

Goal: Convert %N soil data to g N/m<sup>2</sup>, where “m<sup>2</sup>” refers to ground surface area

Note that %N can be expressed as “g of N per 100 g of soil”

For example, 0.2% N is the same as saying “(0.2 g N)/(100 g soil)”

Example for following conditions:

Soil N concentration = 0.2%

Soil Bulk density = 1.2 g / cm<sup>3</sup>

Horizon thickness = 10 cm

Rock content = 30%

Convert from cm<sup>2</sup> to m<sup>2</sup> of ground surface area, given that there are 10,000 cm<sup>2</sup> per m<sup>2</sup>

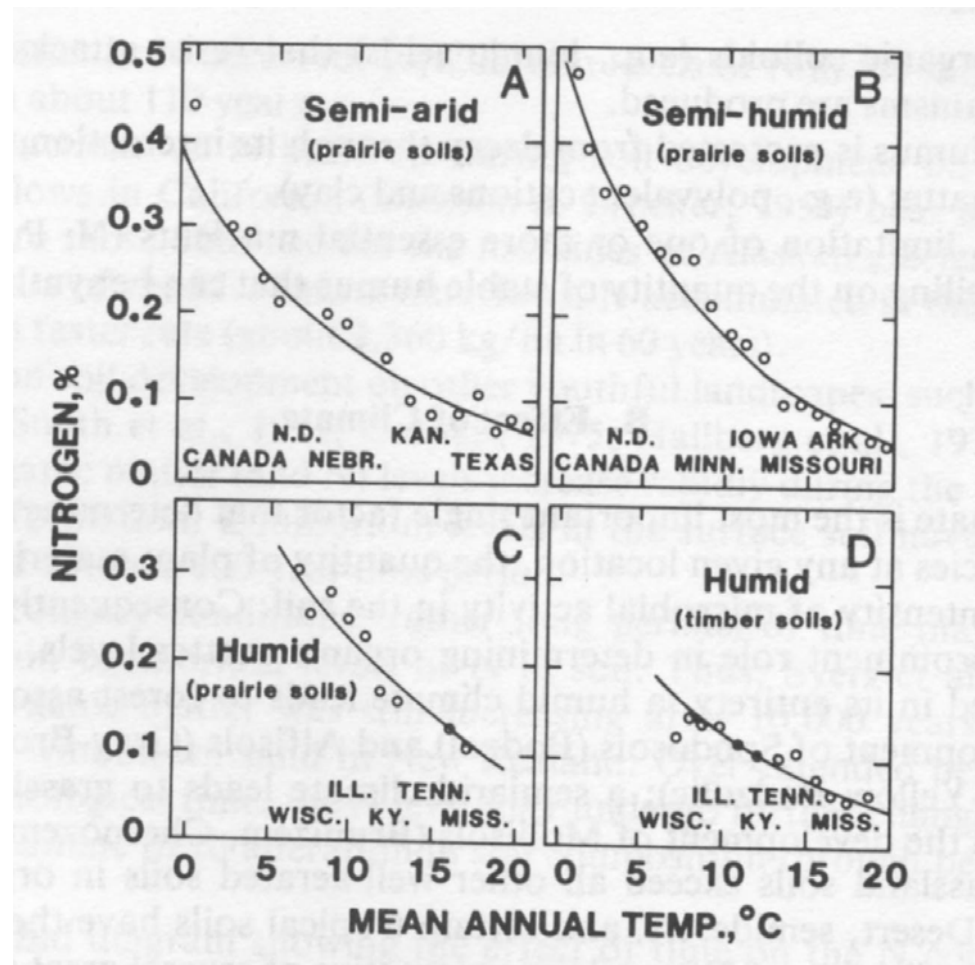
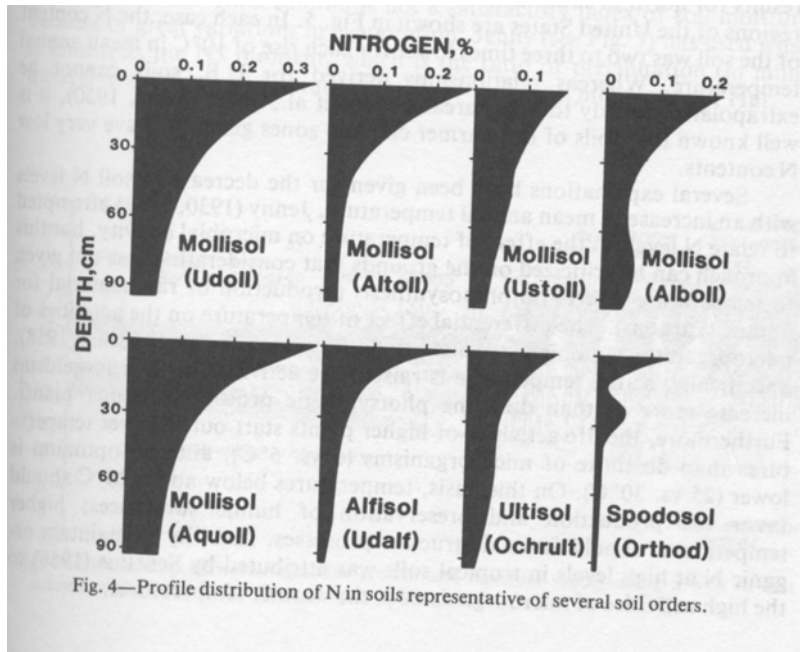
Fraction of rock-free soil  
= (100g - 30g)/100g = 0.7g/g

$$\left[ \frac{0.2 \text{ g N}}{100 \text{ g soil}} \right] * \left[ \frac{1.2 \text{ g soil}}{\text{cm}^3} \right] * 10 \text{ cm} * \left[ \frac{10^4 \text{ cm}^2}{\text{m}^2} \right] * \left[ \frac{0.7 \text{ g}}{1.0 \text{ g}} \right] =$$

Now cancel the units

$$\left[ \frac{0.2 \text{ g N}}{100 \text{ g soil}} \right] * \left[ \frac{1.2 \text{ g soil}}{\text{cm}^3} \right] * 10 \text{ cm} * \left[ \frac{10^4 \text{ cm}^2}{\text{m}^2} \right] * \left[ \frac{0.7 \text{ g}}{1.0 \text{ g}} \right] =$$

$\frac{168 \text{ g N}}{\text{m}^2}$  are in this 10 cm soil layer, on a per m<sup>2</sup> surface area basis



Stevenson, F.J. 1982. Origin and distribution of nitrogen in soil. *In* Nitrogen in Agricultural Soils, F.J. Stevenson (editor), Number 22 in the series Agronomy, American Society of Agronomy, Inc., Madison, WI.