

Soil Testing + Results

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Photo Credit: John Garlisch

What is soil?

- Living dynamic
- Minerals
- Organic matter
- Living organisms
- Biological
- Physical
- Chemical
- Air and water



Photo Credit: NMSU College of ACES

Soil Quality Texture

- Sand – large size, least nutrient exchange
- Silt – mid size
- Clay – small plates, largest nutrient capacity
- Jar test; ribbon test
- Changes little



Photo Credit: John Garlisch

Soil Health

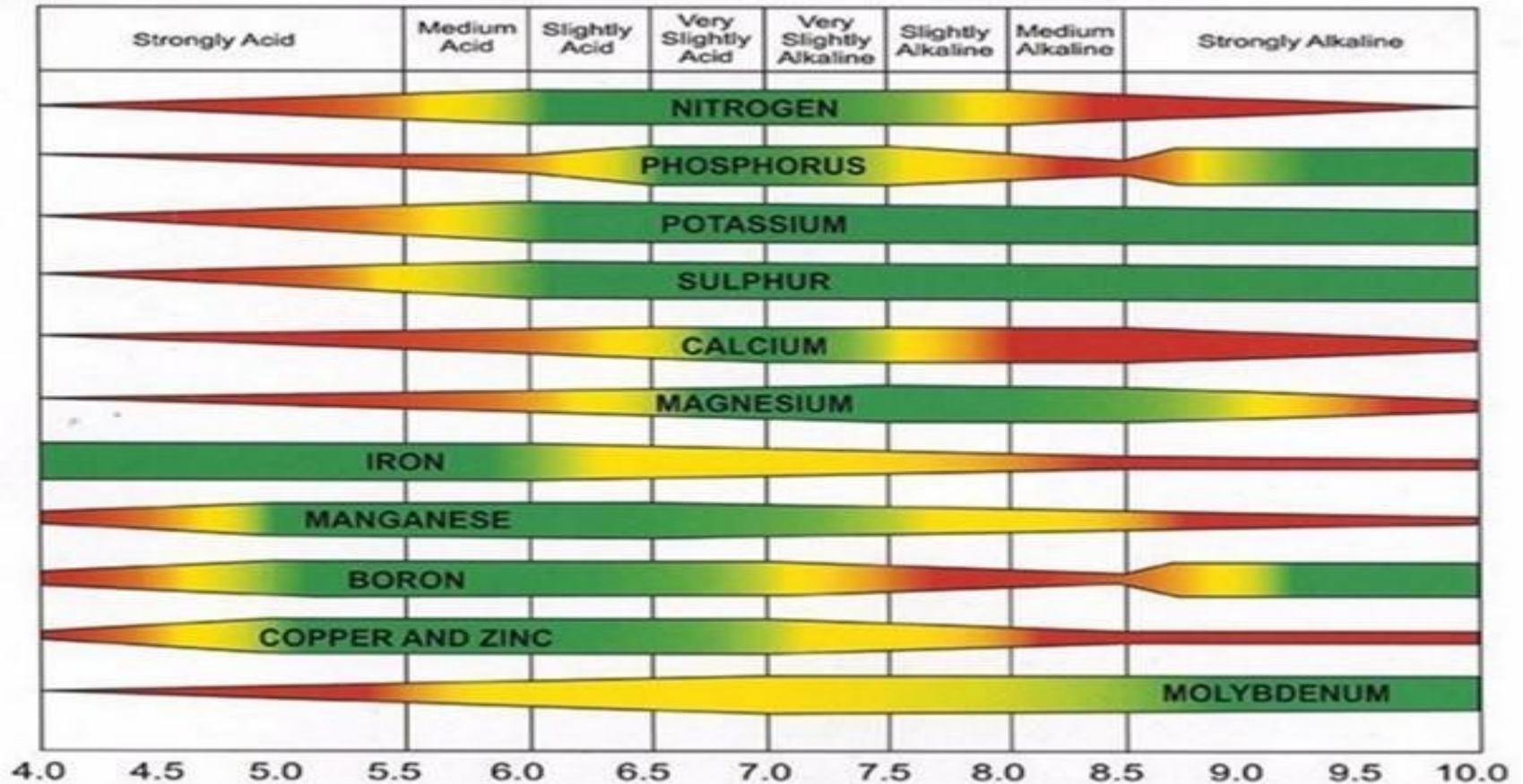
- Organic matter
- Microbial activity
- Tilth
- Water holding capacity
- Compaction (air and water flow)



Photo Credit: John Garlisch

Soil Nutrients + pH

How soil pH affects availability of plant nutrients.



