



## Electronic Soil Tester Instructions

### Getting Started

Soil conditions, including pH, can vary within the same garden. Determining the pH of your garden soil will enable you to know which plants will grow best where. Knowing the pH level of your soil will also indicate if acidic or alkaline additives are needed. Vegetables, flowers, shrubs and trees all absorb nutrients more efficiently when soil pH levels are within the prescribed range.

To ensure accuracy of the test results equipment must be thoroughly cleaned.

You will need the following items:

- Burpee's Electronic Soil Tester
- a one gallon (or larger) bucket
- hand trowel
- stirring utensil
- distilled water (available at grocery stores) or rainwater
- pint size or larger plastic or glass jar

### Collecting Soil for Testing

- Confine your soil sampling to a single area in your garden. Remove soil samples from multiple locations within that immediate test area. Place ¼ cupful of soil from each location into a bucket. A final quantity of 2 to 4 cups of soil is enough for testing. Remove all debris including small sticks, organic or foreign matter or stones greater than ¼".

*(Note: Any soil sample that has a dramatically different color than other samples should be excluded and tested separately for best results)*

- Mix the soil in the bucket with the trowel or stirring utensil to create a composite soil sample from all like-locations.

### Testing with the Burpee Electronic Soil Test Meter

- Place 2 to 4 cups of mixed soil from the bucket into a clean jar (at least 3" tall). Make sure that the jar opening is wide enough to accommodate the width of the three probes on the Burpee tester.
- Add enough distilled water or rainwater to fill to the height of the soil. Stir mixture with stirring utensil. Allow to become fully saturated for 15 minutes and pour off excess water. (Note: For the soil tester to respond faster it is best for the soil mixture to be at room temperature)
- Insert metal probes into the muddy soil. The plastic soil tester housing should remain above the mixture.
- Slide the selector switch to the right to test soil pH level. Wait for 2 to 15 minutes (depending on soil temperature). After 2 to 15 minutes the needle will indicate the soil pH level. The gauge ranges from 1 to 9 for pH testing. Values less than 7 are considered acidic and greater than 7 are considered alkaline. Record the pH measurement associated with that area of the garden.
- Next, slide the selector switch to the left to test soil fertility. Wait 2 to 5 minutes. After 2 to 5 minutes the needle will indicate the level of fertility in the soil (TOO LITTLE, IDEAL, TOO MUCH). Record the fertility measurements as above.
- To test additional soil samples the process is repeated. Be sure to clean the jar and other equipment before testing additional soil samples. Wipe the metal probes of the Burpee Soil Tester with a clean, soft cloth before testing additional soil samples or storing.

### Flowers

Name	pH	Name	pH	Name	pH	Name	pH
Ageratum	6.0-7.5	Coleus	6.0-7.0	Godetia	6.0-7.5	Petunia	6.0-7.5
Alyssum	6.0-7.5	Columbine	6.0-7.0	Gypsophyllia	6.0-7.5	Pinks	6.0-7.5
Amaranthus	6.0-6.5	Convolvulus	6.0-8.0	Helianthus	5.0-7.0	Poppy	6.0-7.5
Aster	5.5-7.5	Coreopsis	5.0-6.0	Hollyhock	6.0-7.5	Portulaca	5.5-7.5
Aubrita	6.0-7.5	Cosmos	5.0-8.0	Impatiens	5.5-6.5	Primrose	5.5-6.5
Baby's Breath	6.0-7.5	Cynoglossum	6.0-7.5	Lavender	6.5-7.5	Primula	6.0-7.5
Balloon Flower	6.0-6.5	Daffodil	6.0-6.5	Lobelia	6.5-7.5	Salvia	6.0-7.5
Black-Eyed Susan	5.5-7.5	Dahlia	6.0-7.5	Lupinus	5.5-7.0	Scabiosa	5.0-7.5
Butterfly Bush	4.0-6.0	Delphinium	6.0-7.5	Marigold	5.5-7.0	Snapdragon	5.5-7.0
Calendula	5.5-7.0	Dianthus	6.0-7.5	Morning Glory	6.0-7.5	Stock	6.0-7.5
Canterbury Bells	7.0-7.5	Euphorbia	6.0-7.0	Myosotis	6.0-7.0	Sunflower	5.0-7.0
Cardinal Flower	4.0-6.0	Forget-Me-Nots	6.0-7.0	Nasturtium	5.5-7.5	Sweet Pea	6.0-7.5
Carnation	6.0-7.5	Foxglove	6.0-7.5	Nicotiana	5.5-6.5	Sweet William	6.0-7.5
Celosia	6.0-7.0	Gaillardia	6.0-7.5	Pansy	5.5-7.0	Tulip	6.0-7.0
Centaurea	5.0-6.5	Gazania	5.5-7.0	Passion Flower	6.0-8.0	Viola	5.5-6.5
Chrysanthemum	6.0-7.0	Geranium	6.0-8.0	Penstemon	5.5-7.0	Wallflower	5.5-7.5
Clarkia	6.0-6.5	Geum	6.0-7.5	Periwinkle	6.0-7.5	Zinnia	5.5-7.5

