



Understanding Soil Tests

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Soil Testing

- Backyard
- Nutrients
- Contaminants
- Biological

Backyard Soil Tests

- Texture
- Structure
- Color



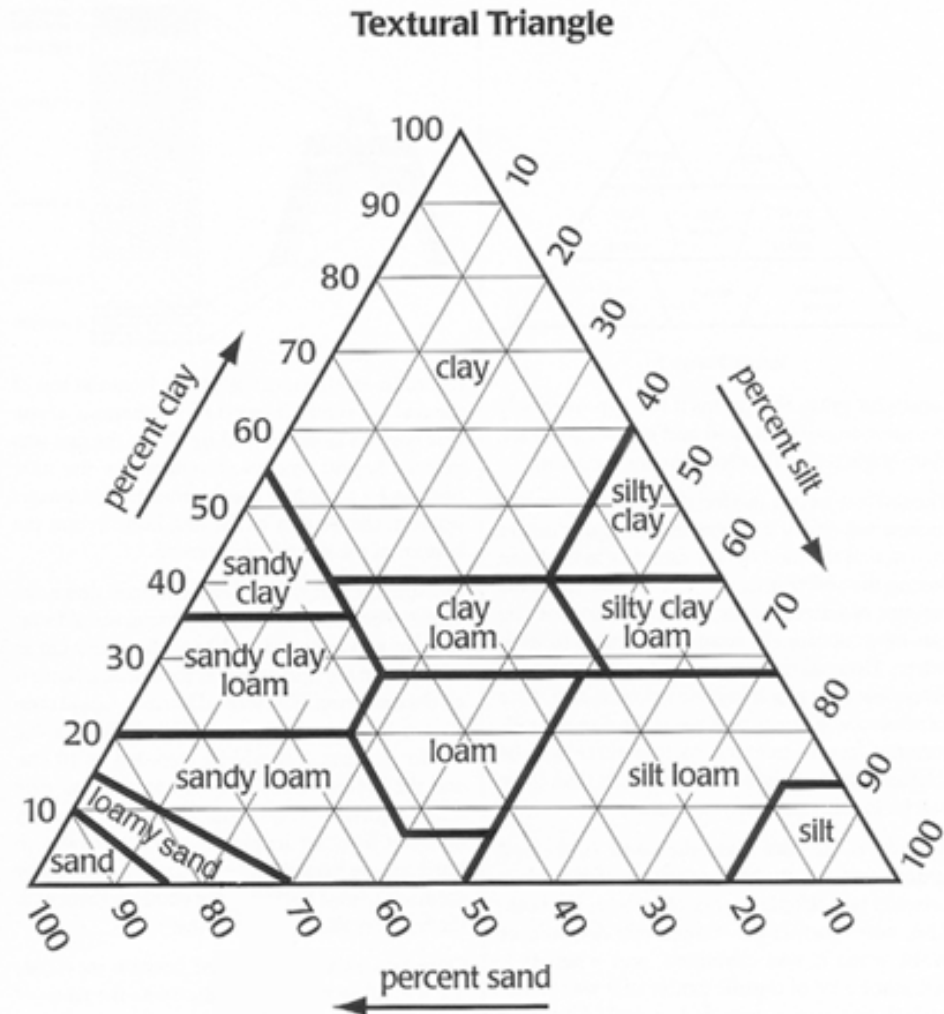
Texture: Proportions of Sand, Silt, and Clay

Sand .05-2 mm

Silt .002-.05 mm

Clay <.002 mm

Coarse Fragments >2 mm



Soil Structure

Aggregation of Sand, Silt, and Clay Particles



Structure affects:

- Macroporosity
- Infiltration
- Aeration

Formation of Soil Structure

- Growth of roots and movement of organisms create pores and aggregates
- Soil organisms break down organic residues, producing glues that stabilize aggregates
- Fungi provide structural support to aggregates
- Physical, chemical processes also involved



Soil Color



Gray, mottled colors indicate seasonal high water table.





