Timing and Placement Effects of Land-Applied Manure on Phosphorus in Runoff. (S08-andraski926533-poster)

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Abstract:

Land application of manure to cropland can increase phosphorus (P) losses in runoff. This study determined the effect of dairy manure consistency, application time, and placement on dissolved P (DP) and total P (TP) losses in runoff in a corn production system under simulated (fall and spring) and natural (12-mo) rainfall. Simulated runoff volume immediately following treatment establishment (fall) was significantly lower in chisel plow (CP) than in no-till (NT) due to greater surface roughness in CP. Spring runoff volumes were similar in CP and NT spring due to over winter changes in soil surface conditions in NT. In fall, DP and TP losses were highest in NT slurry, intermediate in NT semi-solid, and lowest for injected slurry, CP slurry, CP semi-solid, and NT and CP without manure. In spring, only NT slurry had higher DP losses than the remaining treatments. Treatment effects on TP loss were not significant. Natural runoff, DP, and TP losses were not affected by manure consistency, application time (fall, frozen soil, snow-covered soil), or placement during the over winter period (Nov to May). Phosphorus losses from May to Oct will be determined. These results suggest that injecting or chisel plowing fall-applied manure can reduce the risk of P losses if a major runoff event occurs shortly following application.

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