SOIL SENSITIVITY

Klopatek, Harris & Olson (1980) Oak Ridge National Laboratory, Oak Ridge, TN.

Objective

To identify areas: 1) susceptible to accelerated soil acidification,
2) insensitive to acidification with lowered buffer capacity,
and 3) with intermediate response.

Criteria

Soil sensitivity:
1) pH
2) Total base contents (CEC X Base saturation)
3) Organic matter
4) Clay content

All parameters are averaged for A horizons (0-25cm) of typic soils on a county basis. H^+ ion concentration per m^2 calculated from average rainfall pH (Cogbill & Likens, 1974) for each county and multiplied by annual average precipitation (cm).

Sensitivity Class Definitions

Type I	low CEC < 12meq/100g	medium to high B.S. 30 to 50%	pH>5	Noncalcareous	sandy
Type II	medium to high CEC >12meq/100g	medium B. S. 30 to 40%	pH>5	Noncalcareous	clayey or cultivate
Type III	medium to high CEC >12 meq/100g	low B.S. < 30%	pH<5	Acid	-
Type IV	high CEC > 20 meq/100g	high B.S. > 50%	pH>6	Calcareous	-

Map Product

Computer-generated maps produced defining each soil type (I to IV) for eastern North America on a county basis. Superimposed on this is the H^+ ion concentration (5 intervals) ranging from < 0.02 to > 0.06 equivalents/m^2, H^+ ion.

Interpretation

Type I — Accelerated acidification caused by increased (above normal) H^+ ion input. Could require management practices (liming) if H^+ ion input continues or increases.

Type II — These soils are already sufficiently buffered against a small (present) H^+ ion input, such that large quantities of exchangeable cations are not leached.