

#### What is a soil test?

A soil test is a process by which elements in the soil (phosphorous, potassium, calcium, magnesium, sodium, sulfur manganese, copper, and zinc) are chemically removed from the soil and measured for their "plant available" content within the sample. The quantity of nutrients in the sample determines the amount of fertilizer that is recommended. A soil test also measures soil pH, humic matter, and exchangeable acidity. These analyses indicate whether lime is needed and, if so, how much to apply.

#### Why do you need a soil test?

Soil testing is important in determining the fertility of a soil. By knowing the available nutrients in the soil, there is no guess work in deciding the mount of additional nutrients to apply to meet plant's needs. For both economic and environmental reasons, it is not advisable to apply any more fertilizer or amendment than is needed for healthy crop development.

#### What is in this kit?

In this kit you will find a guide on how to take a soil sample, a list of laboratories in the area that provide soil test services, and a guide to interpreting the test results. Soil testing equipment is also available to borrow for taking soil samples from your property. See our contact information below to reserve.

> **Clark Conservation District** 813 W Main Street, Suite 106 Battle Ground, WA 98604

> > (360) 859-4780 staff@clarkcd.org www.clarkcd.org

Clark Conservation District is a grant funded, non-regulatory agency that provides farmers and landowners the means to conserve and protect the soil, water, flora, and fauna on their property.

## A Guide to Collecting Soil Samples for Farms and Gardens

#### By: Melissa Fery, Jeff Choate and Elizabeth Murphy

Without a soil analysis, it's nearly impossible to tell what your soil needs to help your crop grow. A laboratory soil analysis, or a soil test, provides information on the capacity of your soil to supply adequate nutrients. This helps you select the correct mix of fertilizer and liming materials, which can help you to develop and maintain your soil and increase crop production.

The following recommendations are based on fertilizer experiments, soil surveys, and results obtained from on-farm trials.

### Why should I collect a soil sample?

A soil sample can help:

- Establish baseline soil nutrient status for new landowners
- Determine nutrient application recommendations
- Assess pH and the need for liming
- Measure change in soil nutrient status over time
- Document soil nutrient management for certification requirements
- Avoid excessive nutrient applications or soluble salt accumulation
- Develop a plan for possible variable-rate fertilizing within a field

### When should I collect my soil sample?

For annual crops, such as vegetables, test soils when you first cultivate a field or change crops or rotations. If you plant successive crops in a single season, you don't need to test before each planting.



Photo: Lynn Ketchum, © Oregon State University



For perennial crops, such as orchards, tree plantations, alfalfa, grass seed, and permanent pasture, the most important time to test the soil is before planting so necessary nutrients can be incorporated into the soil. If you plan to compare soil test results with the results of a leaf analysis, take samples in August. For more information about leaf analysis, refer to <u>Leaf Analysis of Nutrient Disorders in Tree Fruit and Small Fruits (FS 118)</u> (https://catalog.extension.oregonstate.edu/fs118).

In high rainfall areas of western Oregon, soils are likely to be acidic and require periodic liming. Testing these soils in the late summer or fall allows time for these amendments to react with the soil before the following growing season.

### How often should I collect a soil sample?

Soils should be analyzed often enough to recognize potential nutrient management issues before they adversely impact plant growth. In general, test every 2 to 3 years for annual crops, pastures, and legumes, and test every 3 to 5 years for Christmas trees, fruit and nut trees, berries, and grapes. Take samples at the same time of year so results are comparable from year to year.

# Where should I collect a soil sample?

The area from which to collect a soil sample may depend on the soil type, topography, crops grown, management history, or all of the above. For example, the farm in Figure 1 has three separate sampling areas: A (orchard), B (pasture), and C (vegetable row crops). In this example, a separate soil sample should be collected from each of the three areas. The same concept applies to smaller acreages; for example, a lawn and a vegetable garden should each be sampled separately.