Major Soil Types of the Puget Sound Area

CORDILLERAN ICE SHEET



Glacial Till Soil



Ablation till

- Not compacted
- Permeable to water and roots

Basal till

- Compact and cemented
- Barrier to water and roots

Glacial Outwash Soil



0 to 4"

gravelly sandy loam

4 to 10" very

gravelly loamy sand

10"+

sand and gravel

***Very low water and
nutrient holding
capacity***

Glacial Lacustrine (Lakebed) Soil



Fine texture, high water holding capacity, hard to work when wet or very dry.

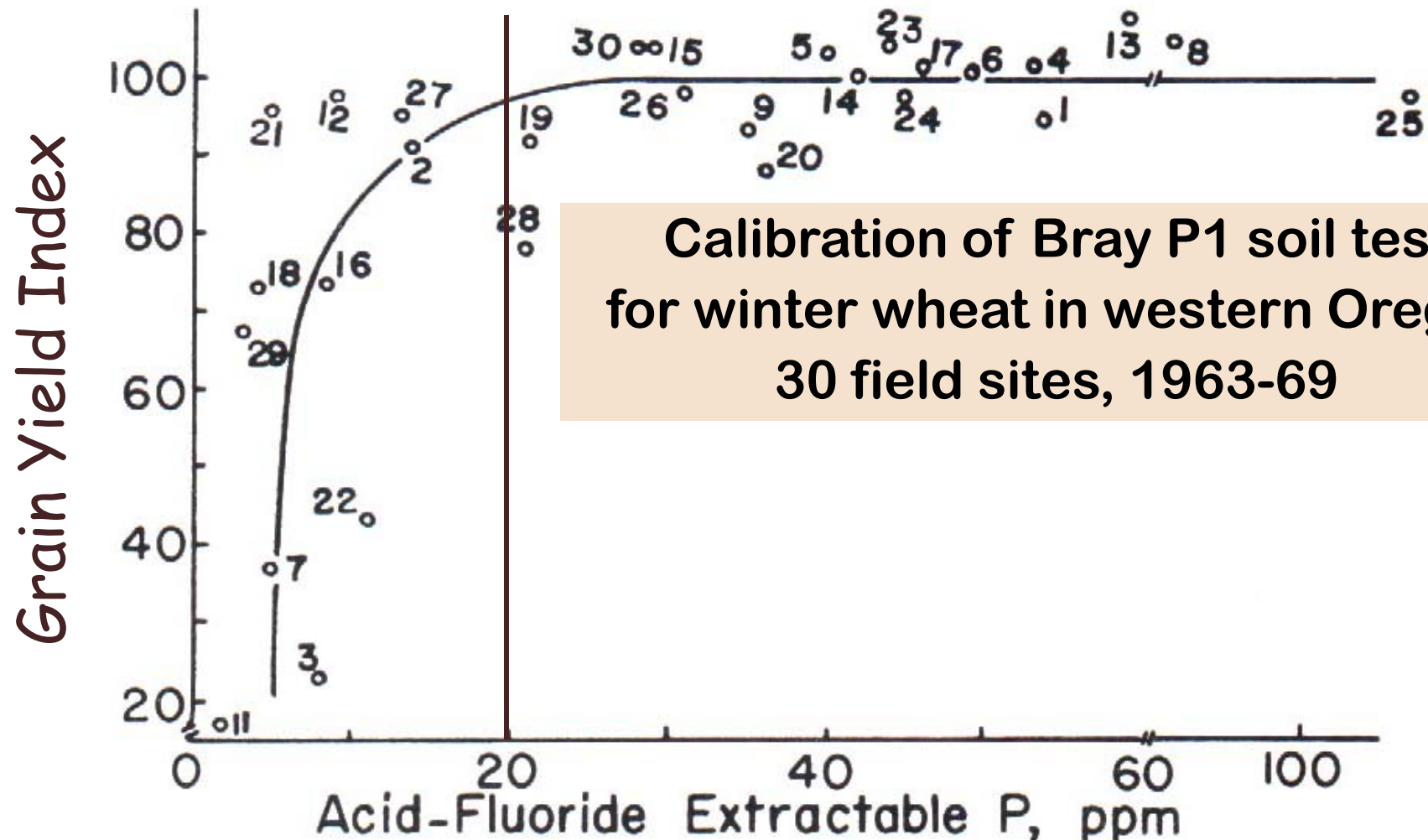
Soil Nutrient Testing



What Is A Soil Nutrient Test?

