

Soil Amendments

pH (Lime) and Fertilizer (N,P,K)

SOIL AMENDMENTS

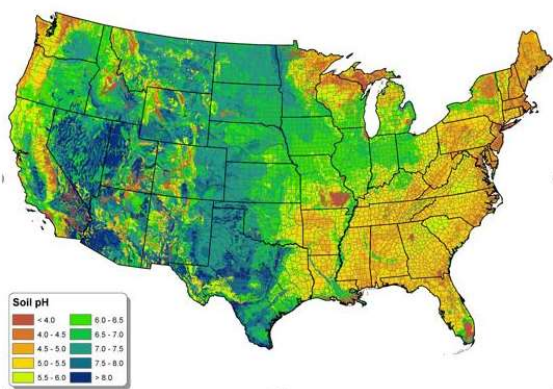
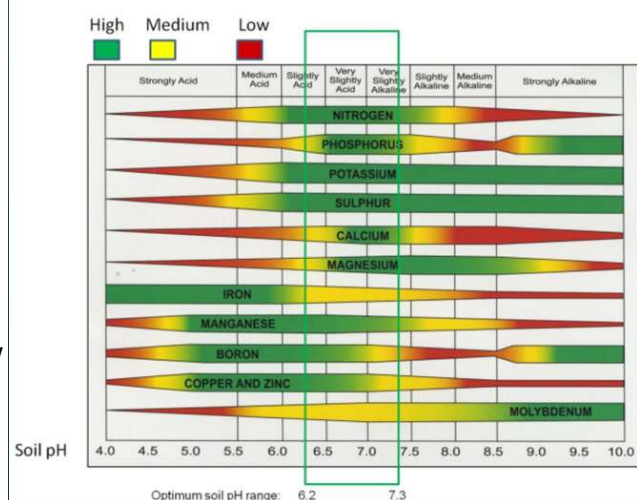
First, real quick... get a soil test. It lets you know what amendments are necessary to ensure that nutrients needed for growth and production are both present and available to your growing plants. Generally, the primary recommended soil amendments include adding specific levels of lime (to increase soil pH), nitrogen (N), phosphorus and potassium (K).

SOIL pH

Soil pH is a measure of the acidity or alkalinity of the soil. The scale ranges between 0 and 14 with 7 indicating a neutral soil. Soils with values below 7 as acidic and above as alkaline. For most food plot products (sorghum, corn, sunflower, clovers, brassicas, millets, soybeans, etc) the target pH should be between 6 and 6.5. Adjusting the pH of your soil into this range Maximizes growth and increases yield and palatability.

Soil pH levels affect the solubility (& ultimately the availability) of minerals / nutrients to plants. Three quarters of essential plant nutrients are obtained from the soil. Acidic soils will show deficiencies in the major nutrients (N, P, K, S, Ca, Mg) while alkaline soils will have trace element (Mn, B, Cu, Zn). Failure to amend soil pH will result in wasted fertilizer and also will detrimentally impact herbicide performance.

How soil pH affects availability of plant nutrients



Generally, soils tend toward acidic as a result of rainwater leaching of ions (Ca, Mg, K, Na) and decaying of organic matter forming weak acids. Areas of the US with high precipitation tend to have more acidic soils and arid regions tend to be more alkaline. Be aware that constantly adding N to soil increases acidity (decreased pH).

A soil pH of 5.5 is 10x more acidic than 6.5 and 100x more acidic than 7.5.

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LIME (CALCIUM CARBONATE)

If your soil has a pH under 6, you will likely need to add lime. Refer to your soil test for the recommended amount of lime needed for your crop.

It takes between 4 and 6 months for lime to begin to influence soil pH so it is best to apply well in advance. Incorporating the lime into the soil by disking will help speed up the process.

Lime is most often applied as pelletized or powdered/pulverized/ground. Powdered lime will break down and amend soil pH more quickly, but is dusty, more difficult to transport and sometimes difficult to apply. Many food-plotters are using pelletized lime. Generally, lime recommendations will range from 1-3 tons per acre. If you have large food plots and access to equipment that can spread pulverized lime, visit your farm store and buy in bulk (\$15-\$50/ton). For small plots you can visit a garden supply store get a 40 or 50# bag of lime for around \$4-5 each (\$150-\$250/ton).

FERTILIZER (MACRONUTRIENTS N,P,K)

Remember that a relatively neutral pH is critical for nutrients to be available to your plants. It is estimated that with a pH of 6, 20% of fertilizer is not available and at 5.5, 33% of fertilizer is wasted.

A soil test will provide fertilizer recommendations in pounds needed per acre, but most fertilizer is purchased in bags with three numbers. The numbers are the percentages of nitrogen (N), Phosphorus (P) and Potassium (K). For example, a 50# bag of 19-19-19 includes 9.5#s (50×0.19) each of N, P and K with the remaining 21.5# as filler.

Nitrogen (N) is usually the most limiting macro nutrient in the soil. It is directly related to plant growth and development since it plays a fundamental role in energy metabolism and protein synthesis.

Phosphorus (P) is mostly important in root growth and critical during the flowering stage. Essential in the formation and execution of photosynthesis, it is involved directly with transporting and storing energy.

Potassium (K) is responsible for the regulation of water and transport of reserve substances in the plant. It increases photosynthesis capacity and helps the plant withstand unfavorable environmental conditions. Lack of K results in reduced resilience.

Micronutrients like Calcium (Ca) is important in plant growth and vigor and Magnesium (Mg) is essential to photosynthesis and also promotes the absorption of phosphorus.

A FINAL WORD

Food plots aren't cheap. The best plots start with a soil test and then use those results to determine the amendments needed to get the most out of the soil. Failure to do so will result in reduced effectiveness of fertilizer and herbicide (adding additional expense).

Once you've invested in preparing your soil, be sure to purchase quality seed designed by the professional wildlife biologists at Pheasants Forever and Quail Forever. Shop our mixes at www.PFHabitatStore.com.

All proceeds from our seed program support our mission of putting more habitat on the ground, youth in our fields and birds in the air. Thank you for your support. Think Habitat!

