

Soil Fertility and Fertilizers for the PNW

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What we covered:

Reviewed soil physical properties including soil texture, soil structure, soil bulk density, porosity, infiltration, water-holding capacity and soil biology. The soil at many home sites is a 'soil mix' created during the home building process. Often only 6 to 12 inches of this mix is filled over glacial till or subsoil

We reviewed basic soil chemical properties, pH, cation exchange capacity, plant root and shoot botany. We also discussed nutrient uptake of mineral ions, the nitrogen cycle plus fertilizer requirements for gardens plus determining nutrient need, fertilizer materials and application.

Summary/take-home messages

- Successful gardening can be fostered by understanding basic soil physical and chemical properties that explain the WHY of plant nutrition
- Soil pH is one of the most important factors in nutrient cycling and uptake
- There are 16 plant essential nutrients, but we mainly only manage 3: N, P, and K. If soil pH is ok the soil, water and atmosphere supply the rest!
- Soil, microbial life and plants plus animals coexist in continuing cycles that perpetuate life
- Everything in nature is about recycling: life, growth, death, decay, new life

- Fertility requirements for crops we grow for food are much higher than for lawns and gardens

Resources/Reference

WSU PNW Gardeners Handbook: [Pacific Northwest Gardener's Handbook: Growing for the Future | WSU Extension Publications | Washington State University](#)

Garden Fertilizer Calculator:

<https://wpcdn.web.wsu.edu/wp-ecommerce/uploads/sites/2/product-3729-sku-FS324E.pdf>

USDA Web Soil Survey

<http://websoilsurvey.nrcs.usda.gov/app/>

Google Earth: Just Google it!

King (county) Conservation District

<https://kingcd.org/publications/soils/>

Important numbers:

A pint is a pound, the world around! (for water)

Most inorganic fertilizers are 1 to 1.3 # / pint (depends on bulk density)

1 gallon of water = 8.3 lbs = 3784 ml

1 Tablespoon = 15 milliliters

1 cubic foot of water = 62.4 lbs

One acre = 43,560 square feet

One acre inch of water = 27,290 gallons

One inch of water on 100 square feet = 63 gallons