Nutrient Dense Crop Production

2010-11 Course I
Dan Kittredge
Dan@realfoodcampaign.org
978 257 2627
Course Objective

• Support students in achieving significant improvements in the vitality, health, yield and nutrient value of the crops they produce.
Support systems

• Individual consultation with Dan on your soil test and devising a fertility plan
• Newsletters every two weeks with comprehensive information on the topics we cover in class to aid your process as a grower.
Mode of teaching

• Morning session on principles and theory

• Afternoon session hands on
Today’s topics

• Soil testing and mineral balancing
• Seed and inoculation
• Potting Soil
• Real Food Campaign
Priorities/Focal Points

• M&M’s - Microbes and Minerals
• MOM - Microbes, Organic Matter and Minerals
• HOME - Humus, Organic Matter and Energy
• Don’t forget Air and Water.
Soil Testing

• History and place of Agriculture

• Effect of long term cropping on Soil

• Role of macro and micro minerals in plant health and vitality
Logan Test

- Base Plus or “Agri-Dyn II” Test
- A Strong Acid test
- Sulfer - 75 ppm
- Phosphorus - 75 ppm
- Calcium - 70-75%
- Magnesium - 15-18%
- Potassium - 3-5%
Trace Element Levels

- Boron - 3 ppm
- Manganese 80-90 ppm
- Copper - 4 ppm
- Zinc - 8 ppm
- Cobalt - 2 ppm
- Molybdenum - 1 ppm
- Selenium - .5 ppm
Farm Test
General recommendations for specific mineral deficiencies

• Sulfer - with Calcium needed, 500 pounds per acre (ppa) gypsum
• Sulfer - with Magnesium and Potassium needed 300-500 ppa Sul-Po-Mag or K-mag
• Sulfer - with Potassium needed 200-300 ppa potassium sulfate.
• Sulfate forms of the trace elements
Phosphorus

- Phosphorus - with calcium needed, 500-2000 ppa colloidal soft rock phosphate, Tennessee brown rock phosphate, Black hard rock phosphate
- Phosphorus - with potassium needed, Compost.
Calcium

• Calcium - 500-2000 lbs Calcium Carbonate (Calcite or Hi-cal Lime) Also Aragonite, Coral Calcium, Egg Shells,
• Calcium - with Magnesium needed 500-2000 ppa Calcium Magnesium Carbonate, (Dolomite, or Dolomitice Lime)
• Calcium - with Sulfer needed, 500 ppa gypsum
• Calcium - with Phosphorus needed, 500-2000 ppa Soft Rock Phosphate.
• Calcium - Phosphorus and Traces and Paramagnetic needed 500-2000 ppa Carbonatite
Magnesium

• Magnesium - with Calcium needed 500-2000 ppa Dolomite
• Magnesium with Sulfer and Potassium needed 300-500 ppa Sul-Po-Mag or K-mag
• Magnesium - with Sulfer needed, 200 ppa magnesium sulfate (epsom salts)
Potassium

- Potassium - Spread well, clean wood ash
- Potassium - with Magnesium and Sulfer needed, 300-500 ppa Sul-Po-Mag or K-mag
- Potassium - with Sulfer needed, 200-300 ppa potassium sulfate
- Potassium - with Phosphorus needed, Compost
Boron

• Boron - Depending on level needed, up to 30ppa per year Borax. Apply in split applications. Ideally at least three
Manganese

• Manganese - 5-20ppa manganese sulfate
Copper

- Copper - 5 ppa Copper Sulfate. If very low up to 10 ppa
Zinc

• Zinc - 5-10 ppa Zinc Sulfate.
Mineral Application Rules of Thumb

• To address deficiencies, fall applications are best. That gives time for minerals to be digested and made bio-available for next year’s crop.

• Rock minerals should whenever possible be applied with some form of an organic compound. Some common ones are compost, Humates, Biochar.
Best Practices for Mineral Application

- Into cover crops in the fall
- Into compost piles at first turn
Other Minerals

- Glacial Gravel Till
- Granite Dust
- Basalt Dust
- Volcanic Rock
- Alluvial Outwash Clays
- Humates
- High Energy Clays
- Biochar
- Sea Minerals
Seed

• Sorting by Size

• Yield Potential

• Growth Potential

• SPECIAL REPORT on seed companies coming in RFC newsletter. What companies would you like us to interview?
Inoculation

- “Digestive Tract” of plants
- Inoculating “gut” at birth
- Bacterial and Fungal Species critical symbiotes.
- Special Report on Inoculants coming in RFC newsletter. Key suppliers across the country, the products they sell, with species, purposes, levels, application rates and price.
Potting Soil

• Besides Compost, peat, vermiculite and perlite, Consider, Kelp, Alfalfa, Zeolite, Humate, Montmorillonite, Lime, Rock Phosphate, Gypsum, Trace Elements, and critical role of biological innoculants and enzyme stimulants.

• Survey of compost and potting soil producers, their amendments and mineral assays coming in the RFC newsletter. Companies?
Real Food Campaign

• History

• Mission
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Database

Archive

Profiles
Real Food Campaign

• Research
  – Blow your mind and share the results
  – Hand held “tri-corder” for consumers
Real Food Campaign

• Staff
  – Dan - Director, Teacher, Public Face
  – Doug - Course Coordinator, Chief of Staff
  – Eric - Backend Database Wizard
  – Chris - Website Design/Implementation
  – Suzanne - Development
  – Clio - Research/Newsletter
  – You?