

How to Prepare Soil Before Fertilizing

Simple Steps for Better Nutrient Uptake and Plant Performance

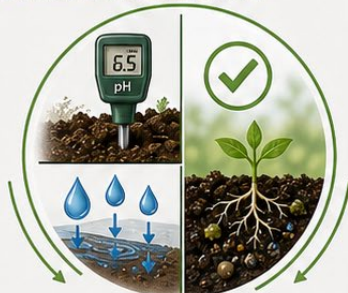


LEARNING CENTER

GROWING TIPS

How to Prepare Soil Before Fertilizing

Simple Steps for Better Nutrient Uptake and Plant Performance



**PREP SOIL FIRST.
BETTER UPTAKE STARTS BELOW.**



TEST SOIL

Know pH, nutrients, and organic matter



CHECK STRUCTURE

Look for compaction, drainage, and root space



MANAGE MOISTURE

Support infiltration, aeration, and water balance



MATCH THE PLAN

Choose the right fertilizer, rate, and timing

Fertilizer works best when the soil is capable of supporting healthy root growth and making nutrients available to plants.

Applying fertilizer without first considering soil conditions can lead to disappointing results. Nutrients may already be present, soil pH may limit their availability, compacted soil may restrict roots, or poor drainage may interfere with normal plant growth.

Preparing the soil before fertilizing does not necessarily mean tilling, adding compost, or applying multiple amendments. It means understanding the condition of the soil first and addressing the factors that may affect how well plants can use the nutrients being supplied.

Start With a Soil Test

A soil test is one of the most useful tools for making informed fertilizer decisions.

Depending on the laboratory and test package, a soil test may provide information about:

- Soil pH
- Phosphorus
- Potassium
- Organic matter
- Soil texture
- Soluble salts
- Other nutrients or soil characteristics

A soil test does not measure every aspect of soil health, but it provides an important baseline.

Most importantly, it can help identify nutrients that are already present in sufficient amounts.

Applying fertilizer without knowing existing nutrient levels can lead to unnecessary applications, nutrient imbalances, or wasted product.

The objective is not to add nutrients simply because fertilizer is available.

The objective is to supply nutrients that the crop or plant actually needs.

Check Soil pH

Soil pH influences nutrient availability.

Even when nutrients are present in the soil, plants may have difficulty accessing them if the soil is excessively acidic or alkaline.

Different crops have different preferred pH ranges, so there is no single ideal pH for every growing situation.

Before attempting to change soil pH:

1. Test the soil.
2. Identify the pH requirements of the crop being grown.
3. Follow appropriate recommendations for the soil type and production system.

Adding lime, sulfur, or other pH-adjusting materials without testing can create new problems rather than solve existing ones.

The goal is not simply to make soil more acidic or more alkaline. It is to establish conditions appropriate for the plants being grown.

Look for Compaction

Roots need space to grow.

Compacted soil has reduced pore space, which can restrict:

- Root development
- Water infiltration
- Drainage
- Air movement
- Biological activity

Compaction can occur from repeated equipment traffic, foot traffic, working wet soil, livestock activity, or other forms of pressure.

Before fertilizing, examine whether water readily enters the soil and whether roots can penetrate the root zone.

If compaction is present, simply adding fertilizer may not correct the underlying problem.

The appropriate solution depends on the soil and growing system. In some situations, mechanical loosening may be appropriate. In others, reducing traffic, maintaining living roots, increasing organic inputs, or changing management practices may be more effective over time.

Avoid working soil when it is excessively wet, because wet soils can be particularly vulnerable to compaction.

Evaluate Drainage and Moisture

Plants need both water and oxygen around their roots.

Soil that remains saturated for extended periods can limit oxygen in the root zone. Soil that dries too rapidly may not retain enough moisture for consistent plant growth.

Before fertilizing, consider:

- Does water soak into the soil or run across the surface?
- Does the soil remain saturated after irrigation or rainfall?
- Does it dry excessively between irrigations?
- Are there compacted layers that interfere with drainage?
- Is irrigation reaching the active root zone?

Good nutrient management and good water management are closely connected.

Nutrients move through soil water, and root uptake depends on a functioning root system. Improving infiltration, drainage, or irrigation practices may therefore improve plant performance even before fertilizer rates are changed.

Consider Organic Matter

Organic matter contributes to several important soil functions.

