Soil Basics + Soil Testing

Evaluating and Managing Your Soil for Healthier Plants

Jay Mirro

Senior Resource Planner

3/11/25

King Conservation District

Local Food
Healthy Forests
Clean Water
Better Ground

Outline

- Who is the King Conservation District?
- A Brief History of Soil Conservation
- Soil Basics and Soil Health
- KCD Soil Testing Program & How to Collect a Soil Sample
- Understanding Soil Test Results
- Improving Soil Fertility

Mission

Promote the sustainable use of natural resources through responsible stewardship for both city dwellers and rural residents alike.

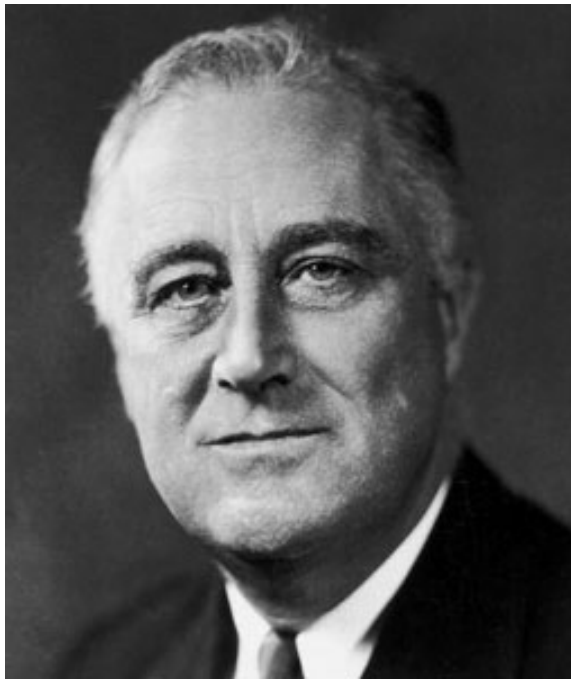
KCD Programs

- Soil Nutrient Testing
- Native Plant Sale
- Education and Volunteer Programs
- Shoreline & Riparian Habitat Enhancement and Conservation Reserve Enhancement
- Forest Health and Wildfire Resiliency Programs
- Community Agriculture
- Farm Conservation Management, Agricultural Drainage and Equipment Rental Programs
- Grant Programs: Member Jurisdictions, Regional Food Systems and Landowner Incentives

Soil Conservation History

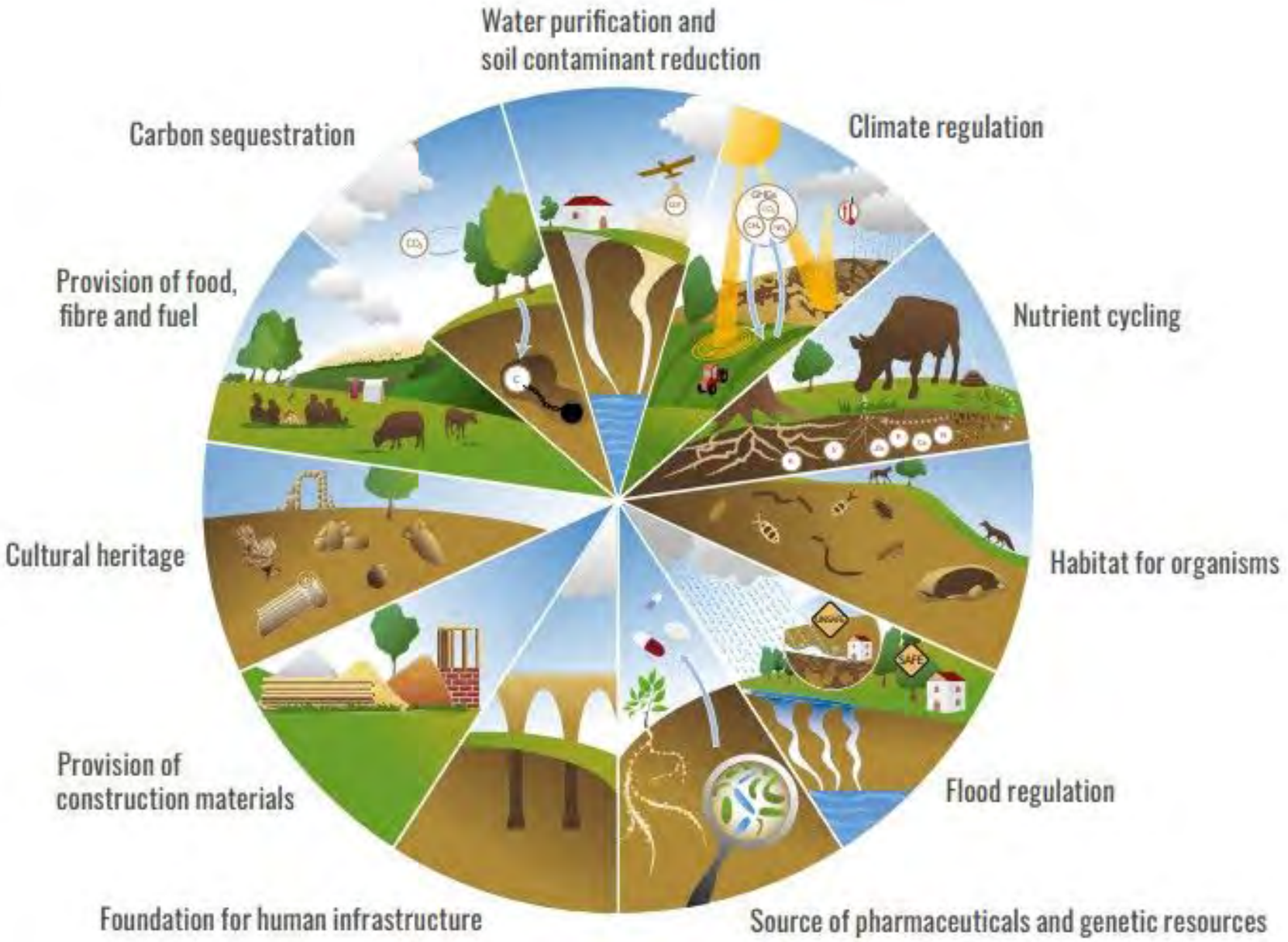
"The nation that destroys its soil destroys itself."