**Figure 1. Collect a separate soil sample from each of the three areas (A, B, and C).** Photo: © Oregon State University

### How do I collect my soil sample? Sample where the crop will be planted

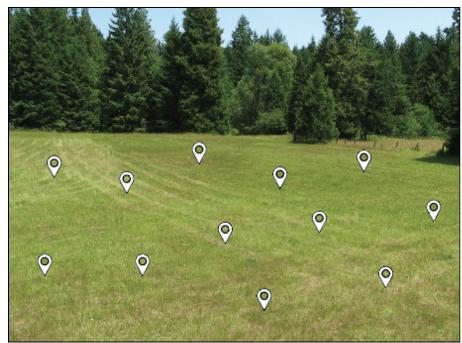
If you are using raised beds, such as for vegetable crops, take your samples in the beds instead of the areas between the beds where there are minimal roots.

### Avoid unusual areas

Avoid sampling in small areas where you know that conditions are different from the rest of the field (for example, former manure piles, fertilizer bands, or fence lines). You often can spot these places by looking for plants growing especially well or particularly poorly.

### Take 15 to 20 subsamples

Each sample should consist of subsamples taken from 15 to 20 locations within the sampling area (Figure 2).



**Figure 2. Take 15 to 20 subsamples within one sampling area.** Photo: Lynn Ketchum, © Oregon State University

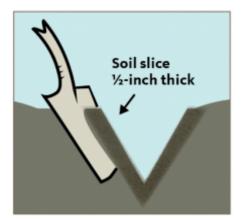
#### Use appropriate tools

Use a soil probe (Figure 3) for ease and consistency of sampling. If a soil probe is not readily available, a shovel will work.

To use a shovel, begin by pushing the blade into the soil at an angle to the desired depth (see "Take the soil sample to the correct depth"). You can make a mark on the shovel with a piece of tape as a guide for consistent sampling depth. Next, tilt the shovel back to remove the blade full of soil, being careful to keep the soil intact. At this point, one option is to use your hands or a trowel to remove excess soil from the shovel to arrive at a subsample with approximately equal amounts of soil across all depths. Another option is to use a trowel to remove a thin slice from the face left behind in the soil by the shovel (Figure 4).

Figure 3. Soil sampling tools, from left: trowel, hori hori knife, probe, hammer probe (in two pieces), and a long-handled shovel.

Photo: Melissa Fery,  $\mathbb O$  Oregon State University



**Figure 4. Slice sampling method using a shovel or trowel.** Graphic: © Oregon State University

#### Avoid contaminating the sample

- Use clean sampling tools, and avoid contaminating the sample during mixing or packaging. A small amount of fertilizer residue on tools or hands, for instance, can cause serious contamination of the soil sample.
- Do not include mulch or vegetation in the sample.
- Do not use galvanized metal, brass, or bronze tools to collect samples that will be tested for micronutrients, such as zinc.

### Take the soil sample to the correct depth

Sample the part of the soil where the plant roots will grow. For most annual and perennial crops, sample from the surface down to about 6 inches (Figure 5) or to the depth of tillage.

For perennial crops such as pastures and orchards or other soils that have limited or no tillage, refer to <u>Evaluating Soil Nutrients and pH by Depth (EM</u> <u>9014) (https://catalog.extension.oregonstate.edu/em9014)</u>, for more information about collecting your soil sample. Soils with limited or no tillage can experience significant pH changes in the top 2 inches resulting from the addition of nitrogen fertilizers and lime. However, those changes may be obscured when samples are collected to a depth greater than 2 inches.

Collect samples at the same depth. For example, if you take initial samples at a 6-inch depth, keep that same depth for all future samples to get a more accurate comparison.



**Figure 5. Measuring sampling depth** Photo: Melissa Fery, © Oregon State University

#### Carefully mix the soil sample

Place all of the soil subsamples from a single sampling area in a clean container and mix thoroughly (Figure 6). Do not worry about breaking the sample up into tiny particles. Labs have soil grinders to further mix the sample.



