# When, where, and why to fertilize plants in Wyoming

Were the plants in your backyard looking a little under the weather this last growing season? If so, they may benefit from a fertilizer application. Soil nutrient deficiencies can be an issue in any Wyoming garden or landscape. As you are probably aware, the state's native soils sometimes lack adequate nutrients, may have salt issues, and are often low in organic matter.

## Soil testing

If you're concerned about nutrient availability, start with a soil test. Routine soil tests from a certified lab can help you make informed decisions about the management of all areas of your landscape (i.e., flower beds, garden spaces, lawns, and shelter belts). Most routine tests provide information on soil texture, soil pH, percent organic matter, salt issues, and nutrient levels.

Visit your local UW Extension office or check out https://bit.ly/how-to-sample-soil for more information on soil sampling and testing. The testing won't happen at the office, but an extension educator can explain how to collect a soil sample on your property, suggest where to send your sample for analysis, or help you interpret test results. Test results can help you decide how to approach fertilizer application on your property.

## Why fertilize?

For many plants, Wyoming's climate and soil do not provide optimal growing conditions. Fertilizer helps boost plant growth, which is especially beneficial to slow-growing trees and shrubs. However, fertilizer should not be used to address insect or disease issues.

Wyoming's soils tend to have a high pH, which means they are not ideal for blueberries and other plants that thrive in acidic soils (lower pH). Acidic fertilizer can be used to help these plants but must be added often. Even with the regular addition of fertilizers, some plants may not survive.

Soils with high pH can also cause nutrient deficiencies. Iron deficiencies are common and typically cause iron chlorosis, identifiable by light green to white-colored leaf material and dark green veins on the leaves. Iron and other nutrients will most likely need to be applied each year, or even multiple times per year, for best results. For more information on iron issues, visit https://bit.ly/fe-deficiency.

## Types of fertilizers

Note that there are many formulations and types of fertilizers. The amount or concentration of certain nutrients and how plants receive those nutrients varies by fertilizer. Make sure you read the label before purchasing or applying any fertilizer. The label will explain how the fertilizer should be used, how much to apply, and how it works.

Types of fertilizers include complete fertilizers, which provide



Fertilizer containers or bags provide information regarding the amount of nitrogen, phosphorus, and potassium the fertilizer contains. Look for these three numbers when making a decision about which fertilizer to purchase. Photos by Brian Sebade.

Pellet-type fertilizers can be spread using various equipment. Wheeled spreaders are common for smaller areas to distribute fertilizer more equally. Photo by Brian Sebade.

the macronutrients nitrogen, phosphorus, and potassium; quick-release (highly soluble) fertilizers; slow-release fertilizers; foliar fertilizers; and fertilizer spikes or tablets. Note that fertilizers can be synthetic or organic.

Combination fertilizers contain herbicides to combat certain types of unwanted plants. Consider the types of plants in your landscape and use caution when applying fertilizers containing herbicides.

## Timing

Plants benefit most from adequate nutrition when they are actively growing. Early spring is typically the most common time to apply fertilizers, but timing may vary depending on fertilizer type. Medium-release and quick-release types are usually applied when plants are actively growing. Slow-release fertilizer should be applied earlier in the growing season or when plants are dormant.

In some cases, fertilizing plants during certain times of the calendar year or at certain plant life stages is not recommended. Applying fertilizer in the fall can promote too much growth late in the growing season, which can lead to disease issues or potential winter damage for certain types of plants. Seedlings or newly established plants are sometimes negatively impacted by fertilizer applications as well.

To make the most of your fertilizer application, make sure to consider the types of plants and their

growth stage, fertilizer type, and recommended timing of application.

## How to apply fertilizer

In most cases, fertilizer applications provide nutrients via a plant's roots. For fertilizers intended for uptake by the roots, make sure the application extends to the root zone. For trees and shrubs, this usually requires applications under the plant's drip line. The drip line is an imaginary vertical line that can be drawn from the outer edge of the branches down to the soil surface. For non-woody plants, including annuals, perennials, and flowers, apply fertilizer much closer to the base of the plant.

Remember, copious amounts of water can cause nutrients from fertilizers to leach out of the soil. Quick-release fertilizer, for example, should not be applied before a large irrigation event or to soils that are already saturated. If your local weather forecast predicts large quantities of precipitation, you may also want to delay application.

Applications can be made with wheeled spreaders, hand spreaders, or sprayers (for liquid applications). Fertilizer can also be spread by hand, injected into the trunks of trees, or placed in the soil using stakes and tablets. Keep in mind that objects pounded into the ground have the potential to damage tree roots.

## Don't overdo it

When making applications, keep in mind that some plants prefer or can handle a higher fertilizer rate than other types of plants. Turf grass, for example, should not be fertilized with more than 1 pound of nitrogen per 1,000 square feet, whereas trees and shrubs can handle applications closer to 2 to 3 pounds of nitrogen per 1,000 square feet.

As noted earlier, fertilizers should not be applied without knowing if plants actually need additional nutrients. Over-fertilization can lead to plant, water, and soil issues. Using a soil test to guide your decision-making process is critical.

For questions about fertilizer application, contact your local UW Extension office.

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## Leaf application

Some fertilizers are designed for leaf application. These types of fertilizers should be applied to mature leaves and may require certain climatic conditions for application. They are often mixed with water and applied with sprayers.

Note that these fertilizers do not provide long-term solutions and often need to be applied more frequently than fertilizers taken up by a plant's roots.

Photo by Brian Sebade.