Franklin D. Roosevelt

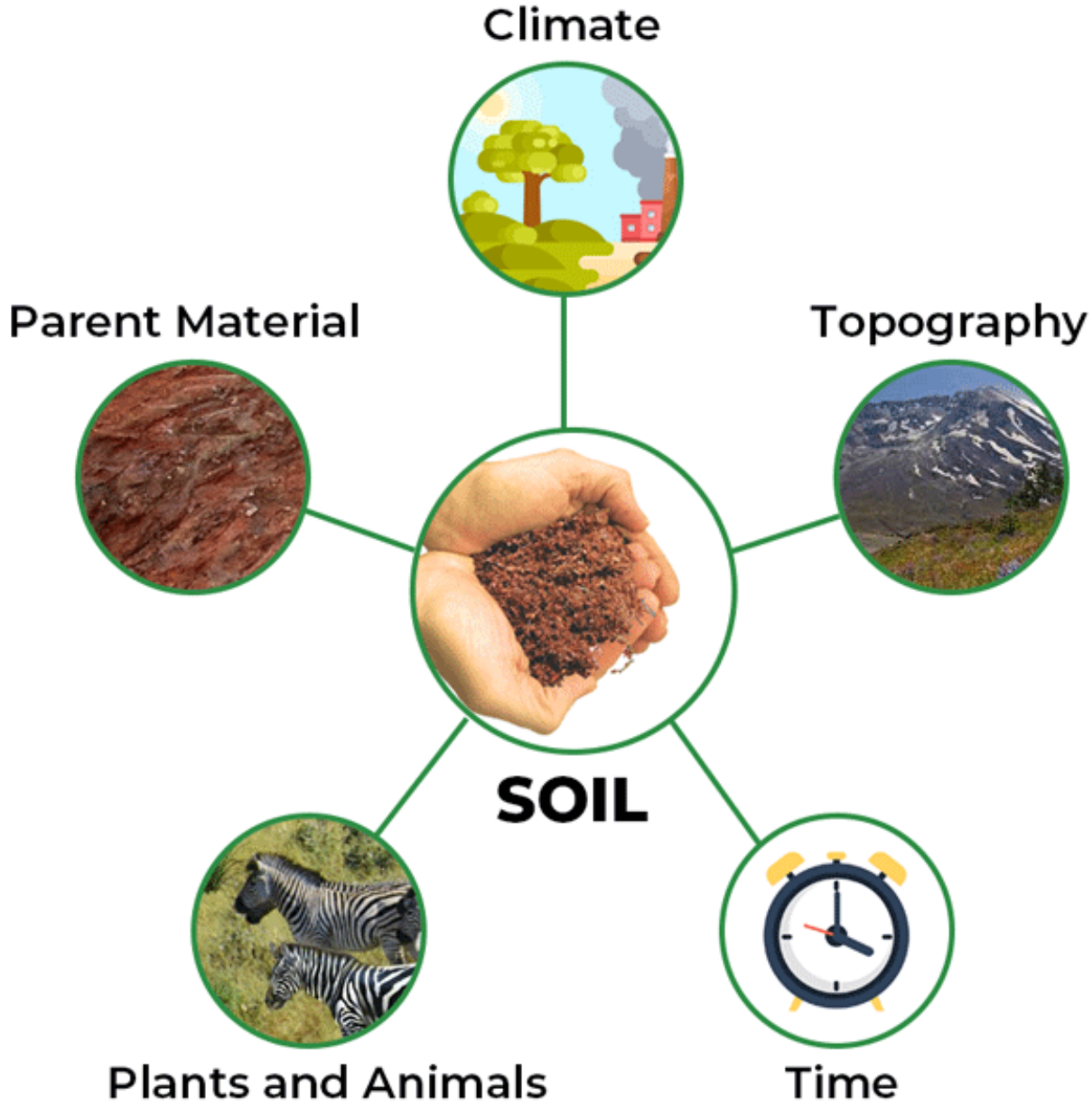



Soils Basics

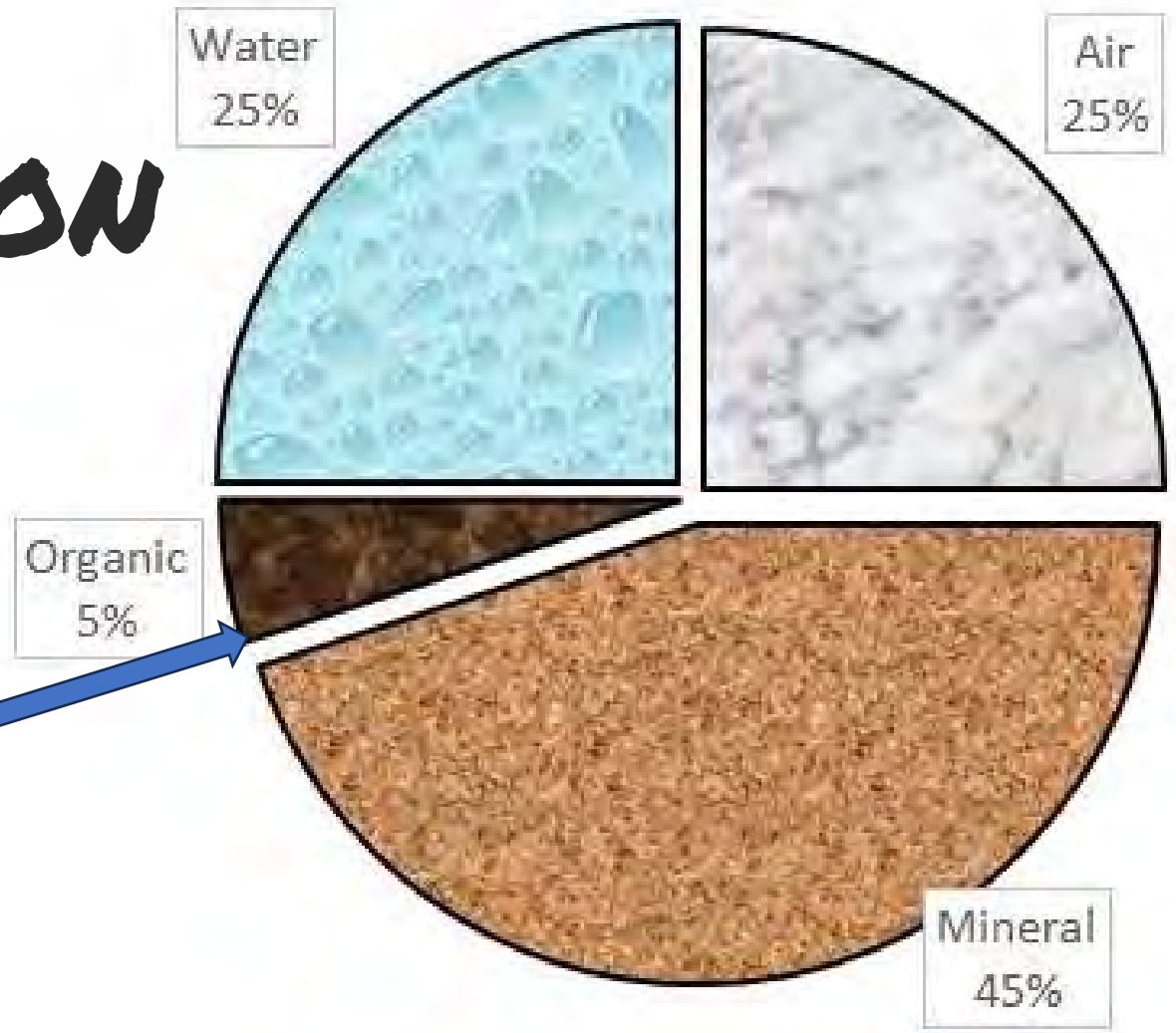
What Does Soil Do?



How is Soil Formed?



Soil Composition

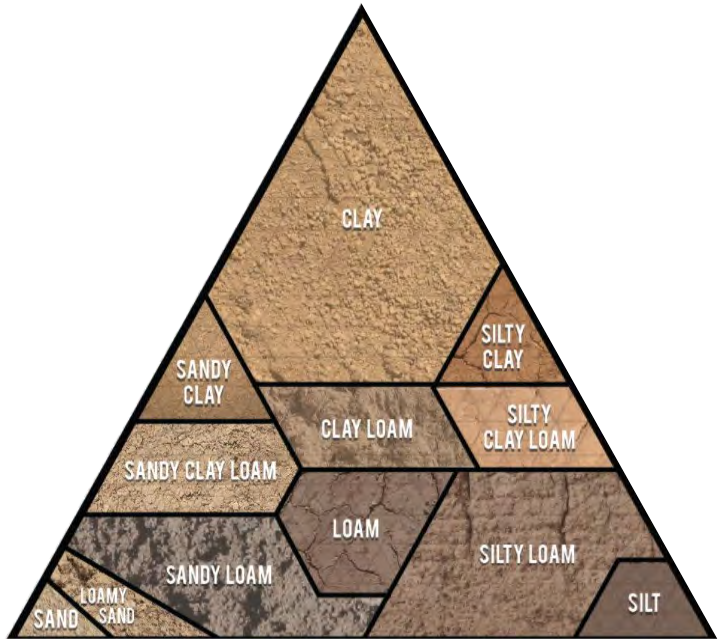


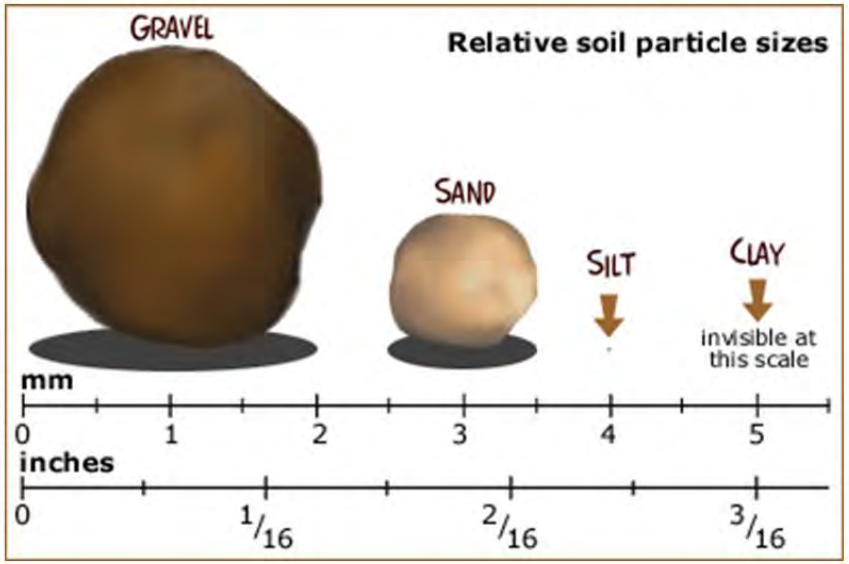
0.05% Macro & microbial life

Soil Texture

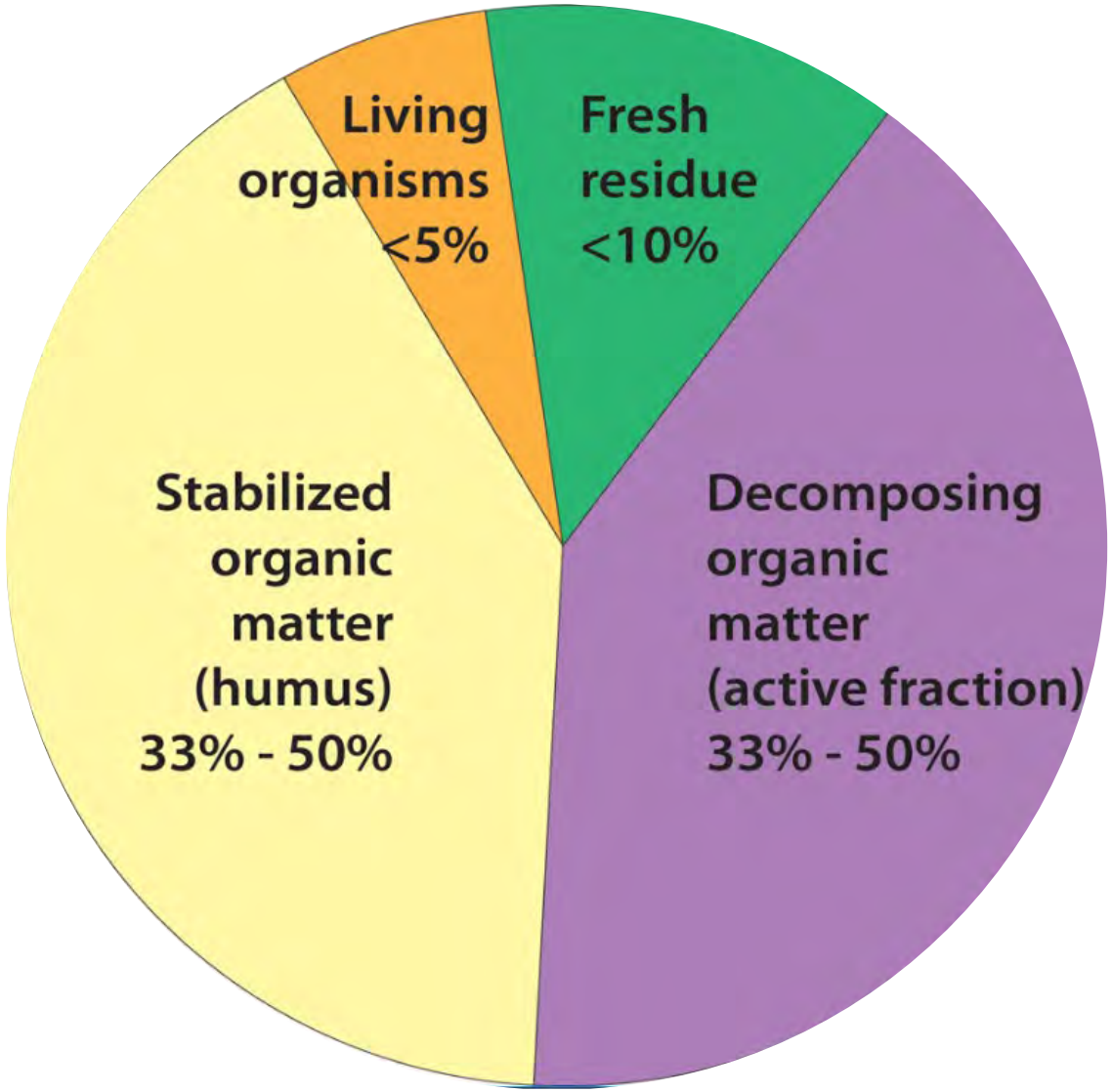
3 Basic Soil Sizes:

- **Sand**
  - **Largest particle size**
  - **Least holding capacity of water or nutrients per volume of soil**
  - **Large pore space**
- **Silt**
  - **Medium size particles**
- **Clay**
  - **Particles are small and closely spaced**
  - **Less pore space for air**





Soil Organic Matter



Organic Matter + Soil Fauna

Nutrients available for plant uptake (manure, plant residue)