**Figure 6. Use a clean hand tool to mix the subsamples** Photo: Lynn Ketchum, © Oregon State University



Figure 7. Take a photo of your sample bags before you mails them, for future reference. Do not use a paper bag unless the lab provides one lined with plastic. Photo: Lynn Ketchum, © Oregon State University

### Analyzing my soil sample

• Refer to Analytical Laboratories Serving Oregon (EM 8677) to find a lab that performs soil analysis. You can search for labs that participate in the <u>North American Proficiency Testing (NAPT) (http://www.naptprogram.org/)</u> program (EM 8677 includes NAPT-participating and also nonparticipating labs).

- Look for a lab that offers a soil test report that you understand. Labs may charge a fee for providing recommendations based on soil test results.
- Call or check the website of one or more labs to find out the cost of the soil analysis that you need.
- After choosing a lab, request any necessary paperwork (such as an information sheet), and find out how you should prepare and submit the sample.
- Prepare and submit the sample according to the lab's instructions. Plastic zipper bags work best; do not use a paper bag unless the lab provides one lined with plastic. Most laboratories ask you to label the sample bag with identifying information and to fill out and include an information sheet with the sample. If mailing, don't forget to include payment in a separate, sealed plastic bag.
- If you are requesting nitrogen tests, keep the sample cool and send it immediately to the lab. However, avoid shipping in the middle of the week if possible, as the sample may arrive over the weekend and may not be processed until the following week.
- For samples that will not be tested for nitrogen, spread the sample out on newspaper to air-dry prior to packaging for shipment.
- You may be able to obtain results sooner if you request to receive results via email. Ask the lab to provide both a printed report and an electronic spreadsheet format for more flexible recordkeeping.
- Number each sample, record sample depth, and keep a record of the fields and areas you sampled. Take a photo of the labeled sample bags before mailing them, for future reference (Figure 7).

### What analysis should I request?

- In high rainfall areas of western Oregon, the standard soil analysis includes phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), soil pH, and SMP buffer pH. Soil pH is a measure of soil acidity, whereas the SMP buffer pH test is used to estimate the amount of lime required to raise the pH of the top 6 inches of soil. Nitrate nitrogen (NO3-N) is sometimes reported in standard soil tests, but is not useful to determine soil fertilizer applications in western Oregon, as nitrate is readily leached from the soil profile. To determine a nitrogen application rate for your crop, consult the specific fertilizer guide (see "Interpreting your soil analysis").
- In arid regions, such as east of the Cascades, test for phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), soil pH, soluble salts (measured by electrical conductivity [EC]), sodium (Na), nitrate nitrogen (NO3-N), and sulfate (SO4). Some of these tests may not be part of a standard analysis, so be sure to check with the lab.
- Certain crops might have higher requirements for specific nutrients. Consult OSU Extension publications (see "Resources") to determine whether you should test for additional nutrients. For example, boron (B) should be included in the analysis for tree fruits, nuts, berries, alfalfa, brassicas, and root crops.

### Sampling over time

Once you have researched and selected a laboratory, plan to use the same lab for future tests to keep sample analysis consistent and detect changes in soil nutrients. Also, plan to take your soil sample at the same time of year, same depth, and same approximate field location.

### Interpreting your soil analysis

Once you have received the analysis results for your soil, use the following tools to make decisions:

- Soil Test Interpretation Guide (EC 1478) (https://catalog.extension.oregonstate.edu/ec1478)
- OSU Extension Fertilizer and/or Nutrient Management guides. To search for your crop-specific guide, go to the OSU Extension Catalog (http://extension.oregonstate.edu/catalog/) at and search by keywords (nutrient management guide or fertilizer guide, and crop).

You can also consult your local OSU Extension Service agent.