SOURCE: <https://www.emporiumhydroponics.com/what-is-ph-1-to-14>

EC, Salts, Organic matter

- Organic Matter (OM) – small percent – huge functions
- Soluble Salts – EC (electric conductivity) – how saline is soil
- $EC > 4$ salt burn, water stress, imbalance
- NM is low in OM, high in dissolved salts (aridity)



Photo Credit: John Garlisch

Soil structure + stability

- Fungal hyphae – glue that hold aggregate together
- Roots, organic matter
- How stable, how compact, how erodible



Photo Credit: John Garlisch

Why and When to sample

- Nutrients available
- Soil health
- Metals
- New field
- Failing crops
- Anytime of year, before work or planting



Photo Credit: NMSU College of ACES

Tools used to sample

- Trowel
- Shovel
- Corer
- Soil probe
- Bucket
- Ziploc bag
- Marker



Photo Credit: NMSU College of ACES

How to Sample

- Randomize sample
- 6-12 samples into 1 bucket
- Mix together
- 1 sample for the whole
- 1"-6" for vegetables, lawn, pasture
- 8"-15" for orchards

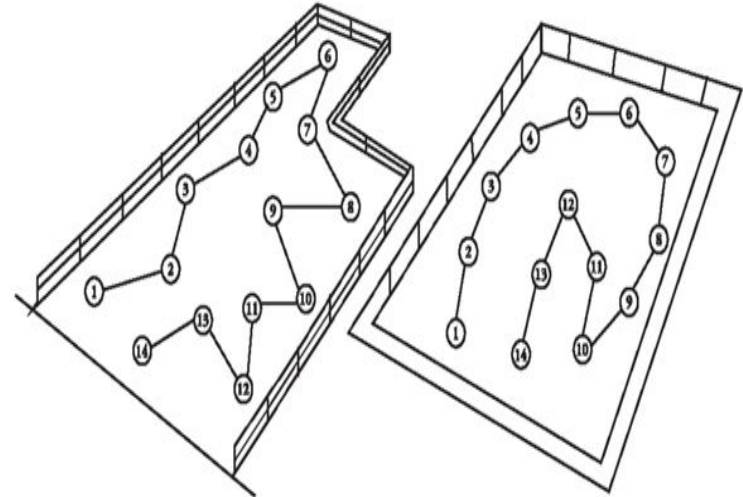


Figure 1. To take a composite sample, take samples from several randomly selected locations in the area of interest. For gardens, sample five or six locations; for fields, sample up to 15 locations.

Source: NMSU Publication A-114

What tests to ask

- Olsen-P with our High pH
- Basic – pH, macro nutrient, texture
- Micronutrients
- Biology – soil health
- Metals
- Each lab test and report style is different



Photo Credit: NMSU College of ACES

Soil Testing Labs

- ***NMSU does NOT recommend one lab over another. Ask if the lab is able to test high pH and high desert soils. Each lab offers different tests and results.***
- Colorado State University – SPUR
 - Soil Water Plant Testing Lab –
<https://agsci.colostate.edu/soiltestinglab/soiltestinglab@colostate.edu>
Room T-316 4780 National Western Dr.
Denver CO 80216
- Ward Labs
<https://www.wardlab.com/customerservice@wardlab.com>
4007 Cherry Ave
Kearney, NE 68847

Soil tests results

Soil pH 1:1	Modified WDRF BpH	Soluble Salts 1:1 mmho/cm	Excess Lime Rating	Organic Matter LOI-%
8.0		0.98	HIGH	6.1
7.9		0.34	HIGH	3.7
NG				
7.9		1.01	HIGH	4.8

KCl Nitrate ppm N	Depth Nitrate Lbs N/A	Method Phosphorus ppm P
	0 - 3 in	O-P
24.8	22	121.3
	0 - 3 in	O-P
2.6	2	22.0
	0 - 3 in	O-P
59.9	54	89.6