https://youtu.be/Mxp1nnrUG0Q

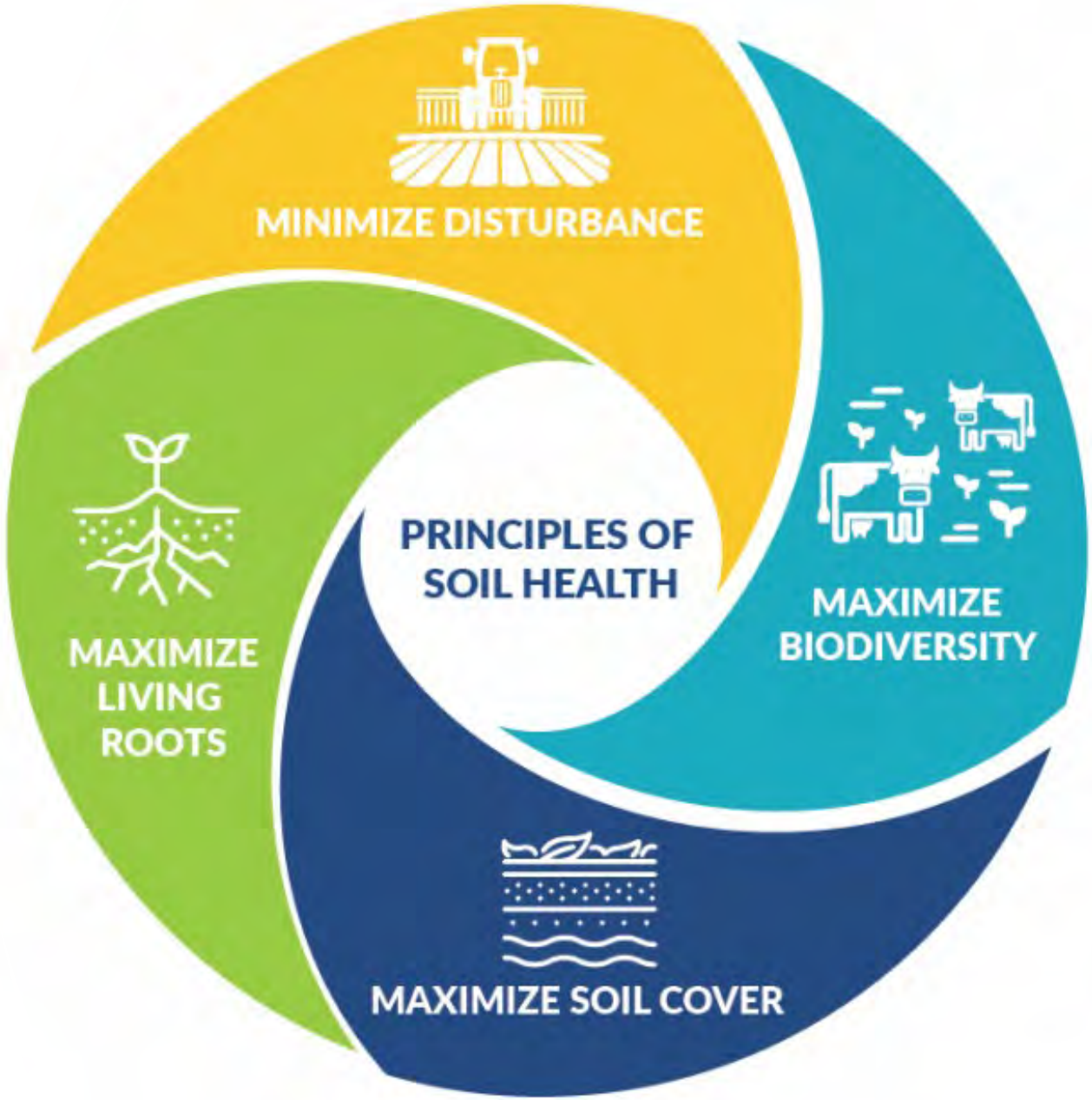
Soil Health

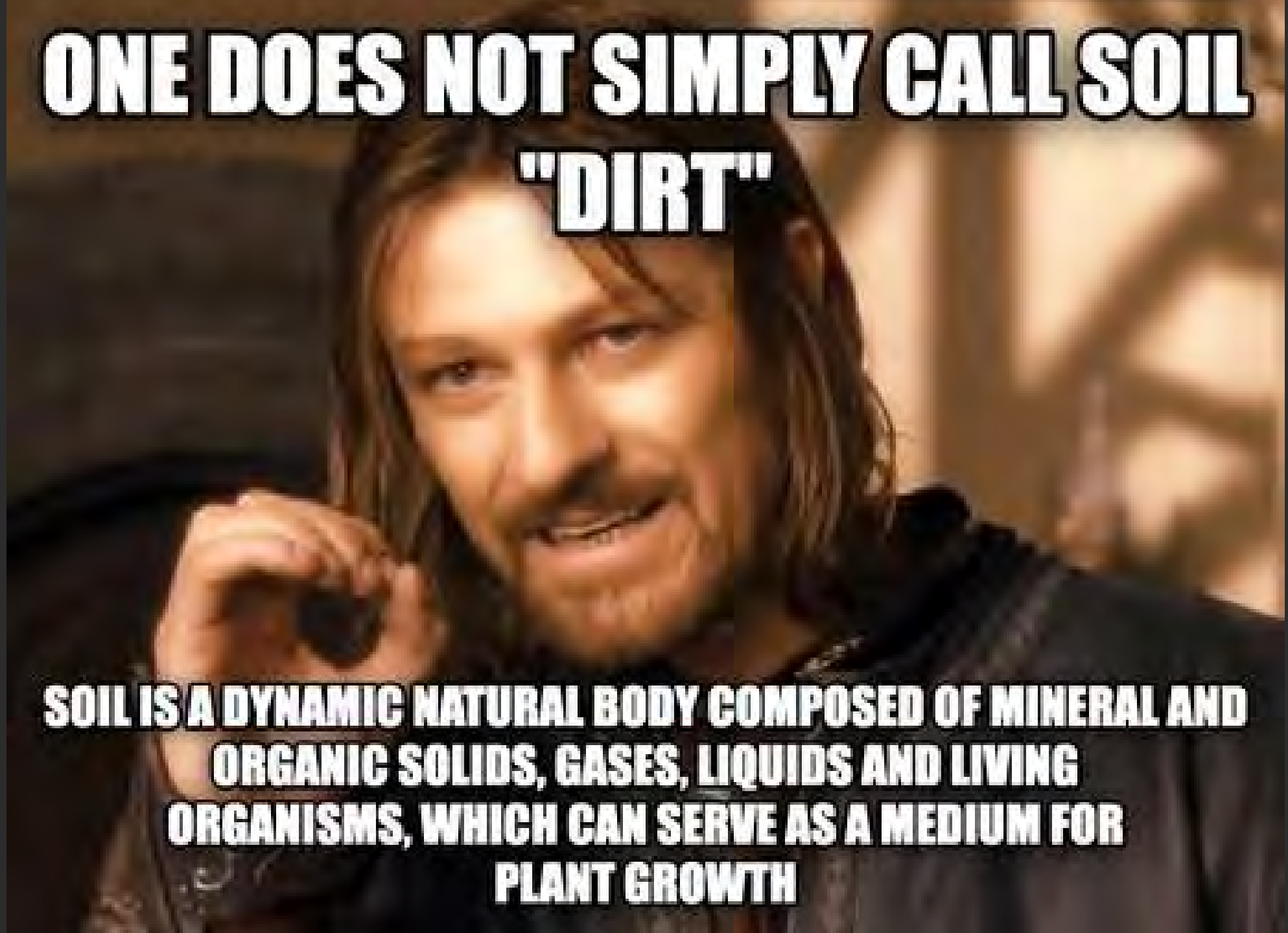
Soil health is the capacity of soil to function as a living ecosystem that sustains plants, animals, and humans (USDA-NRCS, 2012)

- **Retain and cycle nutrients**
- **Support plant growth**
- **Sequester carbon**
- **Allow infiltration and filtration of water**
- **Suppress pest, disease and weeds**
- **Detoxify chemicals**
- **Support food, fiber and fuel**
- **Provide habitat**

Soil Health Practices

- Minimize disturbance
- Maximize biodiversity
- Maintain living roots
- Maximize soil cover

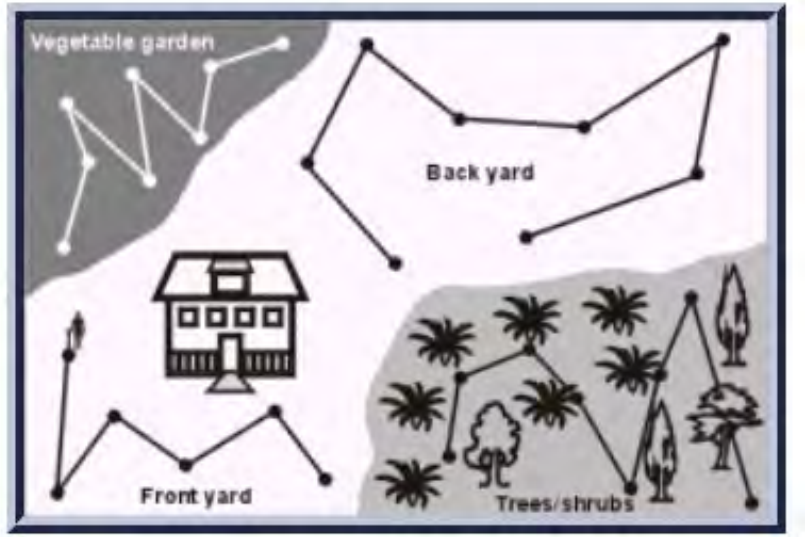


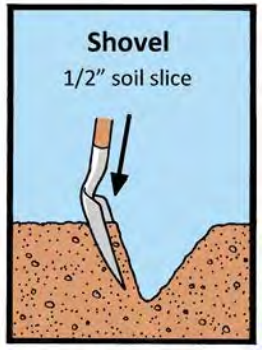

ONE DOES NOT SIMPLY CALL SOIL "DIRT"
SOIL IS A DYNAMIC NATURAL BODY COMPOSED OF MINERAL AND ORGANIC SOLIDS, GASES, LIQUIDS AND LIVING ORGANISMS, WHICH CAN SERVE AS A MEDIUM FOR PLANT GROWTH

King Conservation District's

Soil Nutrient Testing Program

How to collect a soil sample





Take thin slices of soil approximately ½" thick. It is easiest to take a slice if you first remove a v-shaped hole as shown.

	Type of Crop	Sampling Depth
For Samples taken in September and October	All samples	12"
For samples taken any other time of year	Established lawn and Pasture	4"
	New lawn and pasture	6"
	Gardens	6"
	Trees and shrubs	8"
	Commercial crops	8"

Submitting Soil Samples to KCD

King Conservation District

Soil Sample Information Sheet

LAB USE ONLY

LANDOWNER CONTACT INFORMATION

Name

Home Address

Site Address Where Sampled (if different than above)

City | State WA | Zip

Phone | E-mail Address

Please print clearly and complete entire form! Results will be e-mailed in about 3 weeks. ☐ Please check this box if you do not want to be added to KCD's e-mail list.

KCD USE ONLY Submitted to A&L on ___/___/___

King Conservation District
1107 SW Grady Way, Suite 130
Renton WA 98057
425-282-1900 *soiltests@kingcd.org*

Office Hours: Monday-Friday 8:30am to 5:00pm

Each resident in the King Conservation District service area is eligible for up to five free soil tests, lifetime per parcel number. Additional tests are $20 each. Deliver or mail soil samples to our office (address above). *If you need to submit more than 5 soil samples, please use an additional form.* Please see our website or contact our office to determine your eligibilty. *www.kingcd.org*

Please label each sample with your last name and up to five characters. Each sample must be **2 CUPS**.
More than 3 cups may cause problems with handling, less than 2 cups may cause problems getting an accurate analysis.