### Resources

- OSU Extension Catalog publications:
  - Analytical Laboratories Serving Oregon (EM 8677) (https://catalog.extension.oregonstate.edu/em8677)
  - <u>Applying Lime to Raise Soil pH for Crop Production (Western Oregon) (EM 9057)</u> (https://catalog.extension.oregonstate.edu/em9057)
  - Christmas Tree Nutrient Management Guide (EM 8856) (https://catalog.extension.oregonstate.edu/em8856)
  - Eastern Oregon Liming Guide (EM 9060) (https://catalog.extension.oregonstate.edu/em9060)
  - Evaluating Soil Nutrients and pH by Depth (EM 9014) (https://catalog.extension.oregonstate.edu/em9014)
  - Fertilizing with Manure (PNW 533) (https://catalog.extension.oregonstate.edu/pnw533)
  - Fertilizing Your Garden: Vegetables, Fruits, and Ornamentals (EC 1503) (https://catalog.extension.oregonstate.edu/ec1503)
  - Leaf Analysis of Nutrient Disorders in Tree Fruit and Small Fruits (FS 118) (https://catalog.extension.oregonstate.edu/fs118)
  - Monitoring Soil Nutrients Using a Management Unit Approach (PNW 570) (https://catalog.extension.oregonstate.edu/pnw570)
  - Soil Fertility in Organic Systems: A Guide for Gardeners and Small Acreage Farmers (PNW 646) (https://catalog.extension.oregonstate.edu/pnw646)
  - Soil Test Interpretation Guide (EC 1478) (https://catalog.extension.oregonstate.edu/ec1478)
- OSU Vegetable Production Guides (http://horticulture.oregonstate.edu/content/vegetable-production-guides)
- Western SARE videos on soil sampling methods (http://westernsoil.nmsu.edu/soil-testing.html)
- Washington State University Extension publication: <u>Soil Management for Small Farms (EB 1895)</u> (https://s3.wp.wsu.edu/uploads/sites/411/2014/12/Paper\_SoilManageSmallFarms.pdf)?.

© 2018 Oregon State University. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties. Oregon State University Extension Service offers educational programs, activities, and materials without discrimination on the basis of race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, familial/parental status, income derived from a public assistance program, political beliefs, genetic information, veteran's status, reprisal or retaliation for prior civil rights activity. (Not all prohibited bases apply to all programs.)

**Accessibility**: This publication will be made available in an accessible alternative format upon request. Please contact puborders@oregonstate.edu or 1-800-561-6719.

### **Analytical Laboratories Serving Oregon**

S. Andrews, D. Walenta, C. Sullivan, L. Henderson, L. Brewer

ommercial growers, gardeners, and homeowners use soil, plant, and water analyses to help them make decisions about the use of soil amendments and other management actions. Homeand business owners may also wish to test drinking water quality. In this guide, you will find a list of laboratories serving Oregon along with specific information about their laboratory services.

To compile this list, the authors requested information directly from laboratory managers. Neither Oregon State University nor the OSU Extension Service makes any endorsement by listing a laboratory, nor does omission of a laboratory indicate anything about the quality of its services. You can find other sources of laboratory services with an internet search or in the yellow pages.

#### Using a nutrient management guide

Many growers use a crop-specific, OSU Extension Service nutrient management guide that states exactly which testing protocols formed the basis of its fertilization recommendation. To follow the nutrient management guide's recommendation correctly, choose a lab that uses the same testing protocols. The results from an extraction method other than the one cited in the nutrient management guide may produce a different or unsupported fertilizer recommendation.

To make sure you can use your analytical lab results:

- Sample to the same depth or use the same plant part specified in the nutrient management guide.
- Make a composite sample from the recommended number of subsamples.
- Sample at the recommended time of year.
- Request the same analytical method that is stated in the nutrient management guide.

You can find nutrient management guides in the OSU Extension Service Catalog at https://catalog. extension.oregonstate.edu/



Collecting field pea tissue samples for nutrient analyses.

