Green Lawns and Gardens from the Ground Up

City of Kirkland - Natural Yard Care

LEARN. GROW. EAT.
seattle tilth

The Value of Healthy Soil

- Reduces need for chemical fertilizers and pesticides
- Reduces irrigation needs
- Filters out urban pollutants
- Sequesters stormwater
- Stores carbon from atmosphere

S. Rose & E.T. Elliott

Soil Components

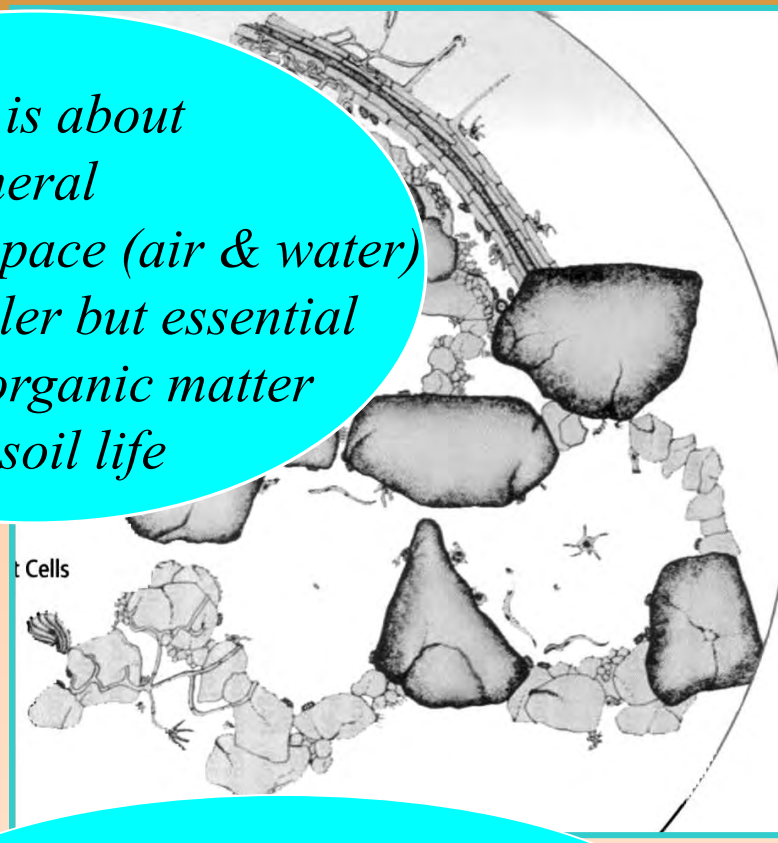
Soil Components

- **"The Dirt"**
  (mineral particles)
  - sand (0.05 to 2 mm)
  - silt (0.002 to 0.05 mm)
  - clay (<0.002 mm)

- **Air and Water** (in pore spaces)

- **Organic Matter and Soil Life**
  (create aggregates & pores)

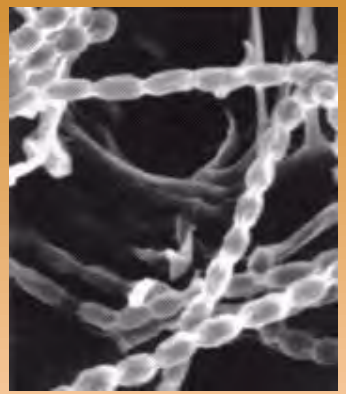
Good soil is about
- half mineral
- half pore space (air & water)
- plus a smaller but essential amount of organic matter and soil life



"Loam" is a mix of sand, silt, clay and organic, formed over time by nature

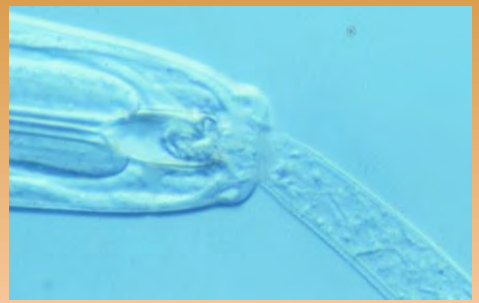
Soil Foodweb

- Bacteria



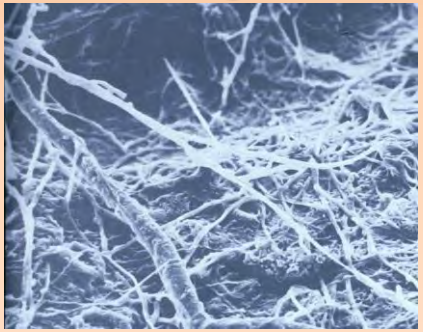
Paul R. August, University of Minn.