☒ Graphics Report ☒ Email Report *soiltests@kingcd.org* ☒ Recommendations required ☐ LBS PER ACRE ☐ LBS PER 1,000 SQ FEET

SAMPLE ID (up to 5 characters)	TEST PACKAGE (office use only)	Vegetable, perennials, pasture, raised bed, etc.	DETAILED DESCRIPTION (more detailed information information about what you are growing)	Please check one: Established	Please check one: Pre-Plant	Sample Depth
_____				☐	☐	0-6"
_____				☐	☐	0-6"
_____				☐	☐	0-6"
_____				☐	☐	0-6"
_____				☐	☐	0-6"

Please let us know you found out about KCD's Soil Testing Program: _____

Understanding Soil Test Results

A Typical Test Results Page

A & L WESTERN AGRICULTURAL LABORATORIES

10220 SW NIMBUS AVE Bldg K-9 I PORTLAND OREGON 97223 I (503) 968-9225 I FAX (503) 598-7702

REPORT NUMBER: 15-014-077 CLIENT NO: 4793

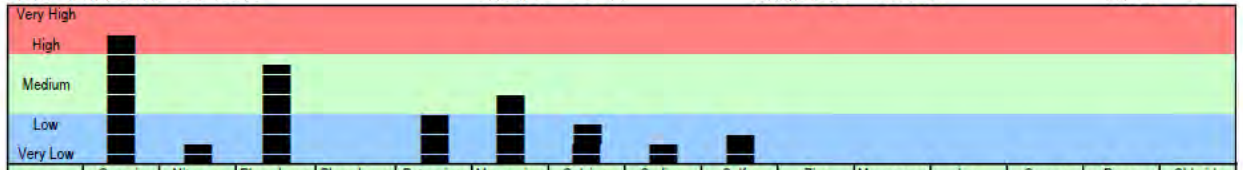
SEND TO: KING CONSERVATION DISTRICT
1107 SW GRADY WAY STE 130
RENTON, WA 98057

GROWER: MELISSA LANG

SUBMITTED BY: JAY MIRRO

Graphical Soil Analysis Report

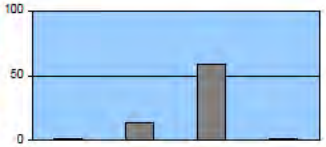
DATE OF REPORT: 01/16/15 LAB NO: 59041 SAMPLE ID: VEG#2 PAGE: 3



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	6.0	4	26	36	36	81	547	13	6						

LOW AVERAGE HIGH

Percent Cation Saturation (computed)



Potassium K %	Magnesium Mg %	Calcium Ca %	Sodium Na %
2.0	14.3	59.0	1.2

ACIDIC BASIC

ECe dS/m — INCREASING SALINITY →

4.6 CEC meq/100g

Ex. Lime

5.6 pH ← INCREASING NEED FOR LIME

Buffer pH: 6.0

NaHCO3-P unreliable at this soil pH

Soil Fertility Guidelines

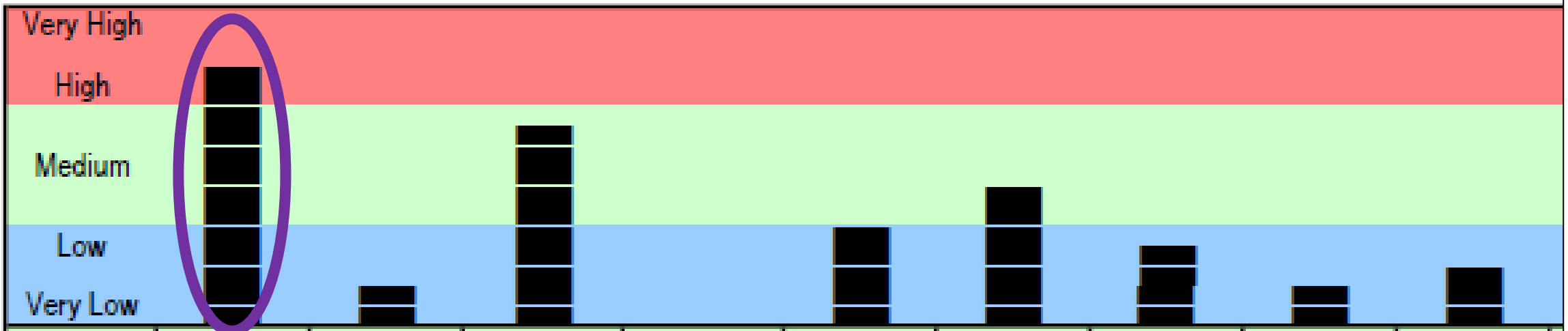
CROP: VEGETABLES RATE: lb/1000 sq ft NOTES:

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	
210				3.1	2.0	6.0		0.6						

COMMENTS

Darcy L. Peebles, CCA
A & L WESTERN LABORATORIES, INC

Organic Matter



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Organic Matter

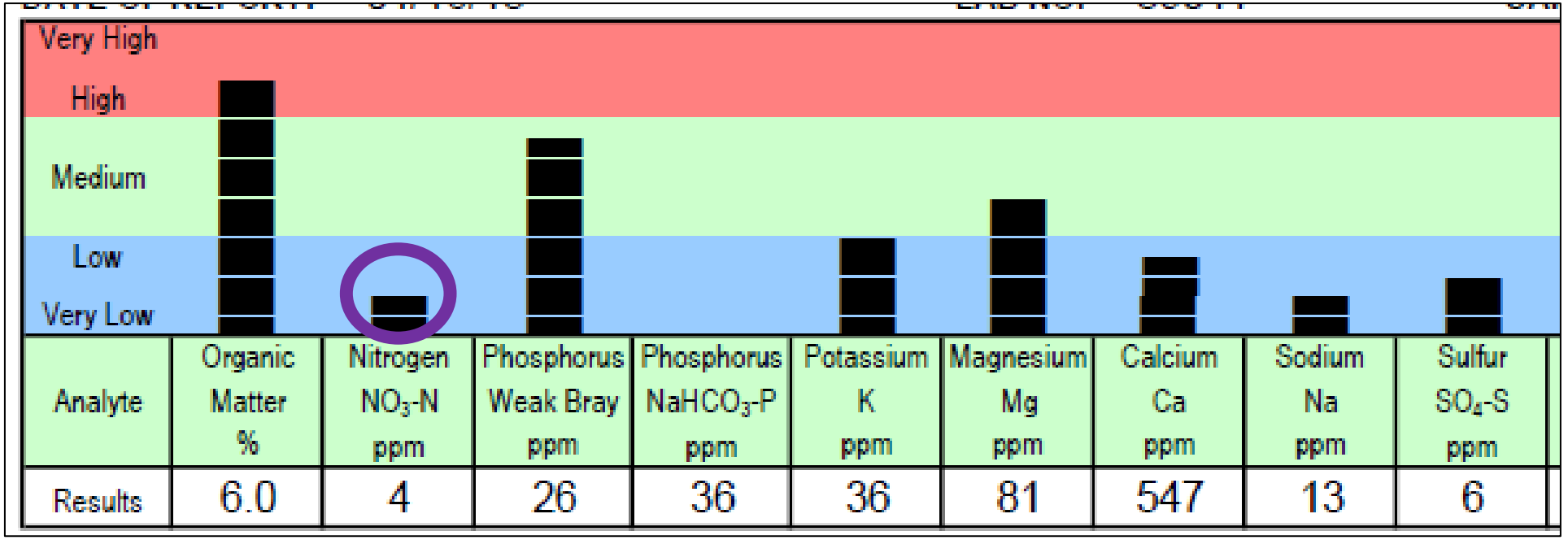
Organic Matter Reading	C.E.C. Reading	Action to Take
Less than 2	Any	Add organic matter
Below 5 but above 2	Under 20	Add high quality organic matter
Below 5 but above 2	Over 20	Maintain organic matter
Above 5	Under 20	Promote biological activity
Above 5	Over 20	Don't add

Photo credit AGRIVI https://www.agrivi.com/blog/plant-residue-management/

If you have high organic matter levels:

- No additional organic matter is needed
- Encourage decomposition of existing organic material
- Ensure microbial populations are present in soil (to break up OM)
    - Add small amounts of compost (15-25 lbs per 100 sq. ft.)
    - Apply soil inoculant (beneficial bacteria)
    - Monitor nitrogen levels

Nitrogen



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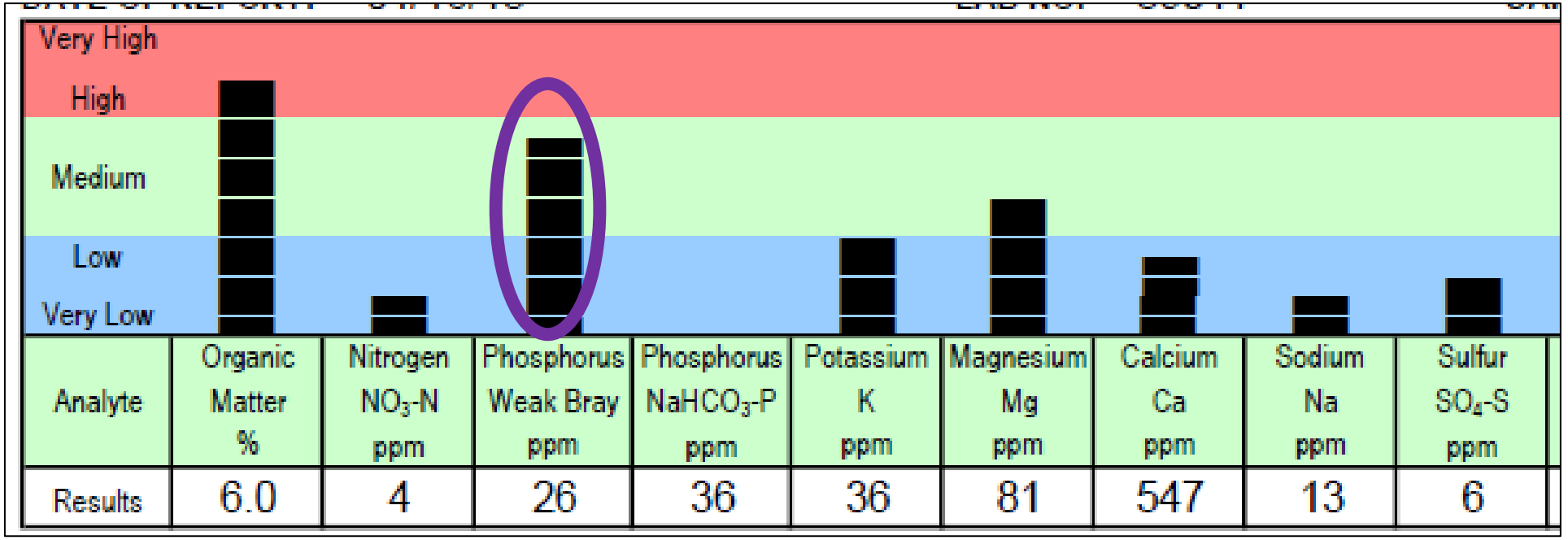
Nitrogen Level
Under 10 Very Low
10-20 Low
20-30 Medium
30-40 High
Above 40 Very High

Phosphorus



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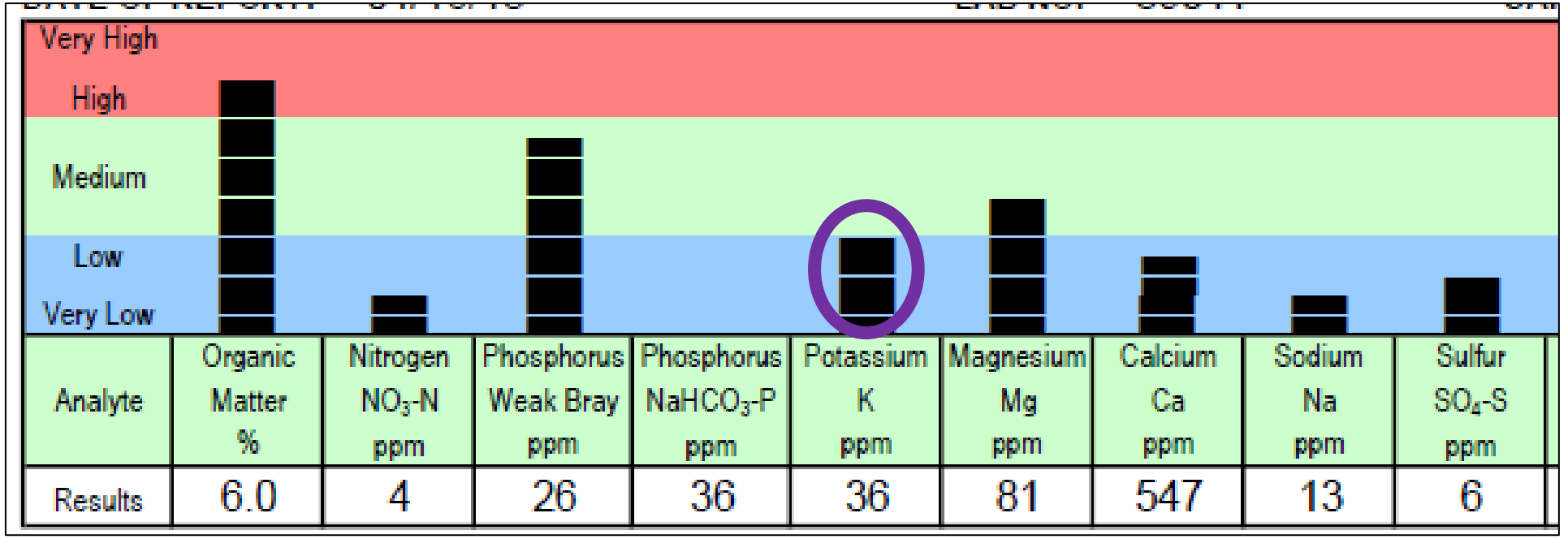
210				3.1	2.0	6.0		0.6						

