

SUPPLEMENTAL

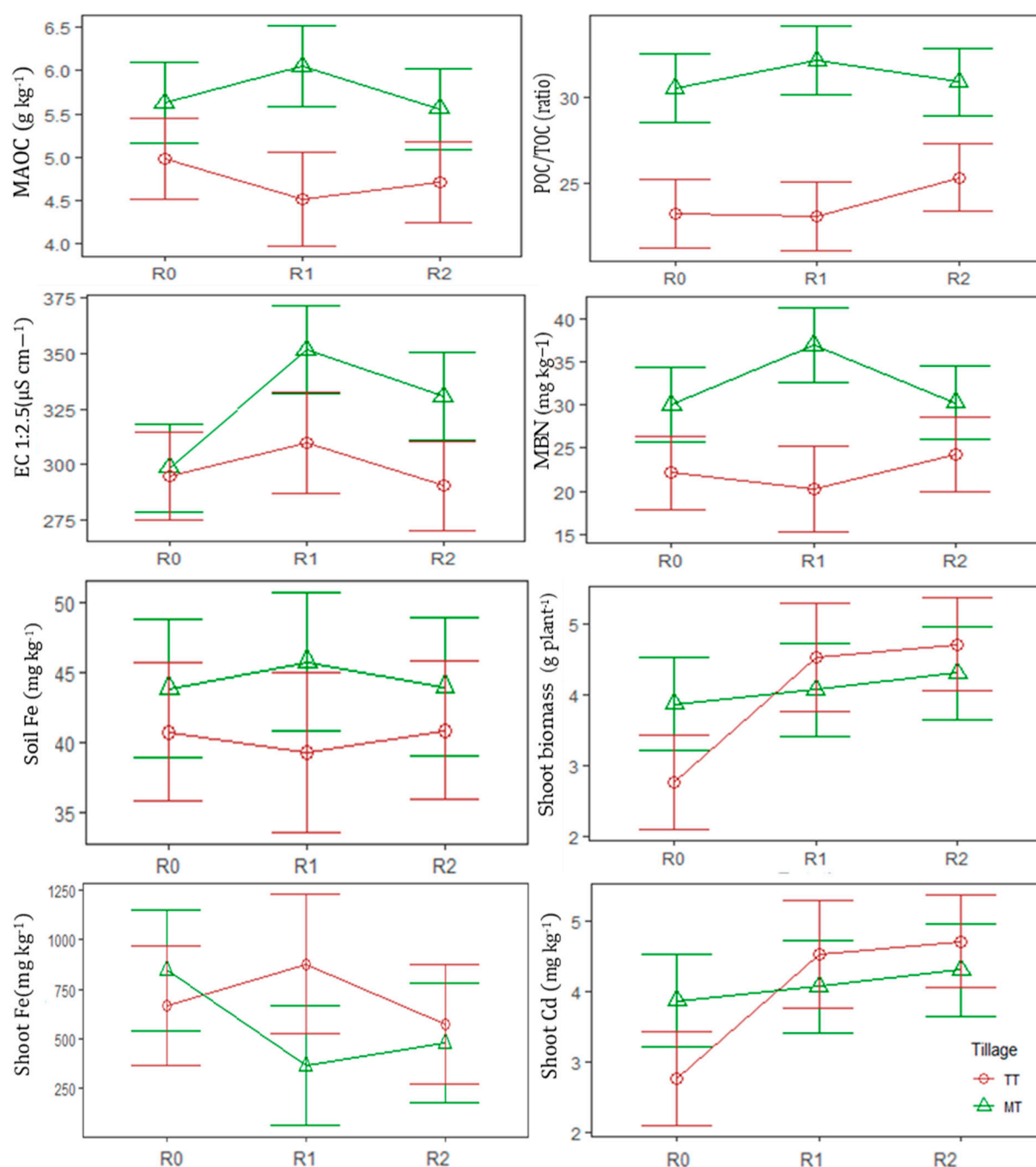


Figure S1. Mineral associated organic carbon (MAOC), particulate organic carbon/total organic carbon ratio (POC/TOC), electrical conductivity (EC_{1:2.5}), microbial biomass nitrogen (MBN), soil Fe, shoot biomass 25DAS, shoot Fe and shoot Cd, as affected by legume CC input level and tillage system interaction R0: rotation with non-CC; R1: rotation with barley and vetch CC between wheat and maize; R2: rotation with vetch interseeded into maize plus barley and vetch CC between wheat and maize; TT: traditional tillage, MT: minimum tillage.

