Phosphorus Runoff from Calcareous Soils. (A05-schierer112526-Oral)

Authors:

- R.A.Schierer* - *USDA-NRCS Greeley, Colorado*
- J.G.Davis* - *Colorado State University*
- R.M.Waskom* - *Colorado State University*
- A.Schlegel - *Kansas State University*
- C.C.Truman - *USDA-ARS Georgia*

Abstract:

Phosphorus runoff research has been limited on soils that are calcareous to the surface. We followed the National P Project protocol using rainfall simulation to evaluate the relationship between soil P levels and runoff P losses on three Great Plains agricultural soils in Kansas, Nebraska, and Colorado. Soil samples taken before simulation outside of the plot resulted in the highest correlations between soil test P (Olsen) and dissolved phosphorus in runoff. In fact, soil test P as measured before simulation outside the plots was significantly different from samples taken after simulation inside or outside the plot at the 0-15 cm depth. However, there was no significant difference between sampling inside the plot after simulation and sampling outside (either before or after simulation) at the 0-5 cm sampling depth. Sampling depth of 0-5 cm was, however, slightly more predictive of dissolved P runoff losses than the 0-15 cm depth. Soil test P did not predict total runoff P or particulate P losses in any case. This is probably due to the fact that the majority (>70%) of P loss from these cropped soils was lost as particulate P, not dissolved P.

Corresponding Author Information:

Ron Schierer
USDA-NRCS Greeley,Co
4407 29th St. Suite 300
Greeley, CO 80634-8044

phone: (970) 330-0380
fax: (970) 330-4837
e-mail: ron.schierer@co.usda.gov

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