- Nematodes



Soil Foodweb Inc.

- Fungi

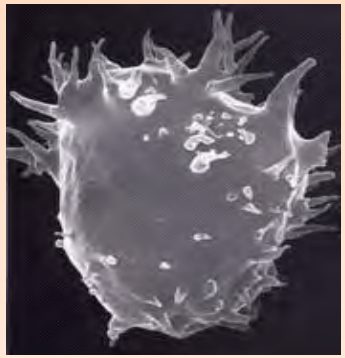


Soil Foodweb Inc.

- Arthropods

SSSA

- Protozoa



Wilhelm Foissner,
University of Salzburg

- Earthworms

Native Sub Soils in the Puget Sound Basin

Land of Fire and Ice

Glacial Till

Hardpan

Outwash Soils

Lake/Marine Bed Soils

Volcanic Ash

Mudflows

Manufactured Soils

- Inputs are sourced from variable places
- Can come from construction sites
- Can have certified organic components
- Are not native soils
- Ask for testing information

Soil Testing; A Good Tool

- Determine soil health baseline
- Assess nutrient quality
- Get guidelines for further amendments
- Assess toxin issues

<u>Toxin Concerns for Edible Gardening</u>

•Houses built pre – 1978
•Old orchard grounds
•Industrial sites (old substations, auto shops)
•Downwind of cement plants
•Areas affected by Asarco Smelter plume
•Along a busy highway

Soil Test

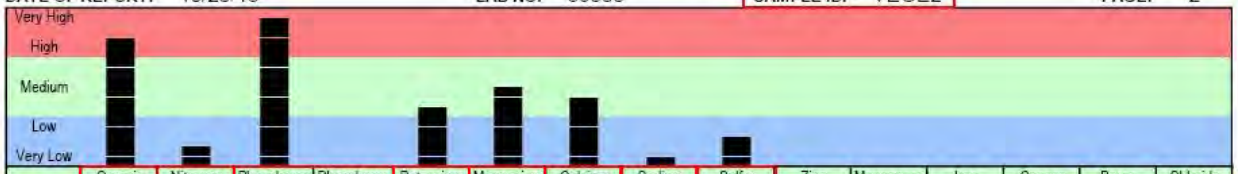
SEND TO: KING CONSERVATION DISTRICT
1107 SW GRADY WAY STE 130
RENTON, WA 98057

GROWER: O'GRADY

SUBMITTED BY: JAY MIRRO

Graphical Soil Analysis Report

DATE OF REPORT: 10/28/13 LAB NO: 59383 SAMPLE ID: VEGE2 PAGE: 2



Analyte	Organic Matter %	Nitrogen NO_3-N ppm	Phosphorus Weak Bray ppm	Phosphorus $NaHCO_3$-P ppm	Potassium K ppm	Magnesium Mg ppm	Calcium Ca ppm	Sodium Na ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Chloride Cl ppm
Results	12.8	6	93	46	190	322	2030	12	7						
		LOW		AVERAGE	HIGH										

Percent Cation Saturation (computed)