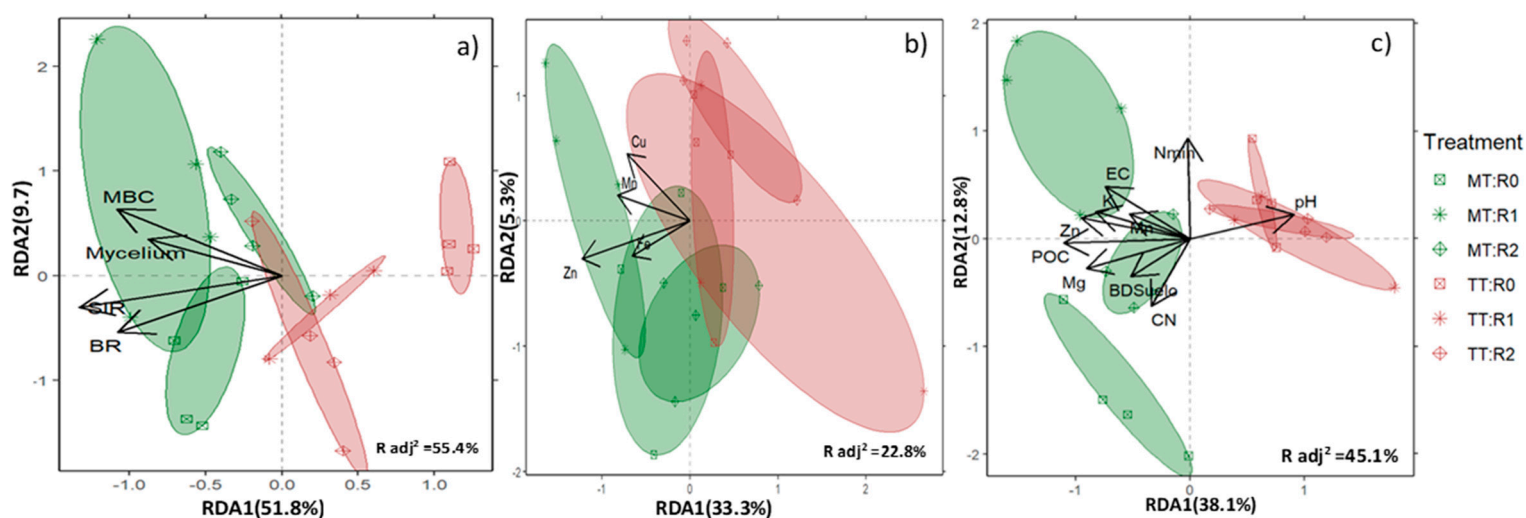


Figure S2. Redundancy analysis (RDA) results to explain (a) soil microbial variables except arbuscular mycorrhizal fungi colonization; (b) soil micronutrients (c) 10 soil physicochemical and nutritional variables, from 6 combined treatments of tillage system (TT: traditional tillage, MT: minimum tillage) and rotation type (R0: rotation with non-CC; R1: rotation with barley-vetch CC between wheat and maize; R2: rotation with vetch interseeded into maize plus barley-vetch CC between wheat and maize); MBC: microbial biomass carbon, BR: basal respiration, SIR: substrate induced respiration, EC: electric conductivity, BD: bulk density, POC: particulate organic carbon, CN: carbon/nitrogen ratio, Nmin: mineral nitrogen.

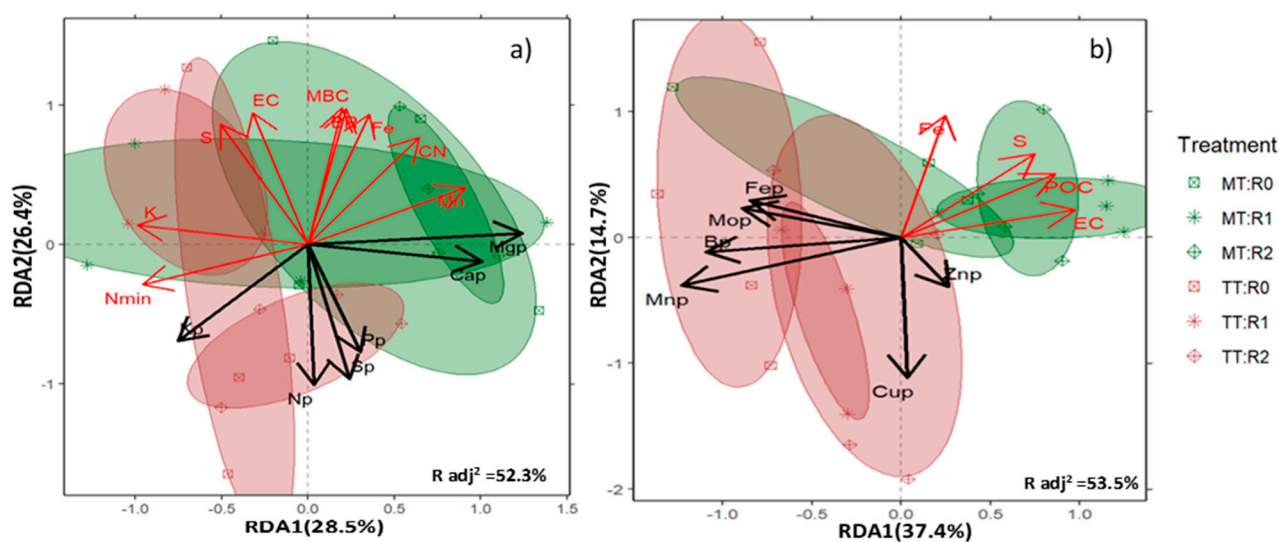


Figure S3. Redundancy analysis (RDA) results to explain (a) shoot macronutrients; (b) shoot micronutrients, from 6 combined treatments of tillage system (TT: traditional tillage, MT: minimum tillage) and rotation type (R0: rotation with non-CC; R1: rotation with barley and vetch CC between wheat and maize; R2: rotation with vetch interseeded into maize plus barley and vetch CC between wheat and maize) together with soil properties; DAS: days after sowing. Chlor55DAS: chlorophyll at 55 DAS maize, Xp: X nutrient concentrations in shoot maize at 25 DAS maize.