It can support:

- Soil aggregation
- Nutrient cycling
- Water retention

- Nutrient retention
- Biological activity
- Improved soil structure

If soil organic matter is low, compost or other appropriate organic materials may be useful as part of a long-term soil-management program.

However, organic amendments should not automatically be added to every soil.

Compost and manure can also contain substantial quantities of nutrients. Repeated applications can cause phosphorus, salts, or other nutrients to accumulate beyond desirable levels.

That is another reason soil testing should come before amendment.

Organic matter is valuable, but more is not always better.

Do Not Automatically Till the Soil

Preparing soil does not always require tillage.

Tillage can be useful in certain production systems for incorporating amendments, managing residue, preparing a seedbed, or addressing specific soil conditions.

But unnecessary soil disturbance can also disrupt soil structure and biological activity.

The appropriate level of soil disturbance depends on the crop, soil, equipment, and management system.

Before tilling simply because fertilizer is being applied, determine whether incorporation is actually required by the product, planting system, or soil condition.

Follow the fertilizer label and use the least disruptive method that accomplishes the management objective.

Remove the Obstacles Before Adding More Nutrients

Poor plant performance does not always indicate a fertilizer deficiency.

Symptoms that appear to be nutrient related can sometimes be associated with:

- Improper pH
- Compaction

- Poor drainage
- Drought stress
- Excessive moisture
- Root damage
- Salinity
- Disease
- Other environmental conditions

Adding fertilizer without identifying the underlying issue may provide little benefit and can potentially create additional nutrient problems.

Before increasing fertilizer rates, ask a more basic question:

Is the soil environment allowing the plant to use the nutrients that are already present?

Match the Fertilizer to the Need

Once the soil has been evaluated, fertilizer selection becomes much more straightforward.

Consider:

- Soil-test results
- Crop nutrient requirements
- Growth stage
- Existing fertility
- Fertilizer analysis
- Nutrient source
- Application method
- Application timing
- Irrigation practices
- Soil conditions

- Product label directions

A high-analysis fertilizer is not automatically the best choice.

The best fertilizer is the one that supplies the nutrients needed by the crop at an appropriate rate and in a form that fits the growing system.

Apply at the Right Time

Timing affects how effectively plants use fertilizer.

Applying nutrients too early can increase the opportunity for losses before plants need them. Applying them too late may reduce their usefulness during important growth stages.

The appropriate timing depends on:

- Crop
- Fertilizer formulation
- Nutrient being applied
- Soil temperature
- Moisture
- Irrigation
- Weather
- Production system

Some fertilizers are incorporated before planting. Others are applied during active growth. Liquid products may be applied through irrigation or other systems when permitted by the label.

The fertilizer label and crop-management recommendations should guide timing decisions.

Water Management Matters After Application

Many fertilizers require adequate soil moisture for nutrients to move into the root zone.

However, excessive irrigation immediately after fertilization can increase the risk of nutrient movement beyond the area where plants can use them.

The objective is to maintain appropriate moisture, not simply apply as much water as possible.

Follow product directions and match irrigation to the soil, crop, weather, and application method.

A Simple Pre-Fertilizing Checklist

Before applying fertilizer, ask:

- Have I tested the soil?
- Do I know the soil pH?
- Do I know which nutrients are actually needed?
- Is the soil compacted?
- Does water infiltrate and drain properly?
- Is the root zone receiving adequate air and moisture?
- Is organic matter appropriate for this soil?
- Am I adding amendments because they are needed, or simply because they are available?
- Does the fertilizer analysis match the crop requirement?
- Is the application rate correct?
- Is the timing appropriate?
- Am I following the product label?

If those questions can be answered confidently, fertilizer has a much better opportunity to perform as intended.

The Bottom Line

Preparing soil before fertilizing is not about performing as many soil-improvement steps as possible.

It is about identifying the conditions that influence nutrient availability and root performance before adding more nutrients.

Start with a soil test.

Understand the pH.

Check soil structure, compaction, moisture, and drainage.

Use organic amendments where they are appropriate.

Then select and apply fertilizer based on what the crop and soil actually require.

Good fertilizer management begins before the fertilizer is applied.

Disclaimer: This material is provided for general educational purposes only. Growing conditions, soil characteristics, crop requirements, application rates, and regulatory requirements vary. Always follow product label directions as well as all governmental and safety regulations or recommendations, and consult appropriate agronomic, regulatory, or crop-management professionals when making site-specific fertilizer or soil-management decisions.

To learn more about BWF Banducci's liquid and dry organic fertilizer products, visit
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