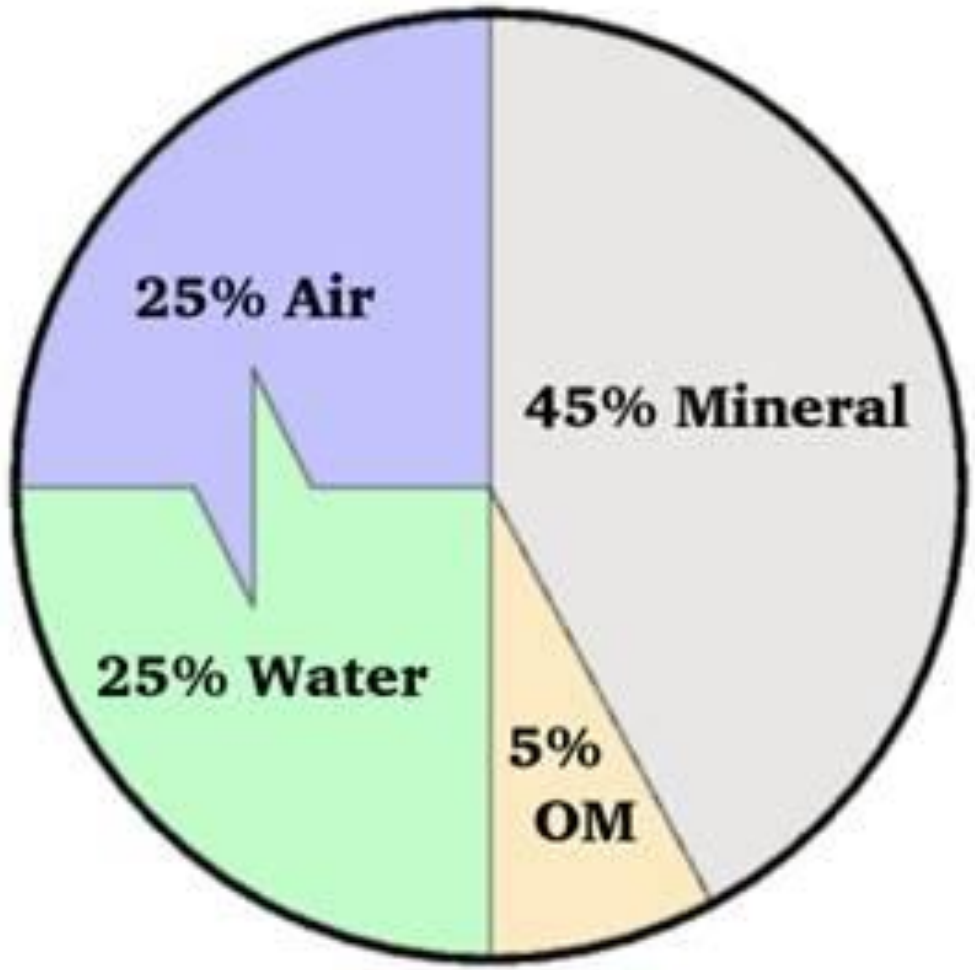
# SOIL: Getting the Model Right - Part 2

