Building Healthy Soil

July 17, 2016 ~ Tamara SunSong ~ sunsonghealing@yahoo.ca ~ 250-353-3284

Soil is a living ecosystem

- The conventional understanding of soil sees it primarily as an inert medium for holding water and nutrients. In reality, soil is a living ecosystem, comprised of non-living components (mineral soil, air, and water), organic matter, and a complex, interdependent community of living organisms.
- In terms of actual effects on crop yields and plant health, the most important single factor is the **health of the soil organisms**. To support this, we need to do the following:

1. **Stop damaging the soil**
   - No nutrient-specific fertilizers without a soil test
   - No synthetic fertilizers or pesticides
   - Minimize organic/botanical pesticides
   - Don't restrict airflow with plastic
   - Don't try to change the inherent soil texture
   - Minimize tillage
2. **Water the soil (not the plants)**
   - All the soil organisms need water; so make sure whatever system you use waters the whole soil area deeply (but not too often).
3. **Add Organic Matter**
   - Organic matter is great at everything we want, no matter what your soil type.
   - The more diverse the sources of organic matter, the more diverse the nutrients they'll bring, and the more diverse the organisms they'll support.
   - Aim for a balanced Carbon to Nitrogen ratio, just like with compost. No raw manure.
   - Keep the soil covered: mulch, mulch, mulch! Mulch is the best way to feed the soil microbes, which feed the plants.
   - Cover crops are awesome too. Many specific types.
   - Nutrient accumulator plants and Nitrogen fixers, especially in perennial areas/food forest
   - Terra preta? (Traditional soil technique from Amazon basin – inoculated biochar)
   - Large scale only: rotational/mob grazing?
4. **Inoculate with friendly critters**
   - Compost – good feedstock makes good compost. Keep it aerobic.
   - Aerated compost tea – *must* be aerated. Ferments can have value but are different.
   - Effective microorganisms (EM)
   - Mycorrhizal fungus
   - Legume inoculant
5. **Balance nutrients**
   - Don't worry about pH; it will adjust itself as you follow good soil care practices
   - Rotate crops so you don't create nutrient imbalances
   - Can add nutrient-specific fertilizers in moderation ***IF*** (and only if) a soil test from a good lab says they're needed.
   - Can add full-spectrum nutrient sources like sea minerals, seaweed, glacial rock dust/Azomite in moderation.
   - Not too much high-N fertilizer at once, including manure
   - Toxic metals? Get a lab test.

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Resources:

Soil Biodiversity Atlas (http://esdac.jrc.ec.europa.eu/content/global-soil-biodiversity-atlas) – online tool with information about soils around the world.

www.soilfoodweb.com – Dr. Elaine Ingham's website – great information about soil health, compost, compost tea, and more. Advanced classes, soil biology testing. Also look on youtube for videos of Dr. Ingham speaking.

Gaia College (www.gaiacollege.ca) – Organic gardening course information – online and in person classes, including info. on Nelson Organic Master Gardener course starting this fall.

Organic Gardener's Pantry (www.gardenerspantry.ca) – Online orders for microbial inoculants, sea minerals, etc.

A & L Laboratories (http://www.alcanada.com/) – based in London, Ontario – good quality lab, wide range of soil tests

Logan Labs (http://www.loganlabs.com/) – based in US (Ohio), also a good lab

MB Laboratories (http://www.mblabs.com/) – soil toxicity testing, based in Sidney BC.

Terra preta (http://www.biochar.info/biochar.terra-preta.cfml)

Hugelkultur (intro at https://www.permaculture.co.uk/articles/many-benefits-hugelkultur but there are many other sites and diverse approaches so check out a few)

More of this kind of detailed information about organic gardening practices is available through the **Organic Master Gardener course, offered on Saturdays (9:30 am – 4:30 pm) in Nelson from October 15th through December 3rd**, as well as online. Contact Tamara or go to www.gaiacollege.ca for details.