pH

pH: just a measure of the relative acidity/alkalinity of a soil. 7.0 = neutral, <7 = acidic, > 7 = alkaline.

• Different plants like different pH (See text: Table 11)

• High and low pH affects nutrient availability (See text: Figure 7.1)

• Most California soils are alkaline and salty

Lime vs Gypsum

• Both used to change the pH, and add Calcium

• Lime to raise the pH, Gypsum to lower it

• Lime = Calcium carbonate (CaCO3)

• Gypsum = Calcium sulfate (CaSO4)

• We need a lot to change the pH. (text: Table 12). Practically, add a little every year, or a lot every few years. Get a gradual pH improvement, unless other things we are doing are messing it up.

Gypsum

• How much should we add?

• For Calcium?

• For pH? Get about 0.1 change in pH for each ton of Gypsum or lime (see text: Table 12).

• To improve the Ca:Mg ratio?

• To replace Na on CE sites? Pure Sulfur 5.38 times better (see text: pg 45)

Why are we adding 2 ton/acre/year?

• Gypsum is 23% Calcium

• 2Ton = 4000lb x .23 = 920lb

• How much does crop use? (text: Table 20)

• So, we are adding more than we need for crop’s Ca requirements. Instead, working to maintain our Ca:Mg ratio.

• Lowering our pH by 0.2 points (Practically, we’re trying to stay even cuz of alkaline water).

• Counteracting the high Na in our water

• Counteracting our BFM regarding soil structure.
Phosphorus
How much do we need?
Onions use 80lb (text: Table 20)
- amount from soil test = 87ppm = >>181+ lb/Ac.
  (see text, p 30)
- Can be a pollution hazard. *No more P!
If you were doing a P budget, you would include P from compost.

Potassium
• How much do we need?
Onions use 160 lb (text: Table 20)
• Amount from soil test = 310ppm = 620lb/acre (double the ppm) (text: pg 48) We have plenty!
  How much would we add if we used 8-5-1?
  • 8-5-1 is 1% K.
  Say we added 2lb per 125 sq ft (.003 Acres)
  2lb x .01 = .02 lb/.003 Ac = 7 lb of un-needed K
If you were doing a K budget, you would include K from compost

Sulfur, Magnesium, Micronutrients
• Read about Sulfur and Magnesium in the text
• Micronutrients: What do the soil tests say?
• Are we going to do anything? If so, what?
• Overcorrection is not easily reversed
• We get some micronutrients from compost
• Potential toxicities and deficiencies can be fixed by adjusting pH (see text, p 60) and raising organic matter

Final thoughts on fertility…
• You should now be able do a budget for any nutrient
• But, before you get too confident:
  Nutrients are affected differently by high and low pH, soil texture, temperature, microbial activity and the degree of o.m. decomposition
  Read about it (text: throughout, and pg 76-80 for micronutrients)