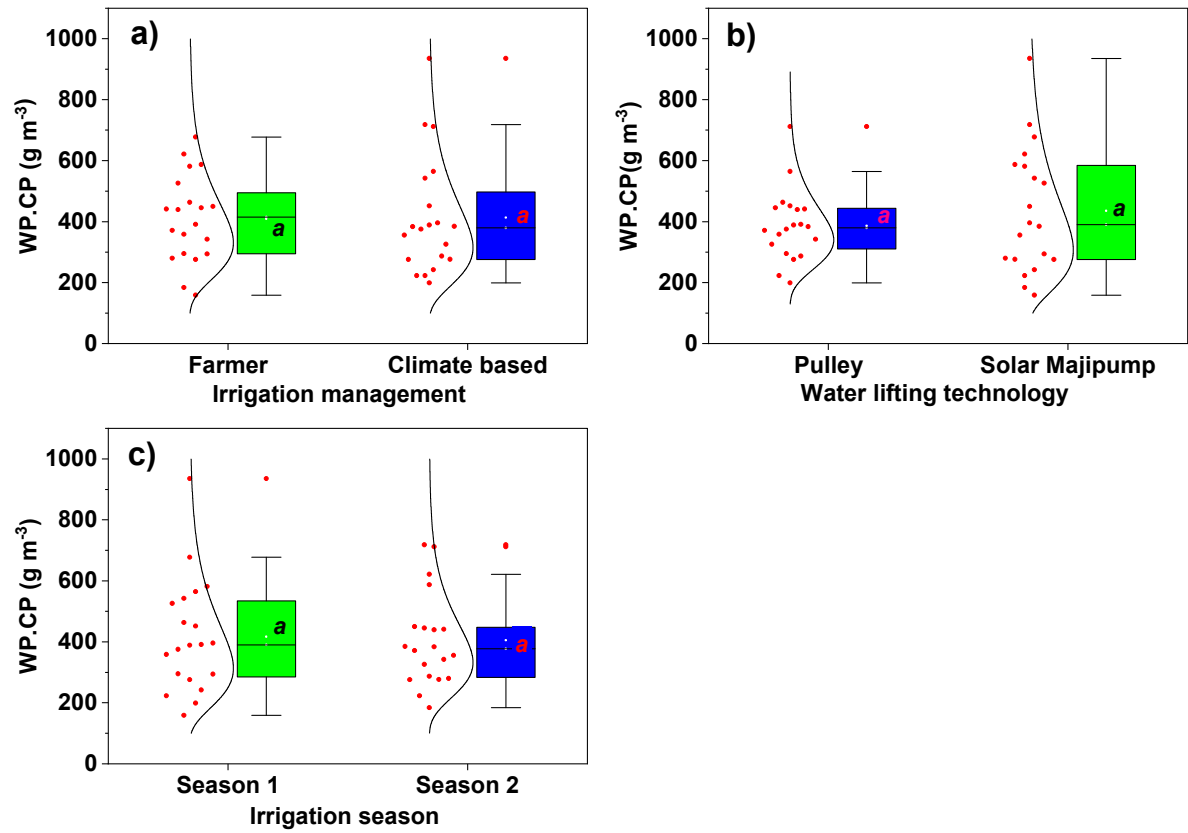


Figure S10 Effect of irrigation management on water productivity for protein production (WP.CP) of Napier grass (a), the effect of water lifting technology on water productivity for protein production (WP.CP) of Napier grass, and effect of irrigation season on water productivity for protein production (WP.CP) of Napier grass

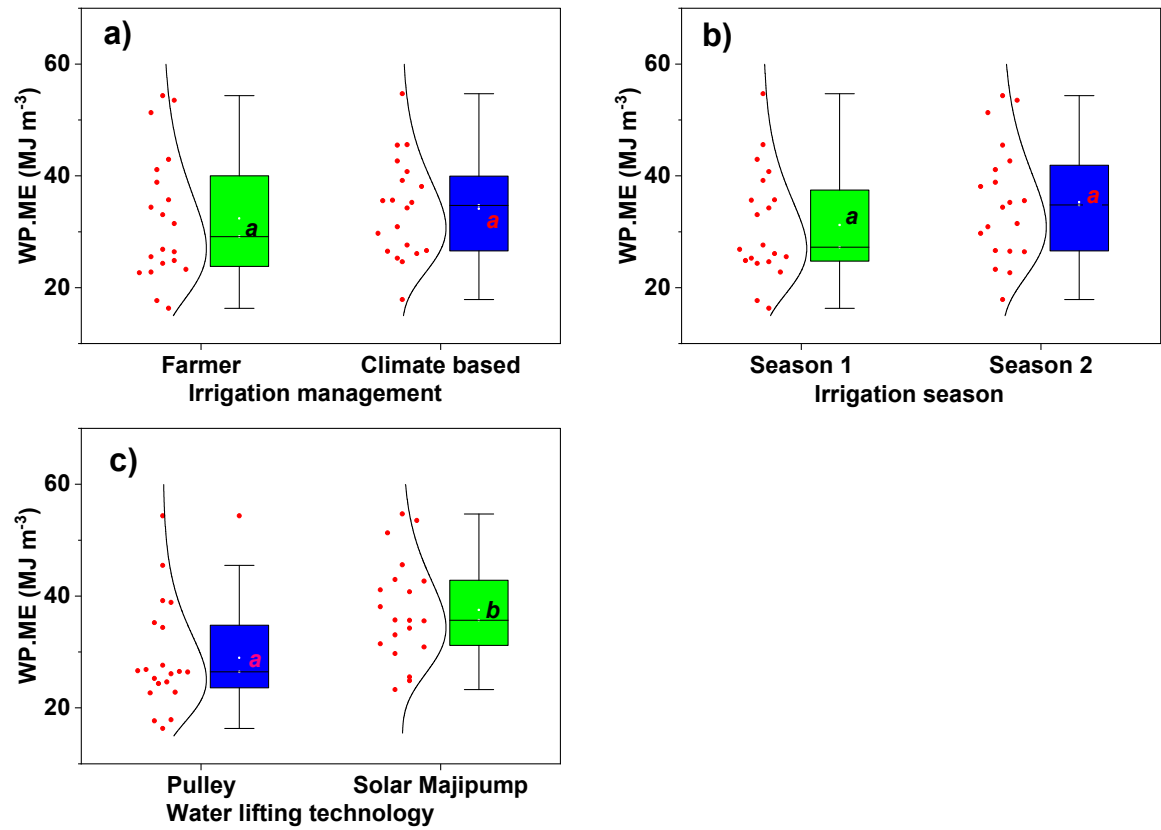


Figure S11 Effect of irrigation management on water productivity for metabolizable energy production (WP.ME) of Napier grass, effect of irrigation season on water productivity for metabolizable energy production (WP.ME) of Napier grass and effect of water lifting technology on water productivity for metabolizable energy production (WP.ME) of Napier grass