Phosphorus Level
Under 10 Very, Very Low
10-20 Medium
20-30 High
Over 30 Very High

Potassium



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210				3.1	2.0	6.0		0.6						

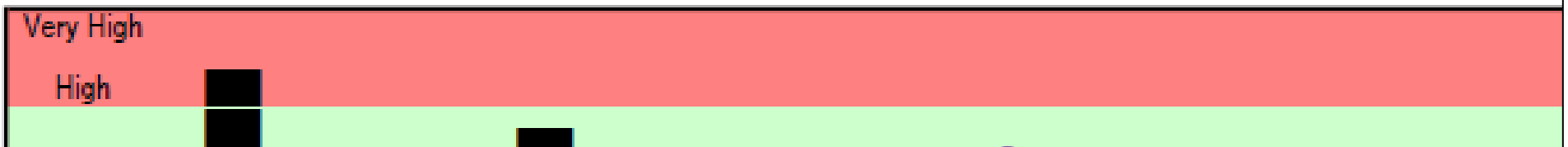
Potassium Level
100 or Less Very Low
100-150 Low
150-250 Medium
250 or Higher High, Very High

Macronutrients

Nitrogen (N)	Phosphorus (P)	Potassium (K)
Critical for plant growth	Plays vital role in plant reproduction	Plays key role in vast array of physiological process
Legumes can fix atmospheric nitrogen	Essential for seed & fruit production	Organic matter holds and releases potassium in soil
Nitrate can leach through soil and ammonium nitrogen can be lost to the atmosphere	Least mobile macronutrient (generally doesn't leach)	Also called Potash
	Becomes unavailable in very acidic or alkaline conditions	Not generally considered a pollution problem
	Loss through soil erosion	

Photo credit: http://mtmorrisorganic.com

Calcium, Magnesium and Sulfur



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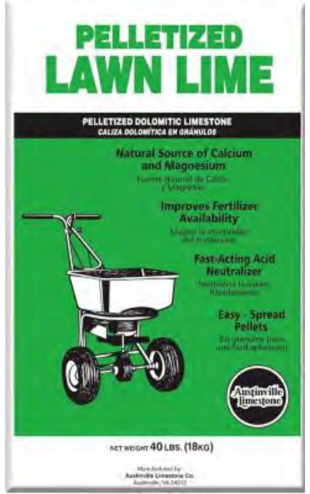
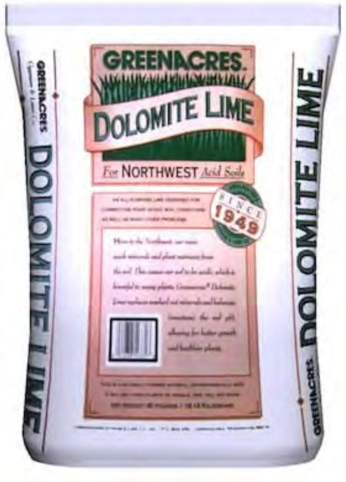
210				3.1	2.0	6.0		0.6						

Secondary Nutrients: Calcium, Magnesium, Sulfur

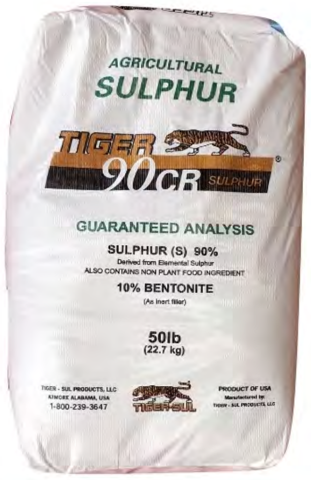
Calcium plays a key role in plant cell walls



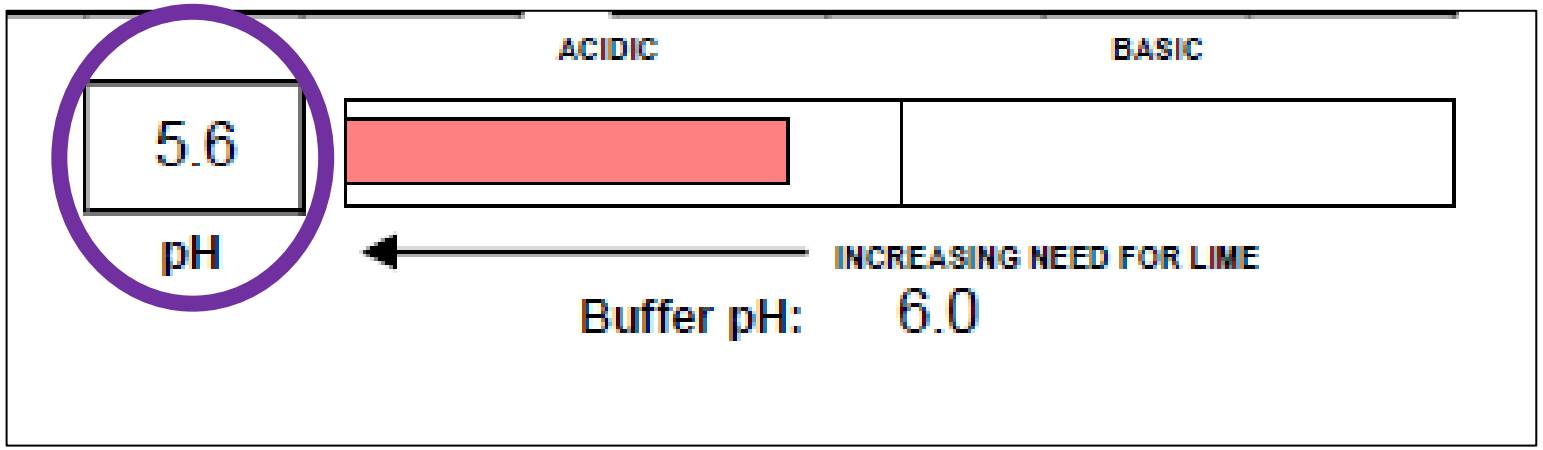
Magnesium plays a critical role in photosynthesis



Sulfur is common component in protein development



Soil pH



Soil Fertility Guidelines

CROP: VEGETABLES

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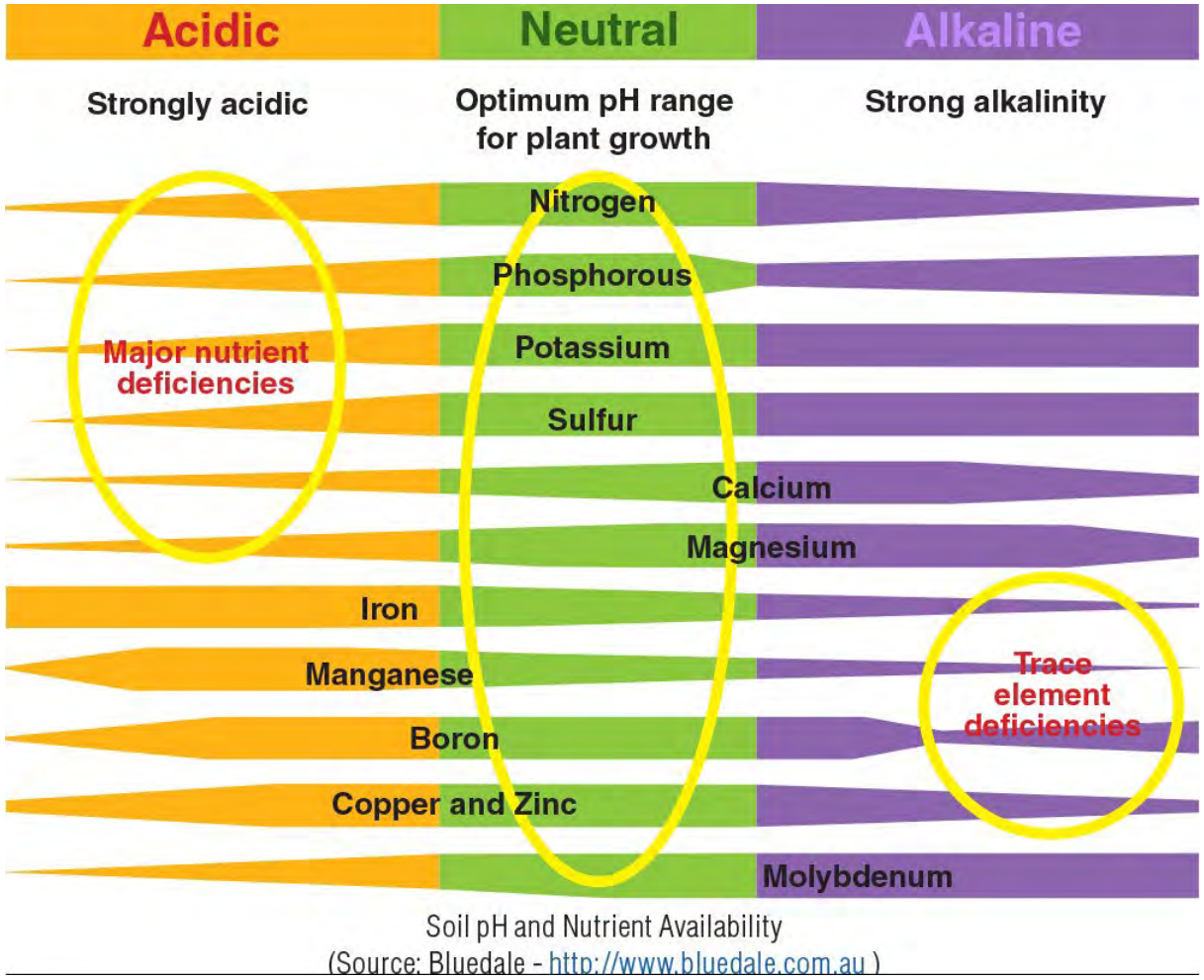
Soil Chemistry pH



Soil pH and Nutrient Availability
(Source: Bluedale - http://www.bluedale.com.au)

Soil pH	Plant Growth
>8.3	Too Alkaline for most plants
7.5	Iron availability becomes a problem on alkaline soils
7.2	6.8 to 7.2 – near neutral 6.0 to 7.5 – acceptable for most plants
7.0	
6.8	
6.0	
5.5	Reduced soil microbial activity
<4.6	Too acid for most plants

Source: Colorado State University – CMG Garden Notes #222

Micronutrients (Trace Elements)

(Iron, Manganese, Boron, Chloride, Zinc, Copper)

- Not needed in large quantities
- Crucial for plant growth
- Plant tissue analysis is more reliable than soil testing for identifying micronutrient problems.
- Organic matter (like composted manure, cover crops) can be a good source of micronutrients

*Micronutrient analysis is not included in basic soil analysis package

Cation Exchange Capacity (C.E.C.)