Potassium K %	Magnesium Mg %	Calcium Ca %	Sodium Na %
3.1	16.9	64.6	0.3

ACIDIC BASIC

ECe dS/m — INCREASING SALINITY →

CEC 15.7 meq/100g

Ex. Lime

pH 6.0 ← INCREASING NEED FOR LIME

Buffer pH: 6.1

NaHCO3-P unreliable at this soil pH

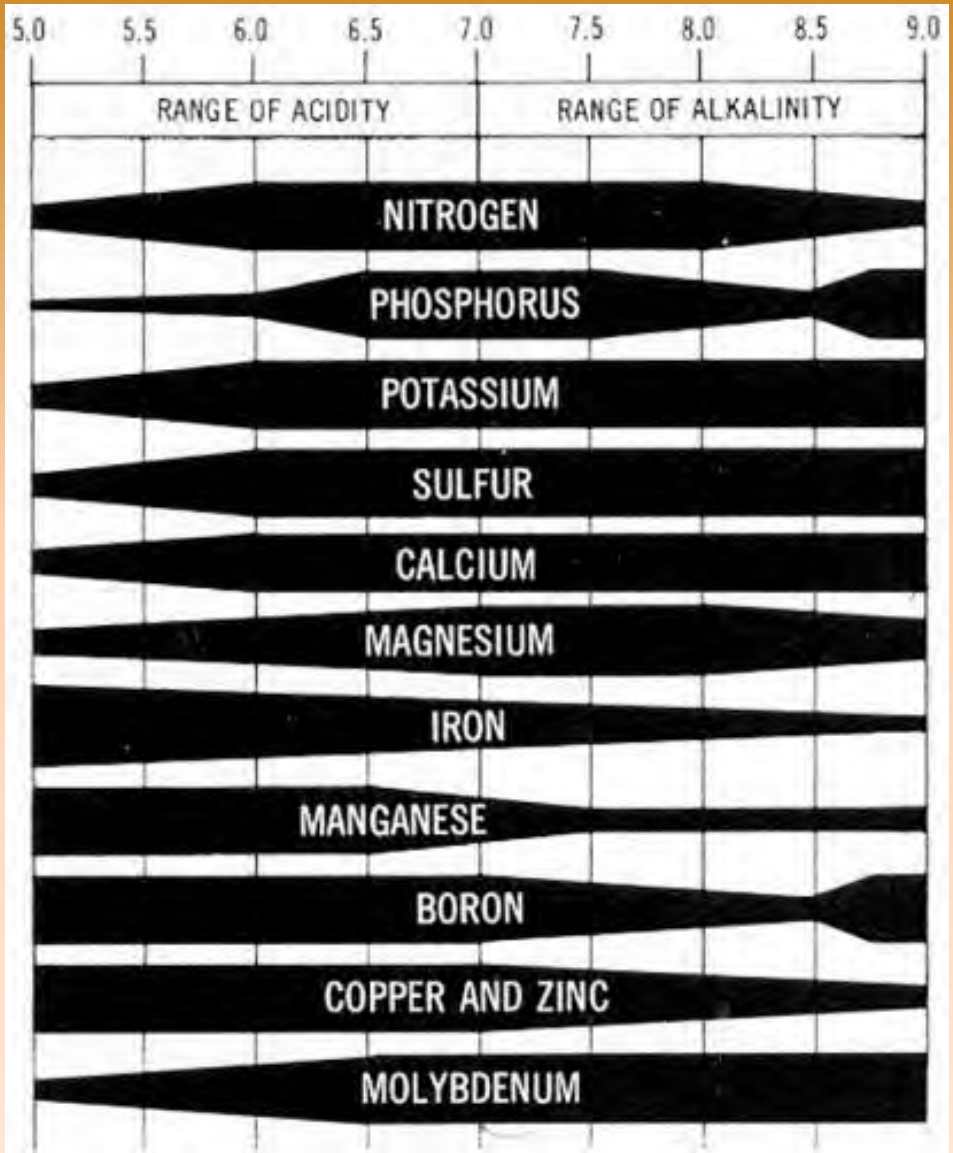
Soil Fertility Guidelines

CROP: VEGETABLES RATE: lb/1000 sq ft NOTES:

Dolomite 100 score	Lime 100 score	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P_2O_5	Potash K_2O	Magnesium Mg	Sulfur SO_4-S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B	
	180			3.3		3.0		0.6						

COMMENTS

pH and Nutrient Availability



Amending Your Soil

- Yard or food waste compost – curbside or home composting
- Manure based compost – livestock and biosolids
- Growing cover crops