- A chemical evaluation of the nutrient supplying capability of the soil.
- Soil test results are calibrated with crop response research to develop fertilizer recommendations.

Soil Test vs. Crop Response



Interpreting Soil Tests

- Nutrient status
 - Low: fertilizer response likely
 - Medium: sometimes a fertilizer response
 - High: fertilizer response unlikely
- Fertilizer recommendation

Reference: EC 1478. Soil Test Interpretation Guide

Soil Nutrient Test

- Basic garden test: P, K, Ca, Mg, B, pH, lime requirement
- Options: Micronutrients (Zn, Mn, Cu, Fe), N, S, CEC, base saturation, organic matter, salts

When to Sample?

- Standard tests can be taken at any time before fertilization.
- It is best to be consistent from year to year.

How Often to Sample

Sample each unit every:

- 3 to 5 years for yards and gardens.
- 1 to 3 years for commercial production.



Taking a Sample

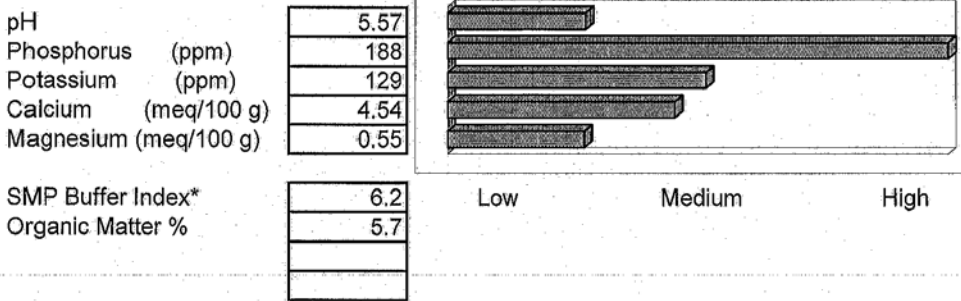
- Sample defined area
- Take 10 or more subsamples (0-8" deep)
- Dry and mix well
- Subsample mixture and fill sample bag



Choosing a Lab

- Does the lab routinely do agricultural and garden tests?
- Do they use OSU or WSU test methods?
- Do they give fertilizer recommendations?
- What information do they need?
- How to send sample?
- Cost?
- Turn-around time?
- What does report look like?

Project: Lawn



* SMP Buffer Index is used to calculate lime requirement

Soil Fertility Levels

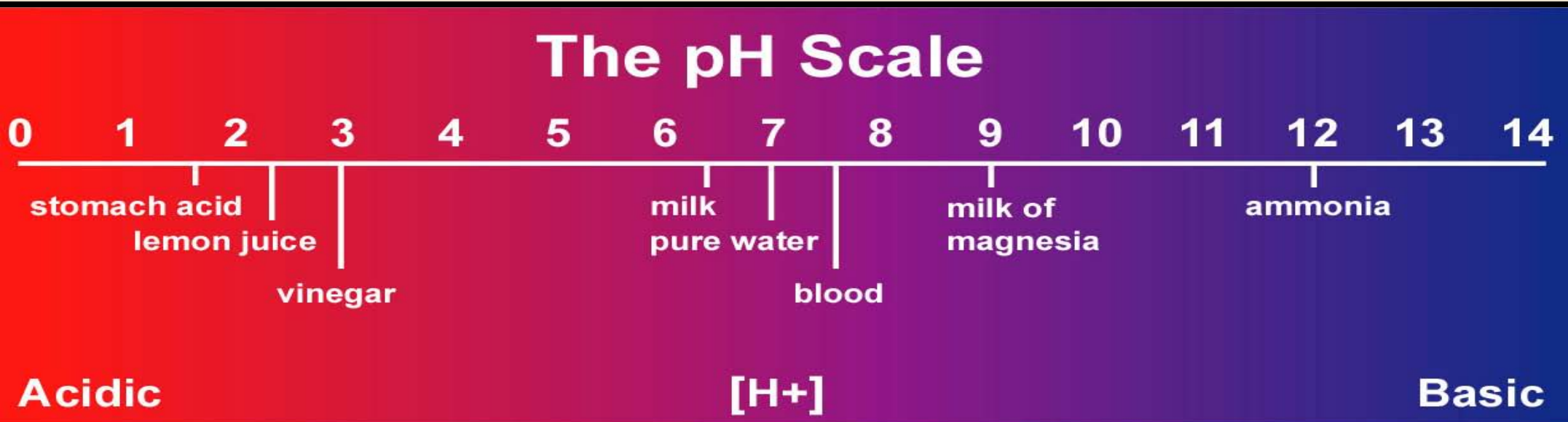
The soil sample submitted from your site was found to have the following nutrient levels:

pH	Moderately Acid	5.2-6.0
Phosphorus (P)	Excessive	>100 ppm
Potassium (K)	Low	<150 ppm
Calcium (Ca)	Low	<5 meq/100g
Magnesium (Mg)	Low	< 0.5 meq/100g
Organic Matter	Adequate	> 4 %

Let's Interpret a Soil Test

What About Soil pH?

- Indicates relative acidity or alkalinity
- pH 7 = neutral; less than 7 = acid; more than 7 = alkaline or basic
- Logarithmic scale

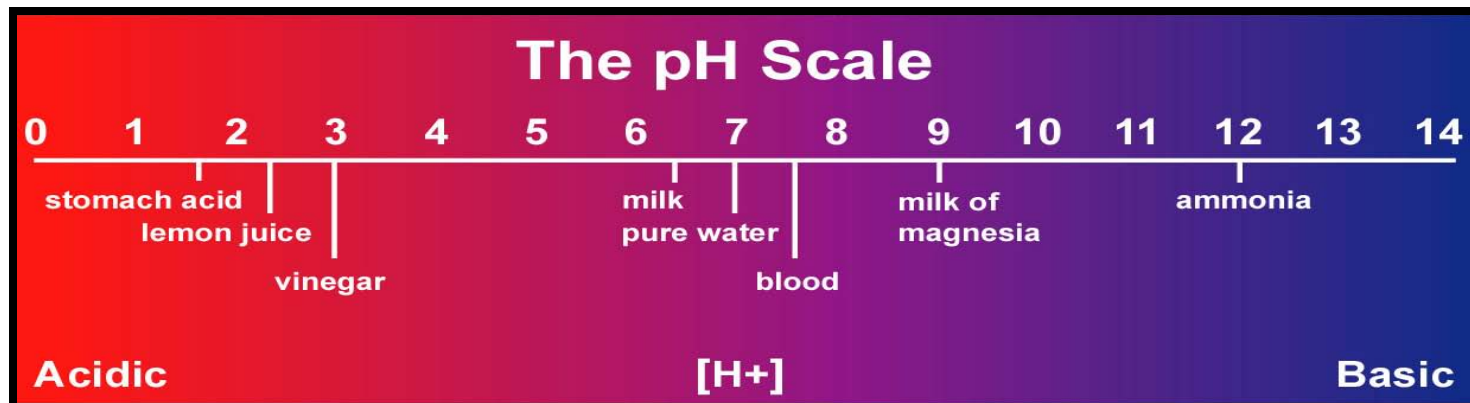


Why is pH Important?

- Nutrient availability
- Availability of toxic metals
- Microbiological activity

Desirable pH Ranges

Vegetables	6 to 7.5
Pastures	5.5 to 8
Acid loving plants	4.5 to 5.5



Contaminant Sampling

- Usually not needed
- You may want to test for lead and/or arsenic if you have good reason to suspect contamination:
 - Plume of Asarco smelter (lead, arsenic)
 - Growing food around foundation of old house (lead)

Biological Sampling

- Population or activity of soil organisms
- Not enough research has been done to recommend these tests



Soil Sampling and Interpretation Information

<http://www.soils1.org>

Click on “***SOILS and SOIL TESTING***” for information on soil sampling, soil testing labs, and soil test interpretation.