

# NORTHWOODS YARD & GARDEN

Weekly Column

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## The N-P-K of Soil Fertility

One of the keys to gardening success is good soil fertility, or the ability of soil to provide essential nutrients to plants. The “Big 3” macronutrients required by plants include nitrogen (N), phosphorus (P), and potassium (K). To ensure healthy plants and avoid problems in 2024, now is a suitable time to review fertilizers, nutrients, and soils.

Nitrogen usually gets the most attention. Nitrogen has many functions in plants, but two major responses are green color and vegetative growth. Understand nitrogen needs of your plants and crops before applying nitrogen fertilizer, as excess nitrogen can be just as bad as not enough. Too much nitrogen can cause plants to grow out of balance, may encourage diseases, and can reduce flowering and fruiting. In addition, excess nitrogen can create issues with both surface and groundwater pollution.

Nitrogen is constantly changing and is unstable in the soil. Plants primarily take up nitrogen from soil in the nitrate form. Soil bacteria play a key role in converting soil nitrogen for plant uptake, and these bacteria prefer a balance of water and oxygen to thrive.

When you apply fertilizer nitrogen, whether organic or synthetic, it must convert to nitrate in the soil for plant use.

Nitrate is technically inorganic, even if it originates from organic material. Confusing? Yes, but what this means is plants do not distinguish between organic and synthetic nitrogen fertilizer sources.

Nitrogen fertilizer sources are either fast release or controlled release. Controlled release fertilizers make tiny amounts of nitrate available over an extended time; versus all in a brief time with fast release. Most organic fertilizers, including composts and rotted manure, are controlled release. Synthetic fertilizers can be either fast release, such as urea or ammonium nitrate; or controlled release, such as sulfur coated or polymer-coated urea, IBDU, and ureaform. Water insoluble nitrogen, or WIN, is controlled release while water soluble nitrogen is fast release. Refer to the guaranteed analysis section on fertilizer packages for specific nitrogen types in the product.

In addition to selecting a nitrogen fertilizer, rate and timing are also critical decisions. Nitrogen rate recommendations are expressed as either pounds of actual nitrogen per one hundred or per 1,000 square feet. The more nitrogen in the fertilizer product, the less you need to apply to provide the suggested rate. Oftentimes fertilizer packages will give guidelines to assist with determining how much actual fertilizer needs to be applied.

Next week I will continue with details on soil phosphorus, potassium, and plants.

Interested in learning more about Horticulture in Iron County?  
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