Problem sets are due ca. one week after they are handed out in lecture. To receive full credit (4 points each), work must be shown as to how the answer was obtained, the correct answer must be written on the indicated line, the units of the answer must be indicated and correct, and the assignment must be handed-in by the due date. Check the course homepage for sample problems and solutions.

1. Calculate and show work in determining the calcium carbonate equivalency of burnt lime, CaO.

2. If 94% of a limestone sample from an Iowa quarry passes a 4-mesh sieve, 89% passes an 8-mesh sieve, 85% passes a 20-mesh sieve, and 79% passes a 60-mesh sieve, what is an estimate of the availability based on fineness of this sample?

3. You have a large containerized planting that contains 250 kg of soil. An analysis shows that you need to neutralize 4.4 meq/100 g of acidity. How many grams of finely ground (100% available) pure CaCO₃ is required to neutralize the acidity of this soil? (Please express your answer in grams.)

4. Your soil test report calls for 3100 lbs ECCE per acre. If the quarry’s limestone is 96% CaCO₃ equivalent and 93% effective, how many tons of limestone from this quarry must be applied to a 55-acre field to satisfy this ECCE?

5. Your soil test report calls for 3300 lbs of ECCE per acre at a 6-in. depth but you wish to incorporate the lime to only a 4-in. depth. How much ECCE is required?