



Annual P Loss Estimator (APLE) Routines

APLE is a Microsoft Excel spreadsheet model that runs on an annual time-step and estimates field-scale, sediment bound and dissolved P loss (kg ha^{-1}) in surface runoff for agricultural field. APLE is intended to quantify P loss through process-based equations. It has been tested for its ability to reliably predict P loss in runoff for systems with machine-applied manure and for soil P cycling using data from a wide variety of agricultural fields and regions. APLE is intended to function like a P Index and estimate P loss for given set of management, soil P, erosion, runoff conditions. It is more process-based than most P Indexes, but much more user-friendly than APEX, SWAT type models.

APLE is intended to be user-friendly and does not require extensive input data to operate. All data are input directly into the spreadsheet User-input data include:

- Soil property data, including depth of the top two soil layers, Mehlich-3 soil test P, soil clay content, and soil organic matter content
- The annual rain, runoff, and erosion amounts
- The total annual crop P uptake
- When grazing animals are present, the total number of animal days in the field.
- For manure applications, the manure amount applied, manure %solids, manure total P205 content, % of manure total P that is water extractable P.
- For fertilizer applications, the mass of fertilizer P applied
- Fraction of fertilizer or manure that is incorporated, and the depth of incorporation.