Guiding Principles from Science

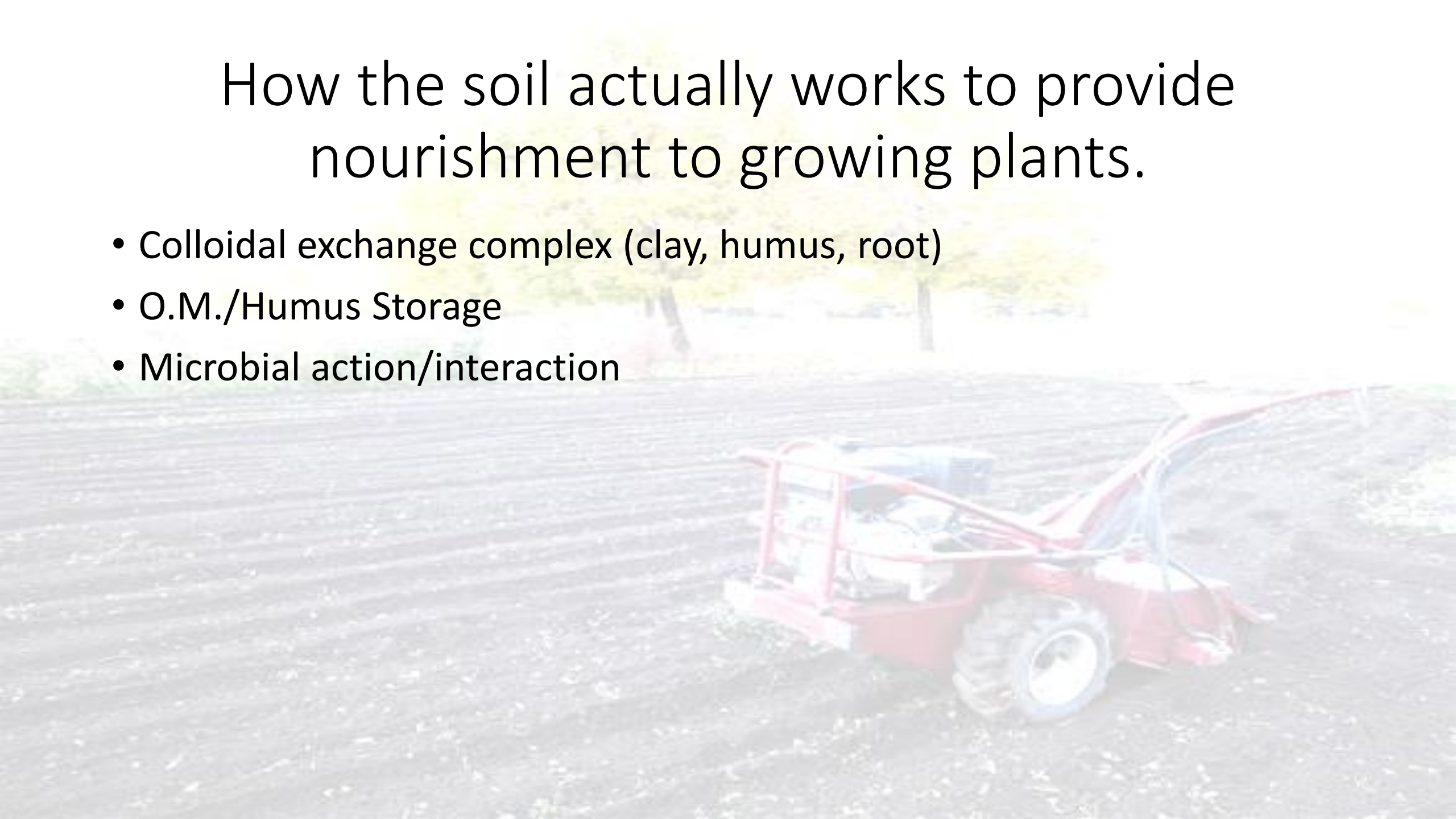

25% Air
45% Mineral
25% Water
5%
OM

# Different schools of thought

- Conventional – Selective chemistry
- Organic – Carbon fertility
- Bio-Dynamic - Energy
- Permaculture – Keep what you've got
- Biological – Soil biology
- Albrecht/CEC – Complete and balanced fertility

# How the soil actually works to provide nourishment to growing plants.

- Colloidal exchange complex (clay, humus, root)
- O.M./Humus Storage
- Microbial action/interaction



# The difference between Photosynthetic production and biosynthetic production

**Photsynthetic**

- Produces carbonaceous bulk
- Primarily energy/calories
- Yield driven

**Biosynthetic**

- Produces mineralized, proteinaceous bulk
- Complete food source
- Quality driven