## Vegetables & Herbs

Name	pH	Name	pH	Name	pH	Name	pH	Name	pH
Basil	5.5-6.5	Cauliflower	5.5-7.5	Kale	6.0-7.5	Parsley	5.0-7.0	Sage	5.5-6.5
Bean	6.0-7.5	Celery	6.0-7.0	Kohlrabi	6.0-7.5	Parsnip	5.5-7.5	Shallot	5.5-7.0
Beet	6.0-7.5	Chicory	5.0-6.5	Leek	6.0-8.0	Pea	6.0-7.5	Spearmint	5.5-7.5
Broccoli	6.0-7.0	Chinese Cabbage	6.0-7.5	Lettuce	6.0-7.0	Pepper	5.5-7.0	Spinach	6.0-7.5
Brussels Sprouts	6.0-7.5	Chives	6.0-7.0	Marjoram	6.0-8.0	Peppermint	6.0-7.5	Thyme	5.5-7.0
Cabbage	6.0-7.5	Corn - Sweet	5.5-7.0	Melon	5.5-6.5	Pumpkin	5.5-7.5	Tomato	5.5-7.5
Cantaloupe	6.5-7.5	Cucumber	5.5-7.5	Mustard	6.0-7.5	Radish	6.0-7.0	Turnip	5.5-7.0
Carrot	5.5-7.0	Fennel	5.0-6.0	Onion	6.0-7.0	Rosemary	5.0-6.0	Watermelon	5.5-6.5

### How to adjust the soil if the pH reading is too low or acidic

- The pH range of most vegetables, annual or perennial plants, trees, and shrubs are from 5.0 to 7.5. Some plants are "acid-loving" and others can tolerate a wide range of pH. Please note it is difficult and takes longer to correct extremely acidic soils. Below is a list of pH ranges for many popular classes.
- To increase the pH level by 1 to make the soil more alkaline: Use 4 pounds of hydrated lime per 100 square feet in sandy soils, 6 pounds in loamy soils and 8 pounds in clay soils or see other lime products at a garden center and follow label directions.

### How to adjust the soil if the pH is too high or alkaline

- If your soil is too alkaline, a quick alternative to using your existing garden beds is to build a raised bed prepared with purchased top soil.
- Easily available materials like composted leaves, leaf mold and peat moss can be used to lower pH. (a few inches deep, worked into the soil is recommended). Applications of sulfur or organic matter are usually used to reduce pH or to make it more acidic. If sulfur is used, it is best to be applied in the spring for desired crops growing in mineral soils. Acidifying soils with organic matter, additions of certain fertilizers or adding sulfur to soils is a very slow chemical reaction and quick changes in soil pH should not be expected. Most fertilizers for "acid loving" plants such as blueberries and azaleas contain ammonium sulfate or sulfur coated urea, good and easy choices for acidifying soils.

To decrease your pH by 1 to make your soil more acidic: Use 1.5 pounds of Iron Sulfate per square feet in sandy soils, 3 pounds in loamy soils and 4 pounds in clay soils. (Or see your local garden center for gypsum and follow the label directions).

### How to adjust the soil if the Fertility Rating is low

- The rating scale on this meter is a function of all the 16 nutrients required for adequate plant growth. It does not express how much or which element is deficient or in excess. If the rating is too low, it is probable that nitrogen, phosphorous or potassium may be involved since they are required/used at the greatest rates. Nitrogen (N) is primarily responsible for producing the vegetation of the plant (leaves, stems, and promotes growth, etc.) It is a key element in the production of proteins and part of the chlorophyll molecule. The phosphorous (P) is a major

constituent to the energy producer to plants. They also play an integral part of seedling & root development. The potassium (K) helps with protein synthesis, helps regulate water inside the plant and aids in growth and resistance to stresses.

- The percentage of N, P & K elements is generally located on the front label of a fertilizer bag. Vegetables, flowers or trees and shrubs generally require a considerable amount of each of these elements and may or may not include other secondary or micronutrients.
- Natural or organic fertilizers may include dried manures, feather meal, dried blood, bone meal, natural elements mined from the earth or extracted from the ocean. Generally the analysis of % N, P & K are much lower than fertilizers that are man-made, however, applied at the correct rate they can be just as effective.
- Rates for specific crops are generally provided on the label of each package and generally recommended based on the amount of nitrogen per given 1000 Sq Ft.
- Over applications of "man-made" fertilizers may burn crops generally due to their high salt content in relation to the soil moisture & root development or age of the plant. In contrast, organic fertilizers generally have lower salt values and rarely burn roots but are slower to release their nutrients to the plant.

### How to adjust the soil with a Fertility Rating of "too much"

- As many of the fertility elements are soluble, it is a general practice to "leach" the fertilizer salts with copious amounts of water. For vegetables, annual or perennial flowers or trees and shrubs that are already planted, this causes a bit of concern on how to leach without causing root damage caused by oxygen depletion. Frequent applications of water means every 3 days for heavier soils and equivalent of 1-2" at a time are common. Allow some drying of the soil before reapplying water. For sandy soils, the ritual may need to be daily with equivalent water rates of 1". This should remove many of the salts from the top 3-6" of soil where most of the feeder roots are located. Reexamine the soil fertility after 1-2 weeks to see if the values have been lowered and respond accordingly. For soils that have not been planted yet (pre-plant), you may irrigate with more water frequently to leach the salts from the soil profile. Preplanning is a must as the leaching should be done prior to planting seedlings or sowing seeds.