

SOILS ANALYSES

Exchangeable Cations

- soil preparation :
 - Air dry
 - sieve thru 2mm mesh
- techniques
 - 5 g soil
 - 50 ml 1N NH_4OAc
 - shake thoroughly
 - let stand overnight
- filter
- repeat filtering w/ 4 more batches of 25 ml of NH_4OAc
- pour 20 ml of filtered solution into sample holder + mark w/ plot number - give to Neil

Equipment costs

pH	8 hrs labor	= \$76.16
75	K or AA	11.25
75	Ca, Mg or Plasma	39.75
		<hr/> 127.16

pH = \$11.25

Extraction for Exchangeable bases

Reagents

1 L { 1.5 L of glacial acetic acid 99.5%
2 L of "concentrated ammonium hydroxide"
NH₄OH
to make 25 L of 1N NH₄OAc

* { 1N NH₄Cl adjusted to pH 7.0 w/ NH₄OH
10% ammonium oxalate
dilute NH₄OH

few drops added to 10 ml of leachate -
heat, look for precipitate

* but this would

	75	100
Erlenmeyers	110	5 50 15
filters	75	49 100 ml
1 volumetric flask	75	200 ml
aliquot jars	90	x 15 1500 15 L

ΔA-38-S1 2.5 L # ~~32.00~~ 34.55
Glacial Acetic Acid

A-669-S1

75
140
3000
75
10500 ml

= 7.5

140
75
200 ml / sample
15000 = 15 L

140
5
0

pH in water

~~100 g~~ { 20 g soil (air dried? sieved)
70 ml distilled water
in 50 ml beaker

- stir several times over 30 minutes
- let stand for \approx 1 hr. until settled

\rightarrow assumes glass + calomel electrodes

AA-38 2 500 ml @ \$12.35 each \$26

~~AA-38-SI~~ 2.5 L Glacial Acetic Acid ~~\$24.55~~
in Safe-Cote Bottle

SO-A-385 Conc Ammonium Hydroxide 6x100ml
\$61.05

Fisher Filter Paper
Quantitative Ashless
Grade Q5

9 cm

09-790-2C \$7.36 x 2 pkgs

201 379-1400

Account 585 680-01

A-669 15

Ammonium Hydroxide

A-669 $2\frac{1}{2}$ L 18.50

Buell et al 1966

N.J.

Exchangeable Ca + Mg

CEC

glacial acetic acid
ammonium hydroxide
isopropyl alcohol

- 10g of 2mm sieve air-dried soil in 500 ml
Erlenmeyer

- 250 ml of NH_4OAc

- shake flask, let stand overnight
- filter soil w/ 55 m Buchner funnel
- leach the soil w/ NH_4OAc

250 ml x 100 samples = 25 liters of NH_4OAc
for each 2 liters - need 1/4 ml of acetic acid
138 ml NH_4OH

= 1.5 L of acetic acid

= 7 L of concentrated ammonium hydroxide

275
24
300
150
1.500

Soil pH

- place filter paper on balance + weigh
- add 5 g of soil
- pour soil into 30 ml plastic beaker - add 5 ml deionized ^{H₂O} 15
- stir several times during next 30 min. then let stand 15 minutes
- rinse of pH electrode
- lower electrode into soil-water mixture (near bottom of mixture)
- read pH
- turn meter off } before removal from solution
- rinse electrode } w/ deionized water
- wash out beaker + rinse w/ deionized water

CEC

- place filter paper on balance
- add soil to $\approx 5.5 - 6.0$ grams total wt.
- record total weight (gross)
- pour soil into flask
- place filter paper back on balance + weigh it
- record this as "tare"
- discard filter paper + blow any dust off balance pan
- add 50 ml ammonium acetate to