A & L WESTERN AGRICULTURAL LABORATORIES

10220 SW NIMBUS AVE Bldg K-9 I PORTLAND OREGON 97223 I (503) 968-9225 I FAX (503) 598-7702

REPORT NUMBER: 15-014-077 CLIENT NO: 4793

SEND TO: KING CONSERVATION DISTRICT
1107 SW GRADY WAY STE 130
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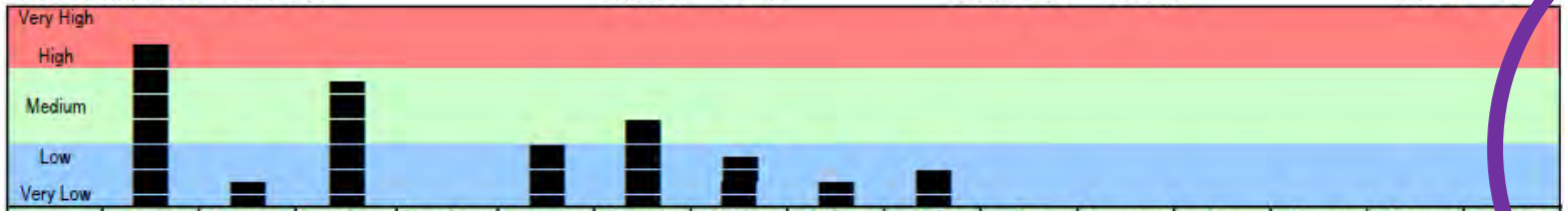
GROWER: MELISSA LANG

SUBMITTED BY: JAY MIRRO

Graphical Soil Analysis Report

DATE OF REPORT: 01/16/15 LAB NO: 59041 SAMPLE ID: VEG#2 PAGE: 3



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LOW AVERAGE HIGH

ECe dS/m — INCREASING SALINITY →

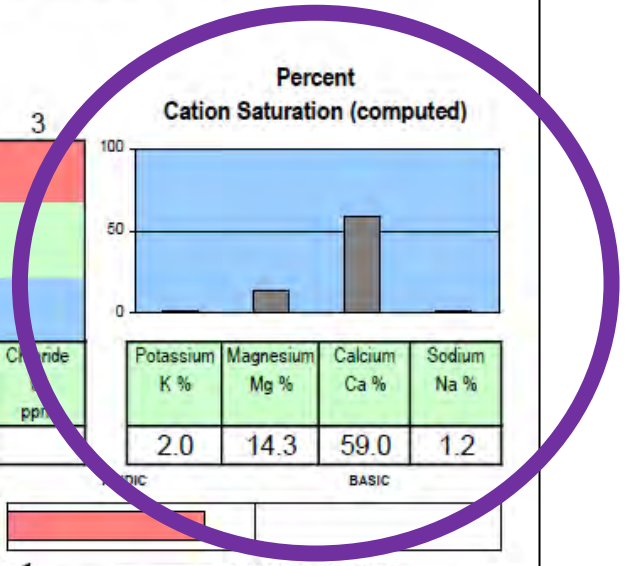
CEC meq/100g: 4.6

Ex. Lime

pH: 5.6 — ← INCREASING NEED FOR LIME

Buffer pH: 6.0

NaHCO3-P unreliable at this soil pH



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Soil Fertility Guidelines

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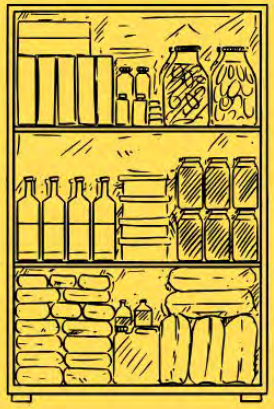
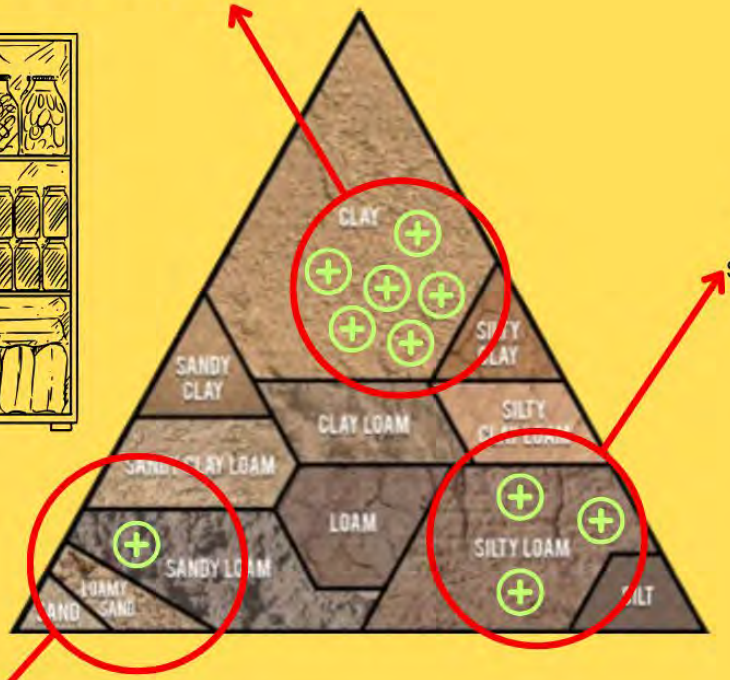
210				3.1	2.0	6.0		0.6						

C

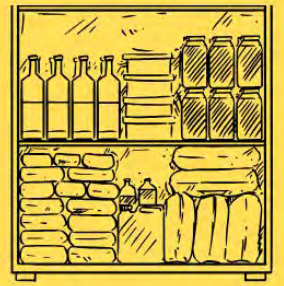
C.E.C. and Soil Characteristics

Clay soils, and soils with a lot of humus or organic matter generally have the highest CEC. They can store many nutrients. This like having a large pantry.





Silty soils have a medium CEC. They can store some nutrients. This is like having a medium sized pantry.



Sandy soils have a low CEC. They store few nutrients. This is like having a small pantry.

Improving Soil Fertility Using Soil Nutrient Tests

How to Use Fertility Guidelines

NaHCO3-P unreliable at this soil pH

Soil Fertility Guidelines

CROP: VEGETABLES

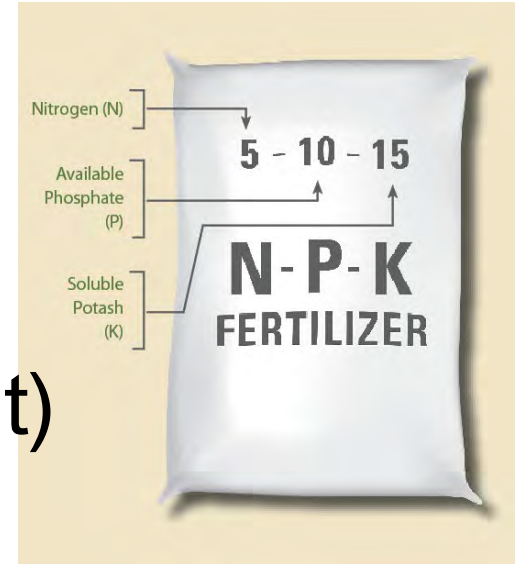
RATE: lb/1000 sq ft

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	
210				3.1	2.0	6.0		0.6						

If results in lbs/acre, then Divide by 43.56 to get lbs per 1000 sq feet

How to read a fertilizer label

Most fertilizers have 3 numbers
on the front label, separated by dashes



10-10-10

50lb bag (10% of each=0.10 of total weight)
5lbs nitrogen, phosphate and potash

18-18-18

50lb bag of fertilizer (0.18 x 50)
How much N, P, K is in the bag?

Determine How Much You Need

Nitrogen recommendation: 3.1lbs per 1000 sq. ft. (If results are in acres divide by 43.56 to get per 1000 sq ft). Now what?

Step 1: How big is your garden area?

100 sq ft.

Garden size: calculate the size of your garden as a proportion of 1,000 square feet.

_____ * _____ = _____

garden length in feet | garden width in feet | your garden size

_____ /1,000 = _____

your garden size | **your garden proportion**

Key to Symbols
* mean multiply
/ means divide

Determine How Much You Need

Now what?

Step 2: Pick your supplement

example: blood meal= 13-0-0

So, this blood meal contains 13%

Nitrogen and no other nutrients.

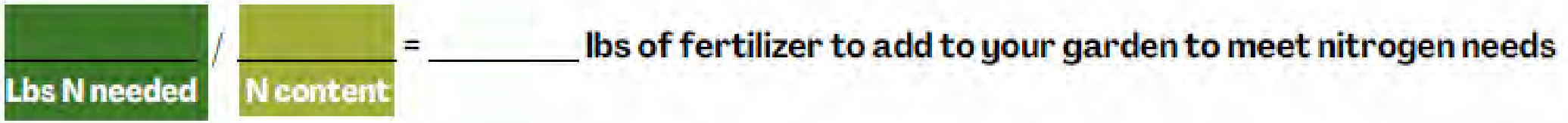
$$\frac{\text{Percent N (from bag)}}{} * 0.01 = \frac{}{\text{N content}}$$

Determine How Much You Need

Nitrogen recommendation: 3.1lbs per 1000 sq. ft.

Now what?

Step 3: Calculate fertilizer weight needed:

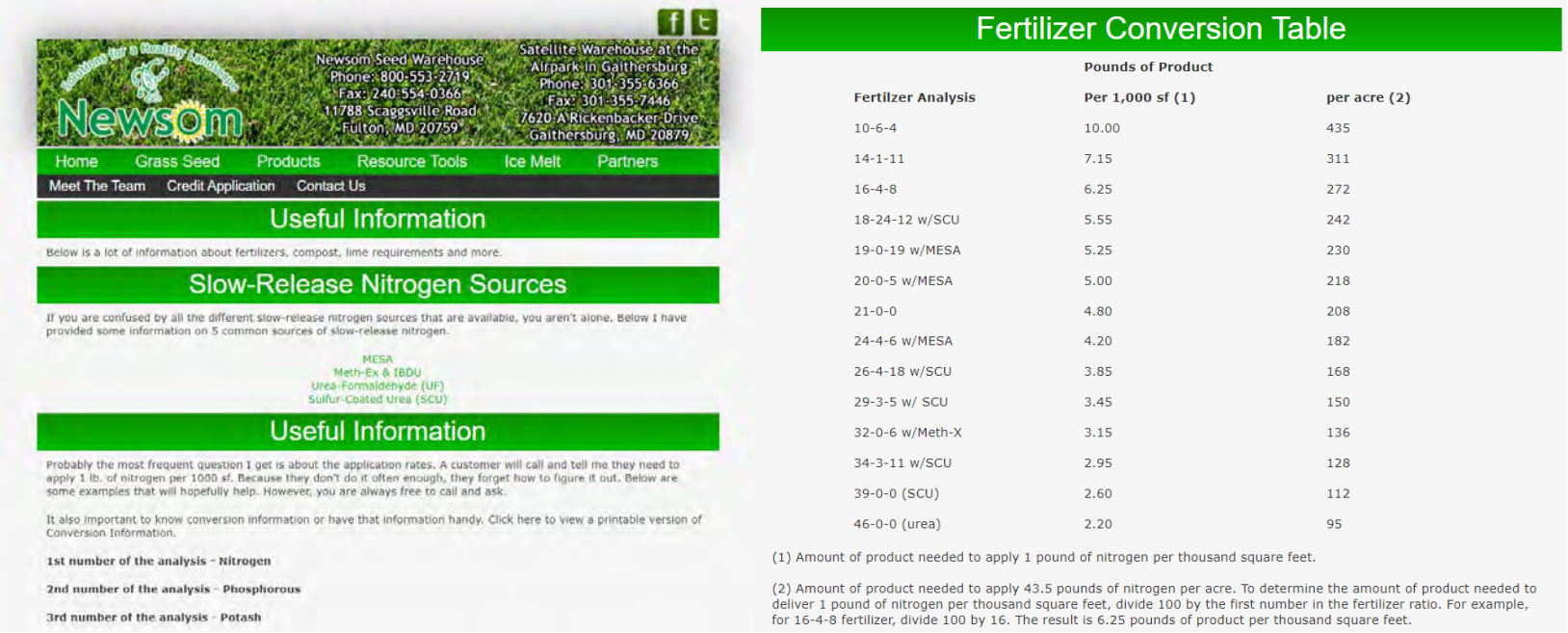


Additional Help for Figuring Out Correct Applications

Great websites available for help:

Example: http://newsomseed.com/usefulinformation.html

Contact your local conservation district or garden center



Newsom

Newsom Seed Warehouse
Phone: 800-553-2719
Fax: 240-554-0366
11788 Scaggsville Road
Fulton, MD 20759

Satellite Warehouse at the Airpark in Gaithersburg
Phone: 301-355-6366
Fax: 301-355-7446
7620-A Rickenbacker Drive
Gaithersburg, MD 20879

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Useful Information

Below is a lot of information about fertilizers, compost, lime requirements and more.