Feed the soil and let the soil feed the crop

# Soil Tests

3/1/15

# SOIL RECOMMENDATION

| | |
|---|---|
| Location/ Farm: | Johnson, D / Red Bud |
| Field/ Sample: | Garden / 012915 |
| Crop: | Vegetables |
| Total Exchange Capacity: | 14.47 |
| pH of Soil Sample | 6.50 |
| Humus Content, Percent: | 2.60 |
| Desired Ca : Mg Percent: | 68 : 12 |

## BASE SATURATION PERCENT:

| | |
|---|---|
| CALCIUM (60-70%) | 67.15 |
| MAGNESIUM (10-20%) | 12.84 |
| POTASSIUM (2-7.5%) | 7.01 |
| SODIUM (0.5-3%) | 0.60 |
| OTHER BASES (Variable) | 4.90 |
| EXCHANGEABLE HYDROGEN (10-15%) | 7.50 |

ALL RECOMMENDATIONS ARE PER 1000 SQ. FT. BROADCAST

| | | | | |
|---|---|---|---|---|
| ANIONS | NITROGEN-N (lbs./acre) | ENR Value | 72 | Apply 11¼ lbs. of Feather Meal (60 lbs. N). |
| | SULFUR-S (lbs./acre) | Desired Value | 100 | Apply 1 lb. 10 oz. of 90% Sulfur (63 lbs. S). |
| | | Value Found | 20 | |
| | | Deficit/Surplus | -80 | |
| | PHOSPHORUS-P (lbs./acre) | Desired Value | 330 | Apply 5 lbs. 12 oz. of MAP 11-52-0 (28 lbs. N)(57 lbs. P). Also apply 11¼ lbs. of Soft Rock Phosphate (44 lbs. P)(100 lbs. Ca). |
| | | Value Found | 138 | |
| | | Deficit/Surplus | -192 | |
| CATIONS | CALCIUM-Ca (lbs./acre) | Desired Value | 3936 | Supplied by Soft Rock Phosphate above. |
| | | Value Found | 3888 | |
| | | Deficit/Surplus | -48 | |
| | MAGNESIUM-Mg (lbs./acre) | Desired Value | 417 | Wait. |
| | | Value Found | 446 | |
| | | Deficit/Surplus | +29 | |
| | POTASSIUM-K (lbs./acre) | Desired Value | 846 | Apply 2 lbs. 14 oz. of Potassium Sulfate 0-0-50 (52 lbs. K)(22 lbs. S). |
| | | Value Found | 791 | |
| | | Deficit/Surplus | -55 | |
| | SODIUM-Na (lbs./acre) | Desired Value | 67 | Apply 2 lbs. 5 oz. of Sea-90 Sea Minerals. |
| | | Value Found | 40 | |
| | | Deficit/Surplus | -27 | |
| MICROS/TRACES | BORON-B (ppm) | Desired Value | 1.75 | Apply 7½ oz. of 10% Boron (2 lbs. B). This is the most that should be applied at one time. |
| | | Value Found | 0.99 | |
| | | Deficit/Surplus | -0.76 | |
| | IRON-Fe (ppm) | Desired Value | 300 | OK for this year. |
| | | Value Found | 291 | |
| | | Deficit/Surplus | -9 | |
| | MANGANESE-Mn (ppm) | Desired Value | 200 | OK for this year. |
| | | Value Found | 197 | |
| | | Deficit/Surplus | -3 | |
| | COPPER-Cu (ppm) | Desired Value | 10 | Apply 5½ oz. of 25% Copper Sulfate (3.75 lbs. Cu). |
| | | Value Found | 4.10 | |
| | | Deficit/Surplus | -5.90 | |
| | ZINC-Zn (ppm) | Desired Value | 12 | None. |
| | | Value Found | 17 | |
| | | Deficit/Surplus | +5 | |
| | COBALT-Co (ppm) | Desired Value | 1 | Apply 0.4 oz. 33-34% Cobalt Sulfate (0.3 lbs. Co) |
| | | Value Found | 0.76 | |
| | | Deficit/Surplus | -0.24 | |
| | MOLYBDENUM-Mo (ppm) | Desired Value | 1 | OK. |
| | | Value Found | 1.30 | |
| | | Deficit/Surplus | +0.30 | |