



Columbia Nursery

Soil Testing & pH Guide for Home Gardeners

Columbia Nursery - Northwest Montana

Why Test Your Soil?

Understanding your soil is the first step to successful gardening. Soil pH and nutrient levels affect plant health, root development, and the ability to absorb fertilizers. Even soil rich in nutrients can underperform if the pH is too high or too low.

What is Soil pH?

pH Level	Meaning
Below 7.0	Acidic
7.0	Neutral
Above 7.0	Alkaline

Most vegetables prefer a pH between 6.0 and 7.5. Maintaining a near-neutral pH (6.8–7.2) ensures the best nutrient availability for your plants.

How to Test Your Soil

Home Test Kit:

- Mix a small soil sample with distilled water.
- Use the capsules and color chart provided in the kit.
- Simple, affordable, and good for basic needs.

Lab Testing:

- Professional labs offer detailed soil analysis.
- Recommended for troubleshooting serious garden problems.
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Adjusting Soil pH

Lowering pH (Soil is Too Alkaline):

- Use elemental sulfur.
- Incorporate into the top 6 inches of soil.
- May take several months to a year to take full effect.
- Test soil again after 3–4 months.

Raising pH (Soil is Too Acidic):

- Use lime.



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- Calcitic lime adds calcium.
 - Dolomitic lime adds calcium and magnesium.
 - Finer lime particles work faster.
- Always follow package directions and retest after making changes.

Testing for Nutrients

Nutrient	Purpose
Nitrogen (N)	Leaf growth & green color
Phosphorus (P)	Root, flower & fruit growth
Potassium (K)	Overall plant health

Fertilizers are labeled with N-P-K numbers, such as 7-5-4. These indicate the ratio of nitrogen, phosphorus, and potassium.

- Bone Meal for phosphorus
- Fish Fertilizer for nitrogen
- Wood Ash or Greensand for potassium (use carefully)

Vegetable Soil Preferences

Vegetable	pH Range	Nitrogen (N)	Phosphorus (P)	Potassium (K)
Asparagus	6.0–8.0	Average	Ave to High	Average
Beans	6.0–7.5	Average	Average	Average
Beets	6.0–7.5	Average	Ave to High	Average
Broccoli	6.0–7.0	Average	Average	Average
Carrots	5.5–7.0	Average	Ave to High	Average
Garlic	5.5–8.0	Average	Ave to High	Average
Lettuce	6.0–7.0	Ave to High	Average	Average
Peas	6.0–7.5	Average	Average	Average
Potatoes	4.8–6.5	Average	Ave to High	Average
Tomatoes	5.5–7.5	Average	Average	Average

Tip: Most vegetables do well in slightly acidic to neutral soil.

Helpful Resources

For detailed soil and nutrient information, visit the Montana State University Extension Service at:

<http://store.msuextension.org/search.aspx?keyword=soil+pH>

<https://redmondagriculture.com/products/soil-test-kit>

Need Help?

Stop by Columbia Nursery for soil test kits, pH adjusters, fertilizers, and expert advice. We're happy to help you grow healthier, more productive gardens!