#### Contents

Using a nutrient management guide	1
Sampling for farms and gardens	2
Testing for contaminants	2
Before you submit a sample	2
Services by laboratory	3
Laboratory contact information	6

Shannon Andrews, Department of Crop and Soil Science; Darrin Walenta, Union County Extension; Clare Sullivan, Deschutes County Extension; Leticia Henderson, Baker County Extension; and Linda Brewer, Department of Horticulture; all of Oregon State University



#### Sampling for farms and gardens

Soil condition and plant stages vary depending on the season, their geographic location, or their position in the landscape. The usefulness of your lab results will vary depending on when, where, and how you collect the sample. See the OSU Extension Service publication, *A Guide to Collecting Soil Samples for Farms and Gardens* (EC 628) for more details. Local Extension faculty can also confirm that you are following standard sampling procedures.

If your main concern is to understand why plants don't grow in a certain area, a soil or plant nutrient analysis might not answer all of your questions. It is recommended that you work with your local Extension faculty to assess potential barriers and develop a plan to resolve plant performance issues.

#### **Testing for contaminants**

Many people are concerned that plants, soils, and water have been contaminated with heavy metals. While many labs analyze for these contaminants, different methods produce different results. If your concern is environmental health, look for a certified lab that uses the methods similar to the standards set by health and safety regulations. You can find more detail about these methods, standards, and regulations in *Reducing Lead Hazard in Gardens and Play Areas* (EC 1616).

This publication's list of labs includes services related to the overall health of the environment. The level of testing and services provided within each category varies between labs. Confirm that the lab you are interested in can give you the results you seek.

Many plant production and environmental problems are interrelated. Quality analytical results can improve management decisions, environmental conditions—and your economic bottom line. You can find details for well-water sampling and interpretation of well-water analyses in the *Water Well Owner's Handbook, A guide to water wells in Oregon* (Oregon Health Authority).

#### Before you submit a sample

Consult your local OSU Extension Service faculty before you submit samples to a laboratory. They can help assure that the analysis you request will give you the information to support your management decisions.

Before submitting any sample, call the lab or visit the website for specifics about costs and payment, shipping instructions, the methods used for analysis, and their average turn-around time for results. Confirm that the lab contact understands what kind of decisions you want to make from your test results. This will ensure that you get the highest quality information from your investment.

Analytic labs can be accredited by professional organizations or participate in proficiency testing programs specific to the types of tests they perform. If you have questions about the accreditation of any laboratory, be sure to ask before submitting your samples.

### Services by laboratory

	Soil testing							Vater a	nalysi	is		Plant	Disease testing/ identification			
	Full complement of agricultural soil tests	Agronomic recommend- ations based on soil test	Heavy metals	Contaminants (pesticides, other chemicals)	Soil health analysis	Analyze nutrient content of soil amends (manures, compost, feather meal, etc.)	Biological analyses (total or fecal coliform)	Pesticides or other contaminants	Nitrate, lead, metals	Irrigation water quality (hardness, pH, salts)	Plant tissue analysis for nutrient concentration	Provide agronomic recommendations based on tissue results	Analyze feed and forage (NDF/ADF, crude fiber, fat, protein, total ash)	Confirm presence of endophyte on ryegrass or fescue	Soil-borne pathogens (phytophthora, etc.)	Identify plant pathogens or diseases
A&L Western Agricultural Laboratories	•	•	•			•	•		•	•	•	•	•		•	
AgSource Laboratories	•	•	•		•	•	•		•	•	•	•	•		•	
ALS Environmental	•	•	•	•		•	•	•	•	•						
Analytical Resources			•	•			•	•	•	•						
AV Labs, Inc.	•	•				•	•		•	•	•		•			
Basin Agri-Serve	•	•				•					•	•	•			
Best-Test Analytical Services, LLC	•	•	٠		•	•			•	•	•					
Brookside Laboratories, Inc.	•		•	•	•	•	•	•	•	•	•		•			
Cascade Analytical, Inc.	•		•			•	•		•	•	•					
Dairy One Forage Lab	•				•	•	•		•	•	•	•	•			
Dellavalle Laboratory, Inc.	•	•			٠	•	•		•	•	•	•	•		•	
Edge Analytical	•	•	•				•	•	•	•						
Kuo Testing Laboratories, Inc.	•	•	•	•	•	•	•	•	•	•	•	•	•			
Magic Valley Labs							•	•	•	•						
Mukang Labs, Inc	•	•	•		•	•	•	•	•	•	•	•	•			
Northwest Agricultural Consultants	•	•	•	•	•	•			•	•	•	•	•			
OMIC USA, Inc.	•		•	•			•	•	•	•						
Oregon State University — Soil Health Lab	•		•		•	•			•	•			•			