Slow-Release Nitrogen Sources

If you are confused by all the different slow-release nitrogen sources that are available, you aren't alone. Below I have provided some information on 5 common sources of slow-release nitrogen.

MESA
Meth-Ex & IBDU
Urea-Formaldehyde (UF)
Sulfur-Coated Urea (SCU)

Useful Information

Probably the most frequent question I get is about the application rates. A customer will call and tell me they need to apply 1 lb. of nitrogen per 1000 sf. Because they don't do it often enough, they forget how to figure it out. Below are some examples that will hopefully help. However, you are always free to call and ask.

It also important to know conversion information or have that information handy. Click here to view a printable version of Conversion Information.

1st number of the analysis - Nitrogen

2nd number of the analysis - Phosphorous

3rd number of the analysis - Potash

Fertilizer Conversion Table

Fertilizer Analysis	Pounds of Product Per 1,000 sf (1)	Pounds of Product per acre (2)
10-6-4	10.00	435
14-1-11	7.15	311
16-4-8	6.25	272
18-24-12 w/SCU	5.55	242
19-0-19 w/MESA	5.25	230
20-0-5 w/MESA	5.00	218
21-0-0	4.80	208
24-4-6 w/MESA	4.20	182
26-4-18 w/SCU	3.85	168
29-3-5 w/ SCU	3.45	150
32-0-6 w/Meth-X	3.15	136
34-3-11 w/SCU	2.95	128
39-0-0 (SCU)	2.60	112
46-0-0 (urea)	2.20	95

(1) Amount of product needed to apply 1 pound of nitrogen per thousand square feet.

(2) Amount of product needed to apply 43.5 pounds of nitrogen per acre. To determine the amount of product needed to deliver 1 pound of nitrogen per thousand square feet, divide 100 by the first number in the fertilizer ratio. For example, for 16-4-8 fertilizer, divide 100 by 16. The result is 6.25 pounds of product per thousand square feet.

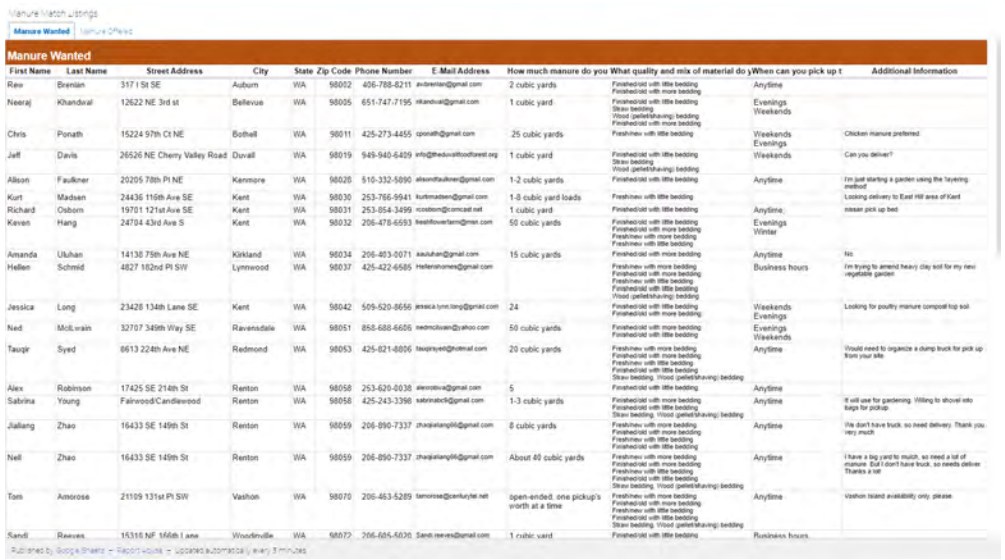
Using compost as a fertilizer:

- Caution- Not all compost is created equal
- N, P, and K are all present, but their levels can vary.
- Proper compost management is important in preserving N
- Compost should be applied as close as possible to the time crops need them
- Do not apply before rain events
- Be careful when applying raw manure to fresh vegetable crops because of possible food safety risks

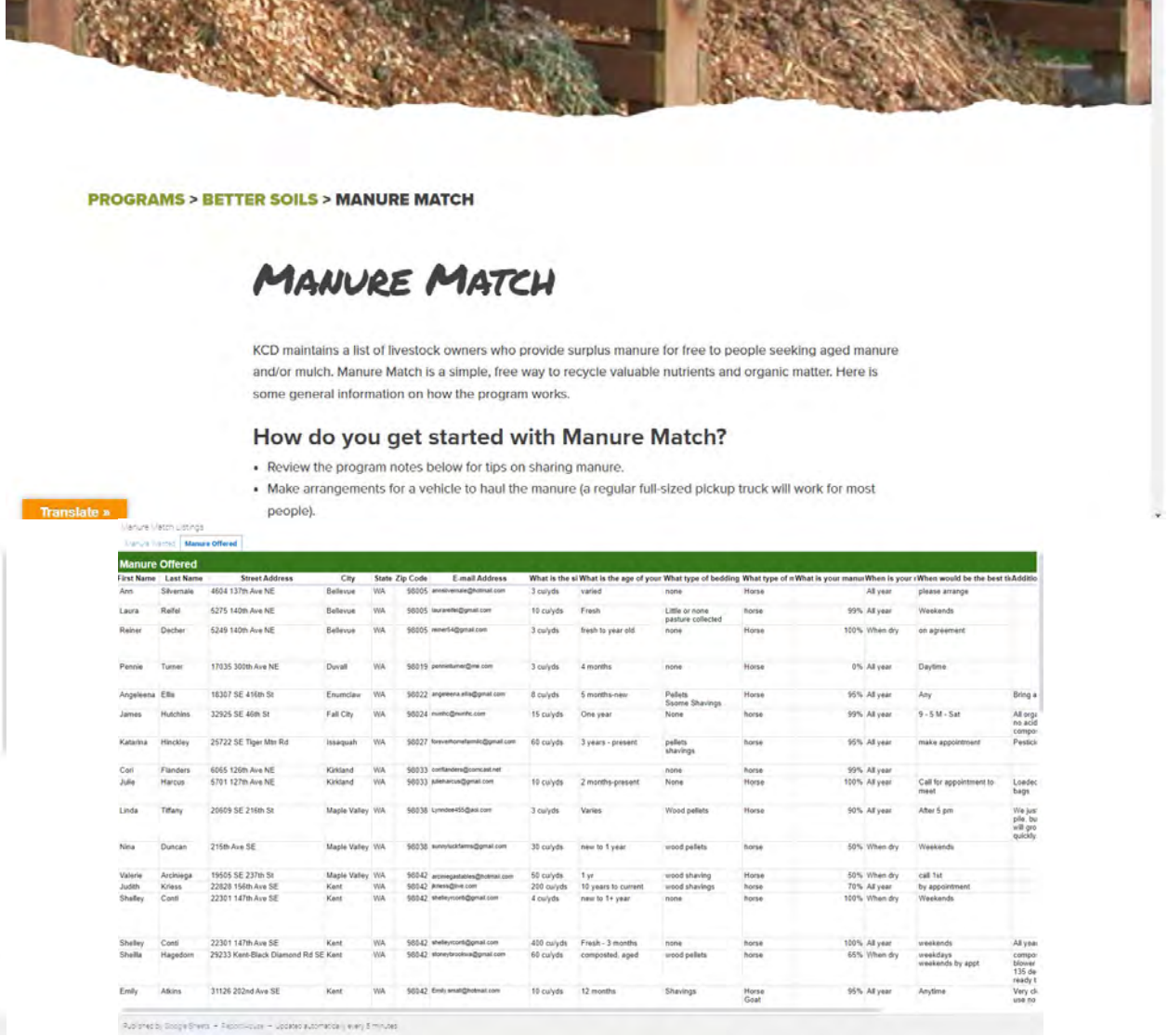
KCD Manure Match

https://kingcd.org/manurematch/

- Landowners looking for bedding and preferences
- Livestock owners with free surplus manure