Disturbed Soil and Compaction

- Topsoil layer removed
- Compaction
- Subsoil (or worse) used to fill layers
- Toxins

Cover Crops Protect and Nourish Soil

- Protect from winter rain and leaching of nutrients
- Prevent compaction
- Add nitrogen
- Add organic matter
- Keep weeds at bay – sometimes inhibiting certain types of weeds

Mulch Protects and Nourishes Soil

- Moisture conservation
- Prevents weeds
- Moderates soil temperature
- Makes a finished look
- Creates habitat for beneficial insects and birds

Growing a Healthy Sustainable Lawn

- Mowing height – 2 inches minimum to outcompete weeds, shade soil, conserve moisture
- Grasscycle – reduces need for fertilization to one application in the fall
- Use natural, organic lawn fertilizer instead of chemical fertilizers
- No Phosphorus is allowed in lawn fertilizers unless your soil test shows P depletion – protects waterways

Growing a Healthy Sustainable Lawn

- Apply lime in the fall if pH is low – check your soil test
- Lawns need 6-8 hours of sun – if too shady try alternatives
- Provide adequate water – 1 inch per week to 6 inch depth
- Good drainage matters–aerate and de- thatch and spread compost and reseed to keep them invigorated

Lawns are…

- Many individual plants
- Grasses that like to grow tall
- Good competitors when healthy
- Permeable when healthy
- Hungry!
- Thirsty!

Lawn and Seed Choices for NW Gardens

- Perennial Rye
- Perennial Fescue
- Kentucky Bluegrass
- Eco-Turf
- Native Grasses
- Steppable Groundcovers
- Perennial Clover

Perennial Rye

Perennial Fescue

Steppables – Creeping Thyme

White Clover

Eco-Turf

Lawns in the Wrong Place

- **Slopes -** No more than 12% grade – avoid runoff, hard to mow – use groundcovers instead
- **Ponding –** Indicates compaction or high water table – assess for and correct or plant adapted plantings
- **Under Conifers –** Shade, tree roots, needles, ground water – substitute with shade loving perennials, ferns or groundcovers.
- **Shady Garden –** Lawns need 6 – 8 hours of sun daily Substitute with shade loving plants and natives.

Weeds and Lawns

Weeds will outcompete lawn if conditions for healthy lawns are not met. Improve the health of your lawn to overcome weeds.
Corrective measures include:

- Mowing high – 2 inches to shade out weed seedlings
- Not letting weeds go to seed
- Aerating, de-thatching and topdressing -improve soil conditions
- Removing lawn from areas where it cannot thrive
- Tolerating some weeds – clover adds nitrogen to the soil

Common Lawn Weeds

Dandelion

Plantain

Buttercup

Moss

Cat's Ear

Clover

Sheep Sorrel

Self Heal

Some weeds are edible, others improve soil, many are companionable with lawns

Common Lawn Weeds

Daisy

Yarrow

Ground Ivy

Annual Bluegrass

Speedwell

Tall Fescue

Common Lawn Pests

- Moles
  - Tunneling and hills – indicates your soil has life in it!
  - Stamp down hills and runs, tolerate until they go deeper into ground in summer
- Crane Fly
  - Creates bare patches in the soil
  - Indicates moist soil – correct or adapt, let lawn go golden in the summer, attract birds as predators, chickens and larvae, reduce pesticide use, apply nematodes as a bio-control
- Red Thread
  - Cosmetic damage mostly – indicates low nitrogen and wet soil
  - Mow off infected blades and fertilize
  - Prevent by keeping soil fertile and well drained

Common Lawn Pests

Mole hills

Crane Fly Damage

Red Thread in Active Stage

More Resources

- Garden Hotline – 206-633-0224 – www,gardenhotline.org
- Seattle Tilth classes www.seattletilth.org
- *"Teaming With Microbes"* Jeff Lowenfels and Wayne Lewis

Please join us next for:

- **Planting a Water Smart Garden – May 21**
- **Pollinator Savvy Plant Care - June 4**

Grand Raffle Prize is a garden consultation with ~Lisa Taylor~