### Services by laboratory (continued)

	Soil testing							Vater a	inalysi	S		Plant	Disease testing/ identification			
	Full complement of agricultural soil tests	Agronomic recommend- ations based on soil test	Heavy metals	Contaminants (pesticides, other chemicals)	Soil health analysis	Analyze nutrient content of soil amends (manures, compost, feather meal, etc.)	Biological analyses (total or fecal coliform)	Pesticides or other contaminants	Nitrate, lead, metals	Irrigation water quality (hardness, pH, salts)	Plant tissue analysis for nutrient concentration	Provide agronomic recommendations based on tissue results	Analyze feed and forage (NDF/ADF, crude fiber, fat, protein, total ash)	Confirm presence of endophyte on ryegrass or fescue	Soil-borne pathogens (phytophthora, etc.)	Identify plant pathogens or diseases
Oregon State University — Cooperative Chemical Analytical Laboratory									•	•						
Oregon State University — Endophyte Service Lab														•		
Oregon State University — Plant Disease Clinic															•	•
Pacific Agricultural Laboratory				•				•								
Soiltest Farm Consultants, Inc.	•	•	•		•	•			•	•	•		•			
Specialty Analytical	•	•	•	•		•	•	•	•	•	•	•				
Stukenholtz Laboratory, Inc.	•	•				•	•		•	•	•	•	•			
Table Rock Labs	•	•					•	•	•	•						
University of Idaho — Analytical Sciences Laboratory	•		•			•			•	•	•	•				
USAg Analytical Services, Inc.	•								•	•	•		•			
Utah State University Analytical Lab	•	•	•			•			•	•	•	•	•			
Waterlab Corp.							•		٠	•						

### Services by laboratory (continued)

			Soil	testing	1		Water analysis					Plant	Disease testing/ identification			
	Full complement of agricultural soil tests	Agronomic recommend- ations based on soil test	Heavy metals	Contaminants (pesticides, other chemicals)	Soil health analysis	Analyze nutrient content of soil amends (manures, compost, feather meal, etc.)	Biological analyses (total or fecal or fecal coliform)	Pesticides or other contaminants	Nitrate, lead, metals	Irrigation water quality (hardness, pH, salts)	Plant tissue analysis for nutrient concentration	Provide agronomic recommendations based on tissue results	Analyze feed and forage (NDF/ADF, crude fiber, fat, protein, total ash)	Confirm presence of endophyte on ryegrass or fescue	Soil-borne pathogens (phytophthora, etc.)	Identify plant pathogens or diseases
Waypoint Analytical California, Inc.	•	•	•	•		•		•	•	•	•	•			•	•
Western Laboratories, Inc.	•	•				•	•		٠	•	•	•	•	•	•	•
William F. Black Soil Testing	•	•	•			•				•	•					

### Laboratory contact information

#### **A&L Western Agricultural Laboratories**

10220 SW Nimbus Ave., Bldg. K-9 Portland, OR 97223 503-968-9225 Fax: 503-598-7702 Web: www.al-labs-west.com Email: alportland@al-labs-west.com