Manure Wanted

First Name	Last Name	Street Address	City	State	Zip Code	Phone Number	E-Mail Address	How much manure do you	What quality and mix of material do y	When can you pick up t	Additional Information
Rex	Brenlan	317 I St SE	Auburn	WA	98002	406-788-8211	avbrenlan@gmail.com	2 cubic yards	Finished/old with little bedding Finished/old with more bedding	Anytime	
Neeraj	Khandwal	12622 NE 3rd st	Bellevue	WA	98005	651-747-7195	nkandwal@gmail.com	1 cubic yard	Finished/old with little bedding Straw bedding Wood (pellet/shaving) bedding Finished/old with more bedding	Evenings Weekends	
Chris	Ponath	15224 97th Ct NE	Bothell	WA	98011	425-273-4455	cponath@gmail.com	25 cubic yards	Fresh/new with little bedding	Weekends Evenings	Chicken manure preferred
Jeff	Davis	26526 NE Cherry Valley Road	Duvall	WA	98019	949-940-6409	info@theduvallfoodforest.org	1 cubic yard	Finished/old with little bedding Straw bedding Wood (pellet/shaving) bedding	Weekends	Can you deliver?
Alison	Faulkner	20205 78th Pl NE	Kenmore	WA	98028	510-332-5890	alisondfaulkner@gmail.com	1-2 cubic yards	Finished/old with little bedding	Anytime	I'm just starting a garden using the 'layering method'
Kurt	Madsen	24436 116th Ave SE	Kent	WA	98030	253-766-9941	kurtmadsen@gmail.com	1-8 cubic yard loads	Fresh/new with little bedding		Looking delivery to East Hill area of Kent
Richard	Osborn	19701 121st Ave SE	Kent	WA	98031	253-854-3495	rcosborn@comcast.net	1 cubic yard	Finished/old with little bedding	Anytime	nissan pick up bed
Keven	Hang	24704 43rd Ave S	Kent	WA	98032	206-478-6593	lilashflowerfarm@msn.com	50 cubic yards	Finished/old with little bedding Finished/old with more bedding Fresh/new with more bedding Fresh/new with little bedding	Evenings Winter	
Amanda	Ulluhan	14138 75th Ave NE	Kirkland	WA	98034	206-403-0071	aaululhan@gmail.com	15 cubic yards	Finished/old with more bedding	Anytime	No
Hellen	Schmid	4827 182nd Pl SW	Lynnwood	WA	98037	425-422-6585	Hellenschomen@gmail.com		Fresh/new with more bedding Finished/old with more bedding Fresh/new with little bedding Finished/old with little bedding Wood (pellet/shaving) bedding	Business hours	I'm trying to amend heavy clay soil for my new vegetable garden
Jessica	Long	23428 134th Lane SE	Kent	WA	98042	509-520-8656	jessica.lynn.long@gmail.com	24	Finished/old with little bedding Finished/old with more bedding	Weekends Evenings	Looking for poultry manure compost top soil
Ned	McILwain	32707 349th Way SE	Ravensdale	WA	98051	858-688-6606	nedmcilwain@yahoo.com	50 cubic yards	Fresh/new with more bedding Finished/old with more bedding	Evenings Weekends	
Tauqir	Syed	8613 224th Ave NE	Redmond	WA	98053	425-821-8006	tauqirsyed@hotmail.com	20 cubic yards	Fresh/new with more bedding Finished/old with more bedding Fresh/new with little bedding Finished/old with little bedding Straw bedding Wood (pellet/shaving) bedding	Anytime	Would need to organize a dump truck for pick up from your site
Alex	Robinson	17425 SE 214th St	Renton	WA	98058	253-620-0038	alexrobiva@gmail.com	5	Finished/old with little bedding	Anytime	
Sabrina	Young	Fairwood/Candlewood	Renton	WA	98058	425-243-3398	sabrinabck@gmail.com	1-3 cubic yards	Finished/old with more bedding Finished/old with little bedding Straw bedding Wood (pellet/shaving) bedding	Anytime	It will use for gardening. Willing to shovel into bags for pickup
Jialiang	Zhao	16433 SE 149th St	Renton	WA	98059	206-890-7337	zhaojialiang66@gmail.com	8 cubic yards	Fresh/new with more bedding Finished/old with more bedding Fresh/new with little bedding Finished/old with little bedding Straw bedding Wood (pellet/shaving) bedding	Anytime	We don't have truck, so need delivery. Thank you very much
Nell	Zhao	16433 SE 149th St	Renton	WA	98059	206-890-7337	zhaojialiang66@gmail.com	About 40 cubic yards	Fresh/new with more bedding Finished/old with more bedding Fresh/new with little bedding Finished/old with little bedding Straw bedding Wood (pellet/shaving) bedding	Anytime	I have a big yard to mulch, so need a lot of manure. But I don't have truck, so needs deliver Thanks a lot
Tom	Amorose	21109 131st Pl SW	Vashon	WA	98070	206-463-5289	tamorose@centurytel.net	open-ended, one pickup's worth at a time	Fresh/new with more bedding Finished/old with more bedding Fresh/new with little bedding Finished/old with little bedding Straw bedding Wood (pellet/shaving) bedding	Anytime	Vashon Island availability only, please.
Sandi	Reeves	15316 NE 166th Lane	Woodinville	WA	98072	206-685-5030	Sandi.reeves@gmail.com	1 cubic yard	Finished/old with little bedding	Business hours	



First Name	Last Name	Street Address	City	State	Zip Code	E-mail Address	What is the si	What is the age of your	What type of bedding	What type of n	What is your manu	When is your r	When would be the best ti	Additio
Ann	Silvernale	4604 137th Ave NE	Bellevue	WA	98005	annsilvernale@hotmail.com	3 cu/yds	varied	none	Horse		All year	please arrange	
Laura	Reifel	5275 140th Ave NE	Bellevue	WA	98005	laurarelfel@gmail.com	10 cu/yds	Fresh	Little or none pasture collected	horse	99%	All year	Weekends	
Reiner	Decher	6249 140th Ave NE	Bellevue	WA	98005	reiner54@gmail.com	3 cu/yds	fresh to year old	none	Horse	100%	When dry	on agreement	
Pennie	Turner	17035 300th Ave NE	Duvall	WA	98019	pennieturner@me.com	3 cu/yds	4 months	none	Horse	0%	All year	Daytime	
Angeleena	Ellis	16307 SE 416th St	Enumclaw	WA	98022	angeleena.ellis@gmail.com	8 cu/yds	5 months-new	Pellets Ssome Shavings	Horse	95%	All year	Any	Bring a
James	Hutchins	32925 SE 46th St	Fall City	WA	98024	munhc@munhc.com	15 cu/yds	One year	None	horse	99%	All year	9 - 5 M - Sat	All orga no acid compo
Katarina	Hinckley	25722 SE Tiger Mtn Rd	Issaquah	WA	98027	foreverhomefarmllc@gmail.com	60 cu/yds	3 years - present	pellets shavings	horse	95%	All year	make appointment	Pestici
Cori	Flanders	6065 126th Ave NE	Kirkland	WA	98033	corflanders@comcast.net			none	horse	99%	All year		
Julie	Harcus	5701 127th Ave NE	Kirkland	WA	98033	jdharcus@gmail.com	10 cu/yds	2 months-present	None	Horse	100%	All year	Call for appointment to meet	Loadec bags
Linda	Tiffany	20609 SE 216th St	Maple Valley	WA	98038	Lynndee455@aol.com	3 cu/yds	Varies	Wood pellets	Horse	90%	All year	After 5 pm	We jus pile, bu will gro quickly.
Nina	Duncan	215th Ave SE	Maple Valley	WA	98038	sunnyluckfarms@gmail.com	30 cu/yds	new to 1 year	wood pellets	horse	50%	When dry	Weekends	
Valerie	Arciniega	19505 SE 237th St	Maple Valley	WA	98042	arciniegastables@hotmail.com	50 cu/yds	1 yr	wood shaving	Horse	50%	When dry	call 1st	
Judith	Kriess	22828 156th Ave SE	Kent	WA	98042	jkriess@me.com	200 cu/yds	10 years to current	wood shavings	horse	70%	All year	by appointment	
Shelley	Conti	22301 147th Ave SE	Kent	WA	98042	shelleyconti@gmail.com	4 cu/yds	new to 1+ year	none	horse	100%	When dry	Weekends	
Shelley	Conti	22301 147th Ave SE	Kent	WA	98042	shelleyconti@gmail.com	400 cu/yds	Fresh - 3 months	none	horse	100%	All year	weekends	All yea
Sheilla	Hagedorn	29233 Kent-Black Diamond Rd SE	Kent	WA	98042	stoneybrooklva@gmail.com	60 cu/yds	composted, aged	wood pellets	horse	65%	When dry	weekdays weekends by appt	compo blower 135 de ready t
Emily	Atkins	31126 202nd Ave SE	Kent	WA	98042	Emily.small@hotmail.com	10 cu/yds	12 months	Shavings	Horse Goat	95%	All year	Anytime	Very cl use no

Dolomite + Lime (increasing pH levels)

Increase soil pH and supplement for Magnesium and Calcium

Two Common Types of Liming Agents:

- Dolomite: Apply if soil is low in both magnesium and calcium
- Lime (agricultural lime): Apply to supplement for calcium

https://kingcd.org/tools-resources/rhino-limer-drop-spreader/

Unsifted lime powder fresh from the kiln

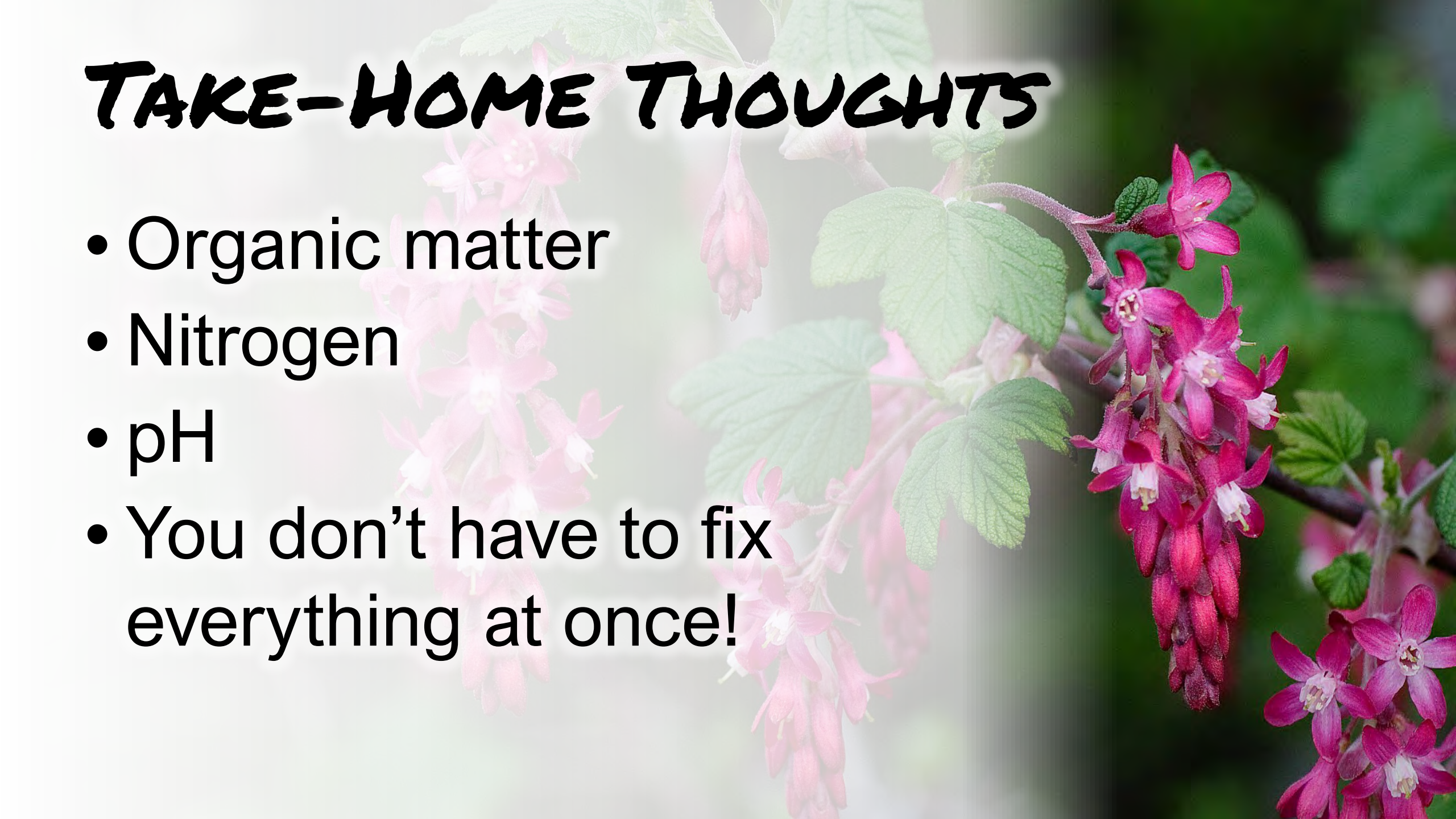
Cover Crops

Grasses, legumes, and forbs planted for seasonal cover

- Reduces erosion from wind and water
- Increases soil organic matter
- Captures & recycles nutrients in soil profile
- Promotes nitrogen fixation
- Increases biodiversity
- Suppresses weeds
- Manages soil moisture
- Minimizes and reduces soil compaction

Take-Home Thoughts

- Organic matter
- Nitrogen
- pH
- You don’t have to fix everything at once!



Thank You + Questions?

Jay Mirro
Jay.Mirro@kingcd.org
425-773-8097 (C)
425-282-1900 (O)

King Conservation District

Local Food
Healthy Forests
Clean Water
Better Ground