-Ammonium Acetate-				M-3	-----DTPA-----			
K ppm	Ca ppm	Mg ppm	Na ppm	Sulfate ppm S	Zn ppm	Fe ppm	Mn ppm	Cu ppm
1420	3991	431	186	131.4	3.25	5.6	3.0	5.27
510	5061	439	78	33.2	1.24	2.5	1.0	0.63
1112	3844	382	159	100.9	2.30	4.1	2.5	2.52

% Base -----Saturation-----				
H	K	Ca	Mg	Na
0	13	71	13	3
0	4	83	12	1
0	11	74	12	3

Soil Analysis		Units	Results	Test Rating*						
1:1 Soil pH			7.6	Strongly Acid <5.4	Moderately Acid 5.4-5.7	Slightly Acid 5.8-6.4	Neutral 6.5-7.2	Slightly Alkaline 7.3-7.6	Moderately Alkaline 7.7-7.9	Strongly Alkaline >7.9
1:1 Soluble Salts (EC)		mmho/cm	0.8	Very Low <0.2	Low 0.2-0.7	Moderate 0.8-1.2	Moderately High 1.3-2.5	High 2.6-5.0	Very High >5.0	
Excess Lime			HIGH							
Organic Matter LOI		%	8.1	Very Low <0.5	Low 0.5-1.5	Medium 1.6-3.0	High 3.1-5.0	Very High >5.0		
KCl Nitrate-N		ppm	54.4	Very Low <5	Low 5-10	Medium 11-25	High 26-50	Very High >50	lb/1000 sq.ft. 2	Recommendation lb/1000 sq.ft. 1
Olsen Bicarbonate Phosphorus (P)		ppm	290.3	Very Low 0-3	Low 4-6	Medium 7-10	Optimum 11-15	High 16-20	Very High >20	Recommendation lb/1000 sq.ft. 0
Ammonium Acetate										
Potassium (K)		ppm	2051	Very Low <60	Low 60-120	Medium 121-160	Optimum 161-220	High 221-280	Very High >280	Recommendation lb/1000 sq.ft. 0
Calcium (Ca)		ppm	3820	Very Low <100	Low 100-200	Medium 201-300	Optimum 301-2500	High >2500	Very High >5000	Recommendation lb/1000 sq.ft. 0
Magnesium (Mg)		ppm	484	Very Low <25	Low 25-50	Medium 51-75	Optimum 75-100	High 100-200	Very High >200	Recommendation lb/1000 sq.ft. 0
Sodium (Na)		ppm	390							
Cation Exchange Capacity (CEC) or Sum of Cations		meq/100g	30	Sand 3-10	Loam 10-15	Silt Loams 15-25	Clay & Clay Loam 25-50	Organic Soils 50-100		
Base Saturation		%	100	H 0.0	K 17.5	Ca 63.5	Mg 13.4	Na 5.6		

What do I add?

- It depends...
on your goal
- Nothing
- Organic matter
- Cover crops
- Compost
- Manure
- Synthetic Fertilizer
- Know your water source



Photo Credit: NMSU College of ACES

Resources

- Test Your Soil (Guide A-114) --
<https://pubs.nmsu.edu/a/A114/>
- Appropriate Analyses for NM Soils (Guide A-146) --
<https://pubs.nmsu.edu/a/A146/>
- Interpreting Soil Test – Unlock the Secrets of your soil (Circ 676) --
<https://pubs.nmsu.edu/circulars/CR676/index.html>
- Diagnosing Saline & Sodic Soils --
<https://extension.colostate.edu/resource/diagnosing-saline-and-sodic-soil-problems/>
- Saline Soils --
<https://extension.colostate.edu/resource/saline-soils/>

Save the Date

OCTOBER 14-15, 2026
ALBUQUERQUE, NEW MEXICO

2026 New Mexico Soil Health Conference

Hosted by the New Mexico Department of Agriculture's Healthy Soil Program
and New Mexico State University's Cooperative Extension Service

NEW MEXICO DEPARTMENT OF AGRICULTURE



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Thank You

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