#### **Ag Source Laboratories**

323 Sixth St. – P.O. Box 1350 Umatilla, OR 97882 800-537-1129 Fax: 541-922-5496 Web: http://agsource.crinet.com/page3780/ Umatilla-Locations Email: umatilla@agscource.com

#### **ALS Environmental**

1317 South 13th Avenue Kelso, WA 98626 360-577-7222 800-695-7222 Web: www.alsglobal.com Email: kurt.clarkson@alsglobal.com

#### **Analytical Resources**

Susan Dunnihoo 4611 S 134th Place Tukwila, WA 98168 206-621-6490 Fax: 206-695-6201 Web: www.arilabs.com Email: info@arilabs.com

#### AV Labs, Inc.

64 N. Broadway Othello, WA 99344 509-488-2468 Fax: 509-488-2473 Email: von@avlabsinc.com

#### **Basin Agri-Serve**

22109 Stateline Rd., P.O. Box R Merrill, OR 97633 541-798-5112 Fax: 541-798-5114 Email: basinagri@fireserve.net

#### **Best-Test Analytical Services, LLC**

3394 Bell Rd. NE Moses Lake, WA 98837 509-766-7701 Fax: 509-766-7705 Web: www.besttestlabs.com Email: service@besttestlabs.com

#### Brookside Laboratories, Inc.

200 White Mountain Drive New Bremen, OH 45869 419-977-2766 Fax: 419-977-2767 Web: www.blinc.com Email: info@blinc.com

#### Cascade Analytical, Inc.

3019 G.S. Center Rd. Wenatchee, WA 98801 800-545-4206 Web: www.cascadeanalytical.com Email: info@cascadeanalytical.com

#### **Dairy One Forage Lab**

730 Warren Rd. Ithaca, NY 14850 607-257-1272 Fax: 607-257-1350 Web: www.dairyone.com Email: forage@dairyone.com

#### Dellavalle Laboratory, Inc.

1910 W McKinley Ave. Fresno, CA 93728 559-233-6129 Fax: 559-268-8174 Web: www.dellavallelab.com

#### **Edge Analytical**

540 SW Third Corvallis, OR 97333 541-753-4946 Fax: 541-753-4994 Web: www.edgeanalytical.com/ Email: lab@edgeanalytical.com

#### Kuo Testing Laboratories, Inc.

337 S First Ave.
Othello, WA 99344
509-488-0112
Fax: 509-488-0118
1300 Sixth St., Suite J
Umatilla, OR 97882
541-922-6435
Fax: 541-922-6435
Web: www.kuotestinglabs.com
Email: info@kuotestinglabs.com

#### **Magic Valley Labs**

210 Addison Ave. Twin Falls, ID 83301 208-733-4250 Fax: 208-734-2539 Email: mvlabs@cableone.net

#### Mukang Labs, Inc.

2526 E. St. Helens St. Pasco, WA 99301 509-544-2159 Fax: 509-547-4605 Web: www.mukanglabs.com Email: services@mukanglabs.com

#### Northwest Agricultural Consultants

2545 W Falls Ave Kennewick, WA 99336 509-783-7450 Fax: 509-783-5305 Web: www.nwag.com Email: lab@nwag.com

#### **OMIC USA, Inc.**

3344 NW Industrial St. Portland, OR 97210 503-223-1497 Fax: 503-223-9436 Web: http://www.omicnet.com/en/index.html Email: sales.us@omicusa.com

#### Oregon State University Soil Health Lab

3017 Ag Life Sciences Corvallis, OR 97331 541-737-2187 Fax: 541-737-1589 Web: https://cropandsoil.oregonstate.edu Email: Soil.Lab@oregonstate.edu

#### Oregon State University Cooperative Chemical Analytical Laboratory

Kathy Motter Oak Creek Bldg 254 Corvallis, OR 97331 541-737-5120 Web: ccal.oregonstate.edu Email: kathryn.motter@oregonstate.edu

