Phosphorus Losses in a Clay Loam Soil: Effects of Compost Additions and Controlled Drainage-Subirrigation. (S11-zhang154953-Poster)

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Abstract:

Addition of organic amendments and irrigation may increase soil P losses. An experiment was conducted in a clay loam soil to determine P losses as influenced by compost additions (leaf yard waste - LYW, and swine manure - SMC) and controlled drainage-subirrigation (CDS). Surface runoff (SR) and tile drainage (TD) flows were monitored and samples collected and analyzed for total dissolved P (TDP) and particulate P (PP) in a 2-year period. Under regular drainage (RD), added SMC and LYW increased TDP contents in SR by 53 and 1,097%, respectively. In TD, added SMC increased TDP contents by 703%. Added LYW deceased TDP contents by 7%. Under CDS, added SMC and LYW increased TDP contents by 21 and 1784%, respectively, in SR, and by 26 and 1055%, respectively, in TD. PP contents in both SR and TD increased with SMC, but decreased with LYW. Annual total P losses (ATPL) were 1959, 2421 and 11414 g P/ha in the control, LYW and SMC plots, respectively, under RD. Under CDS, ATPL was 2082, 1989, and 17283 g P/ha in the control, LYW, and SMC plots, respectively. Of the ATPL, from 40 to 73% was attributed to P losses in drainage water. CDS increased soil P loss through increased SR. SMC increased soil P loss through both SR and TD.

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