Key

Salinity and Nutrient Management Worksheet

1. Due to salinity of wastewater for irrigation concerns, leaching is recommended to avoid sodium build up in the soil.
   a. If the electrical conductivity of the water (Ce) is 2 millimhos/cm and the maximum allowable conductivity of the soil for the landscape (Cl) is 5 millimhos/cm. What is the leaching fraction?

$$Lf = \frac{Ce}{C_1 - Ce} = \frac{2}{5-2} = \frac{2}{3} = 0.67 \sim 67\%$$

   b. If the weekly water requirement (evapotranspiration) is 1 inch. How much irrigation should be applied to avoid salinity build up in the soil?

Leaching Requirement = ET x Lf = 1in x 0.67 = 0.67 inches

Total Irrigation = ET + LR = 1in + 0.67in = 1.67 inches

2. The water analysis below was conducted for a sports field that uses municipal treated reclaimed water.

Nitrogen (N) = 20 ppm
Phosphorus (P) = 10 ppm
Potassium (K) = 30 ppm

If 6 inches of reclaimed water is applied a month, how much nutrients are being applied in lbs per 1000 square feet?

   a. Nitrogen

$$20_{ppm} \times 2.71 = \frac{54 \frac{lbs}{ac\text{-}ft}}{43.56} = 1.24 \frac{lbs}{1000ft^2} \times \frac{6''}{12''} = 0.62 \frac{lbs}{1000ft^2}$$

   b. Phosphorus

$$10_{ppm} \times 2.71 = \frac{27.1 \frac{lbs}{ac\text{-}ft}}{43.56} = 0.62 \frac{lbs}{1000ft^2} \times \frac{6''}{12''} = \frac{0.31 lbs}{1000ft^2}$$

   c. Potassium

$$30_{ppm} \times 2.71 = \frac{81.3 \frac{lbs}{ac\text{-}ft}}{43.56} = 1.87 \frac{lbs}{1000ft^2} \times \frac{6''}{12''} = 0.93 \frac{lbs}{1000ft^2}$$