

“Feeding” Your Forage: Steps to Fertilizing Pasture

By Shelby Filley, Ph.D.

Regional Livestock & Forage Specialist
Oregon State University Extension Service

It is important to follow three basic steps to proper fertilization of pasture. 1) Sample the soil for fertility level, 2) Interpret the results, and 3) Apply fertilizer and lime. Know the details of how to go about these steps and have some understanding of the underlying concepts. In this article I cover a bit about each of these and make a comparison among properly fertilizing your pastures and properly feeding yourself and your animals. I hope it will help you better understand the process, and stimulate you to have a wise fertilizer plan for your forage production and use. References for several Extension publications with more detailed information are included at the end of this article.

Sample the Soil

Take a soil sample that is representative of the area of interest. Areas should be no more than 30 acres for each sample and represent a homogenous area, one with similar characteristics. For example, collect separate samples for hillside pastures and bottom ground areas or areas with different history of use (hay only verses pastured and hay). Use a soil probe and take several (15 – 20) sub-samples at a soil depth of approximately 3-5 inches for each area. Combine the sub-samples from each separate area, mix thoroughly and submit them to a laboratory.



Michaels Ranch, Days Creek, OR

Interpret the Results

Read the laboratory report for the levels of nutrients in the soil at the time of sampling. Some reports tell you whether the amounts are low or high, and some labs provide fertilizer recommendations you can follow. However, I suggest you use OSU Fertilizer guides to be certain you are doing all you can and that the application is customized to fit your specific needs. Extension faculty can help you interpret your results and make recommendations on the amounts of nutrients to apply.

Apply Fertilizer

When you are ready to fertilize, take your recommendation and test results to your fertilizer dealers. They can make a custom mix just for you or suggest a mix that closely matches what you need. There are several different materials in many different combinations that could fit your specific prescription. Let the fertilizer plant suggest a mix or two for you and then check to see if they meet your needs. Again, use the OSU fertilizer guides and Extension personnel to help you with these choices.

In year one of the soil test, follow the recommendation on the amount of lime and/or boron to add. Wait for a new soil test before adding more of these items. In year one and each year after, follow the soil test and add the recommended amount of nutrients such as phosphorus, potassium, calcium, and magnesium. If they are critically low, do this as soon as possible. If not critically low, do this as soon as convenient either spring or fall. Take a new soil test every three years or so and adjust your fertilizer to match the new test results. Nutrients such as nitrogen and sulfur are relative mobile and can change from the time the soil test is taken to the time you fertilize your field. Therefore, we don't use the soil test results here, but rather, use a standard recommendation of 40 - 60 pounds per acre nitrogen and 20 – 30 pounds per acre sulfur, generally in the spring of each year. More nitrogen can be added at other times depending on the need for additional forage and environmental conditions (see fertilizer guides and other publications). Fertilize what you can utilize! This is an old saying of Wayne Mosher, retired OSU Extension Agent in western Oregon, still very active in these parts.

Animal and Plant Comparison

Animals and humans require specific amounts of nutrients (protein, energy, vitamins, minerals, and water) to meet needs for maintenance, growth, reproduction, and work. But knowing our needs is just one side of the equation. We also need to know the nutrient content of our food (hay, grain, sandwiches, and desserts) by sampling and testing or using labels or tables that provide that information. We need to balance our needs with what we consume. If nutrients are over-supplied, some will be eliminated as waste (down the drain), while others will be stored as fat. If we under-supply, we limit potential growth and performance, as well as

increase susceptibility to health problems. We should use the help of a nutritionist to ensure we have a proper diet and understand our options for supplementation.

Plants also require specific amounts of nutrients (nitrogen, phosphorus, potassium, sulfur, calcium, magnesium, and boron) as well as soil acidity/alkalinity and lime requirement (pH and SMP buffer) to meet their needs for leaf and root growth. Since plants get their nutrients from the soil, we need to sample that in order to determine what's available for plants and what we need to add through fertilizer to make up for any deficiencies. If we supply nutrients in excess of plant needs, some will be eliminated from the system (leeching, runoff, volatilization, etc.), while others will be stored (soil bank) for later use. If we add too little fertilizer, we will limit plant growth and invite diseases and weeds to take over the pasture system. With our forage or other crops we should use the help of our soil and plant scientists for providing proper fertilizer to our crops.

Details Needed

As you might imagine or have experience with, there is a lot more detail to the science and art of fertilizing pastures. For example, there are several types of fertilizer one could use and there are rules of thumb for timing of application (fall or spring and according to need); some fertilizers are more acidifying than others; some programs favor legume growth, others grass growth; and application of one material, selenium, isn't even for feeding the plants, but for supplying selenium to the grazing animals. And, just as with feeding animals, you need to watch the plants and take cues from what you see there to assist you in your management and feeding regimen. Experienced producers can see changes in their pastures that they can relate to plant

nutrient imbalances. For example, do you see a lot of yellow color to your plants or can you see a lot of green growth around manure pats? The plants are “telling” you that they may have nutrient deficiencies.

Resources Available

Actually, fertilizing pastures isn't real complicated, but there are a lot of important points that I want you to be aware of. There are many resources you can turn to for help and advice. Make sure you are not over or under applying fertilizer. Practice economic, agronomic application of fertilizer. Here is a list of OSU publications you can use as a resource in your pasture fertilization plan.

Log on to

<http://extension.oregonstate.edu/catalog>.

Search by publications number or title.

Soil Sampling (EC 628), Laboratories Serving Oregon (EM 8677), Pasture Fertilizer Guide (FG 63), Fertilizer and Lime Materials Fertilizer Guide (FG 52), Early Spring Forage Production for Western Oregon Pastures (EM 8852-E), and Alfalfa Fertilizer Guide (FG 18 and FG 60).