USDA United States Department of Agriculture

Illinois Grazing Manual Fact Sheet

FERTILITY

Soil Sampling Testing

Introduction

This fact sheet is designed to complement "Pasture Fertilization" dated November 2012. Soil sampling and soil testing is the first step in planning a pasture fertilization program. This fact sheet provides guidelines to help maximize the value from soil samples.

Depth of Sampling

Sampling depth is very important to avoid over-predicting (result of shallow sampling) and under-predicting (result of sampling too deep). Seven inches is the suggested sampling depth for both established pastures and new plantings. Sample to this depth for phosphorus (P) and potassium (K) recommendations, and soil pH in new plantings.

Number of Samples

The number of composite samples taken from a pasture is a compromise between what should be done (information) and what can be done (cost). Where conditions are not uniform (i.e. varying soil types, management conditions, soil depth, slope, aspect, etc–), it is best but more costly to take composite samples in smaller uniform management units. It is recommended to sample the pasture at the rate of 15-20 subsamples for one composite sample. No composite sample should represent more than 20 acres in size when conditions are uniform or more than 10 acres when conditions are non-uniform. Crumble and mix the sub-samples together in a plastic bucket, remove one pint and this represents one composite sample. Record the management unit where the samples were taken.

Where to Sample

Each paddock, different topography (hilltop, bottom ground, etc.), soil type, and aspect (direction of slope) should be sampled separately. Avoid sampling within 100 to 150 feet of shade trees, feeding areas, watering points, and other areas where livestock congregate. Do not sample within 25 feet of pasture edges and 50 feet of roads. Avoid sampling in fresh manure piles and urine spots.

How to Sample

A one-inch soil probe is the preferred tool for taking soil samples, but an auger or spade can also be used. See below figure.

Be sure to sample to the correct depth (see above) and collect all of the sample (don't let soil drop out from the top portion of the core). Take subsamples at random points along a zig zag pattern throughout the field.

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Number of Samples

Pastures should be sampled at least every four years. Late summer and fall are the best seasons for sampling to avoid the cyclic nature of nutrients, especially potassium. Always collect subsequent samples from the same location and during the same time of the year. When planning to: establish a new pasture in a prepared seedbed, or interseed, or frost seed, sample at least six months before seeding.

Where to Have Samples Tested

Local University of Illinois Extension offices, Natural Resources Conservation Service offices, and fertilizer dealers can provide information on soil testing services available in your area. The Illinois Soil Testing Association (ISTA) is an organization that represents laboratories that perform soil testing. A list of these laboratories can be found on their website at www.soiltesting.org/index.html.

Submitting Sample

Most soil testing laboratories will provide bags for soil samples. Samples can be mailed to the laboratory. Be sure to label bags clearly (name, address, sample number, etc.) and indicate the sampling depth and that the sample represents pasture. Indicate if the pasture is grass, legume, or a grass-legume mixture.

Summary

Soil sampling, done correctly, is a best management practice and is the first step in developing strategies for a pasture fertilization program.

Where to Get Help

For more information contact the local office of the Natural Resources Conservation Service or University of Illinois Extension.

Acknowledgements

Information in this fact sheet was adapted from a number of sources (University of Missouri and Kentucky; Michigan State, Utah State, and Purdue University), including the Illinois Agronomy Handbook, 24th edition. The Illinois Agronomy Handbook is available at University of Illinois Extension offices and on the Internet at http://extension.cropsci.illinois.edu/handbook

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