An Exploratory Technique to Assess Runoff Phosphorus for Agricultural Watersheds. (S02-elrashidi105510-Oral)

Authors:

- M.A.Elrashidi* - *USDA/NRCS-NSSC, Lincoln, NE*
- M.D.Mays - *USDA/NRCS-NSSC, Lincoln, NE*

Abstract:

Using soil tests to estimate P released from agricultural soil by runoff had limited success because P loss is a function of source and transport parameters. There are procedures applying these parameters but they are lengthy, expensive and demand numerous laboratory and field data. The objective was to develop an exploratory technique to estimate runoff P for agricultural land. Various forms of P like moisture are held by soil particles at different energy levels. Kinetic energy exerted by raindrops on surface soil plays a major role in releasing P. The Soil Survey Laboratory developed an anion exchange resin (AER) method to determine P release characteristics (PRC) for soils. In this method, different levels of energy were applied by water on soil particles when soil suspension was shaken for various periods. Understanding the relationship between shaking and rainfall energy enabled us to use the AER method to predict P released by rainfall. The runoff equation (USDA/NRCS) was applied to determine the relationship between rainfall and runoff for agricultural watersheds. We proposed a technique implementing the AER method and runoff equation to determine runoff P for agricultural land. The runoff P for 24 soils investigated ranged between 0 and 8.3 (fallow), 0 and 7.5 (cropland), and 0 and 6.0 Kg P/ha/y for grassland. Field studies on different benchmark soils of the United

States are in progress to estimate runoff P by using rainfall simulators. These data could be used to calibrate the new technique.

Corresponding Author Information:

Moustafa Elrashidi
USDA/NRCS-NSSC
100 Centennial Mall North
Lincoln, NE 68508-3866

phone: 402 437 5319
fax: 402 437 5760
e-mail: moustafa.elrashidi@usda.gov

Presentation Information:

Presentation Date: Tuesday, November 12, 2002
Presentation Time: 9:15 am

Keywords:

Anion Exchange Resin, Runoff Equation, Kinetic Energy