

Figure S1. Schematic diagram of the field layout. NY, 90 kg N hm^{-2} and 45 kg P hm^{-2} and HY, 270 kg N hm^{-2} , and 135 kg P hm^{-2} . CK, sand only; C, sand and biochar; SR, sand and soft rock; SRC, sand, biochar, and soft rock. The blue line indicated the PVC pipe for irrigation, and slash indicated the buffer zone.

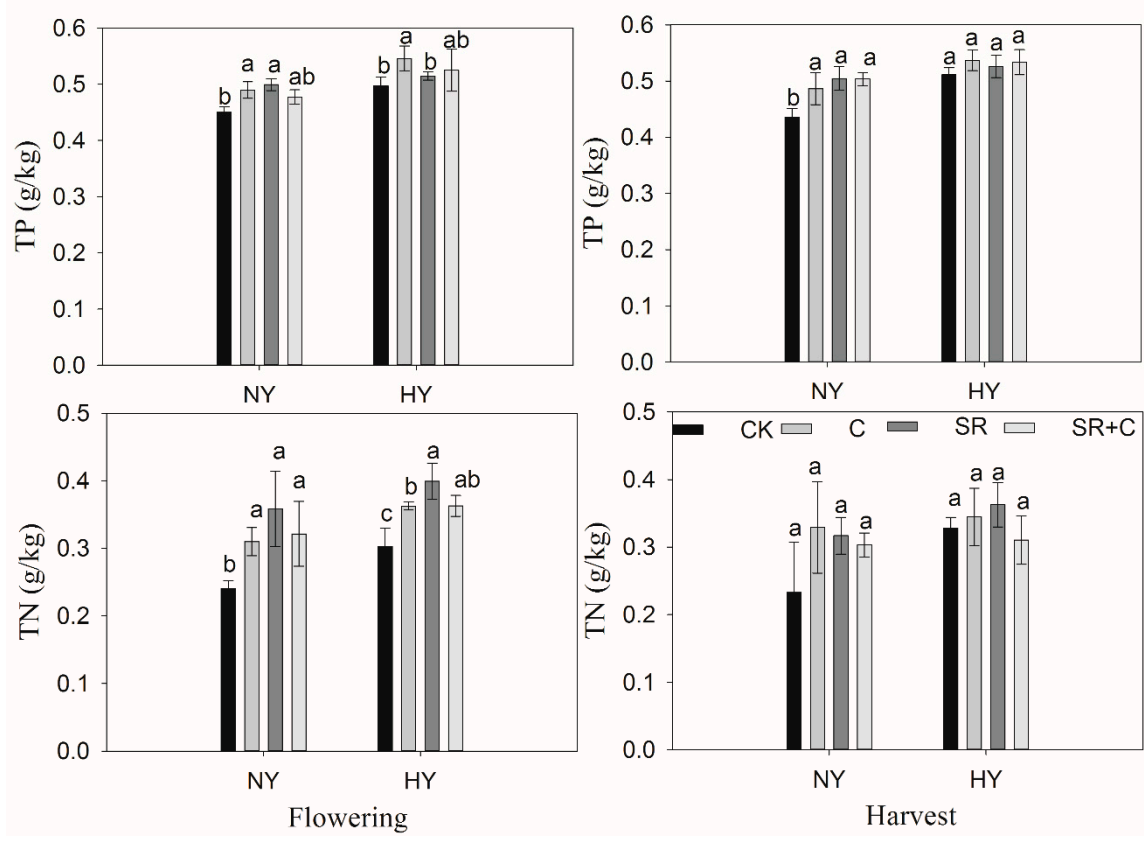


Figure S2. Effects of biochar and soft rock treatments on soil total nitrogen (TN) and phosphorus (TP) at two fertilizer levels in 2019. CK, sand only; C, sand and biochar; SR, sand and soft rock; SRC, sand, biochar, and soft rock; NY, normal yield pattern; HY, high yield pattern.