#### Oregon State University Endophyte Service Lab

139 Oak Creek Building Corvallis, OR 97331 541-737-2872 Web: oregonstate.edu/endophyte-lab/ Email: a.morrie.craig@oregonstate.edu

#### Oregon State University Plant Disease Clinic

Melodie Putnam 1089 Cordley Hall Corvallis, OR 97331 541-737-3472 Fax: 541-737-2412 Web: www.plant-clinic.bpp.oregonstate.edu Email: Melodie.Putnam@oregonstate.edu

#### **Pacific Agricultural Laboratory**

21830 SW Alexander Lane Sherwood, OR 97140 503-626-7943 Fax: 503-641-0644 Web: www.pacaglab.com Email: sthun@pacaglab.com

#### Soiltest Farm Consultants, Inc.

2925 Driggs Dr. Moses Lake, WA 98837 509-765-1622 Fax: 509-765-0314 Web: www.soiltestlab.com Email: brent@soiltestlab.com

#### **Specialty Analytical**

Katherine Lynch 9011 SE Jannsen Road Clackamas, OR 97015 503-607-1331 Web: www.specialtyanalytical.com Email: katherine@specialtyanalytical.com Email: samantha@specialtyanalytical.com

#### Stukenholtz Laboratory, Inc.

2924 Addison Ave. E – P.O. Box 353 Twin Falls, ID 83303-0353 208-734-3050 800-759-3050 Fax: 208-734-3919 Web: www.stukenholtz.com Email: frontoffice@stukenholtz.com

#### **Table Rock Labs**

419 SW 5th – P.O. Box 746 Pendleton, OR 97801 541-276-0385 Fax: 541-276-2041 Web: http://tablerocklaboratory.com/ Email: trocklab@gmail.com

#### University of Idaho Analytical Sciences Laboratory

Steven McGeeham 2222 W 6th St Moscow, ID 83843 208-885-7900 Fax: 208-885-8937 Web: www.uidaho.edu/asl Email: asl@uidaho.edu

#### **USAg Analytical Services, Inc.**

1320 E Spokane St. Pasco, WA 99301 509-547-3838 Fax: 509-547-8645

#### **Utah State University Analytical Lab**

1400 Old Main Hill Logan, UT 84322 435-797-2217 Fax: 435-797-2117 Web: www.usual.usu.edu Email: usual@usu.edu

#### Waterlab Corp.

2603 12th St. SE Salem, OR 97302 503-363-0473 Fax: 503-363-8900 Web: www.waterlabcorp.com Email: waterlab@comcast.net

#### Waypoint Analytical California, Inc.

Central CA Office 1101 S. Winchester Blvd., Suite G-173 San Jose, CA 95128 408-727-0330 Fax: 408-727-5125 Web: www.waypointanalytical.com Email: splab@waypointanalytical.com

#### Western Laboratories, Inc.

211 Hwy 95 Parma, ID 83660 208-649-4360 800-658-3858 Fax: 208-402-5303 Web: www.westernlaboratories.com Email: westernl@westernlaboratories.com

#### William F. Black Soil Testing

503 Gardner – P.O. Box 317 Burlington, WA 98233 360-770-6437 Fax: 360-757-6112 email: wfblacksoiltester@gmail.com

Trade-name products and services are mentioned as illustrations only. This does not mean that the Oregon State University Extension Service either endorses these products and services or intends to discriminate against products and services not mentioned.

© 2017 Oregon State University. This publication was produced and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties. Oregon State University Extension Service offers educational programs, activities, and materials without discrimination based on age, color, disability, familial or parental status, gender identity or expression, genetic information, marital status, national origin, political beliefs, race, religion, reprisal, sex, sexual orientation, veteran's status, or because all or a part of an individual's income is derived from any public assistance program. Oregon State University Extension Service is an AA/EOE/Veterans/Disabled.

Published June 2017