

Basic Gardening 101

 Climate

Fresno is in the USDA zone 9 and is a Mediterranean climate zone. There are only five mediterranean climates in the world— the largest region, and the one most of us think of, is the Mediterranean basin. There is also Central Chile, the cape region of South Africa, Southwestern and South Australia, and California—the coastal areas, particularly in the central and southern areas.

When “last frost time” is listed, that is an average of many years when the date of the last frost occurs in the spring. In zone 9, this is around February 15. This is important to know how early you can begin planting plants that are frost tender. When you see a climate zone number followed by “b”, that means the area is about 5 degrees warmer. For example, Fresno is in zone 9. Some areas are zone 9b which means temperatures are about 5 degrees warmer.

Soil

Garden experts nearly all agree that soil is the most important component in a healthy garden. Knowing the texture of the soil on your property is important. Soil texture definition –“The relative proportions of sand, silt, and clay in a soil as expressed by a percent in weight, the coarseness or fineness of a soil” (California Master Gardener Handbook). When one refers to a type of soil in the garden, they are most likely asking if your soil is light, containing a lot of sand, or heavy, containing a high percentage of clay. The soil texture determines the soil characteristics that affect plant growth, e.g., water-holding capacity, permeability, and soil workability. Water holding capacity is the ability of a soil to retain water.

Light soil refers to soil with a high proportion of sand, which makes it easy to work with and drains quickly but can dry out quickly as well. Add organic matter, such as compost or mulch. If you have a sandy soil minerals and fertilizer leached through faster.

Heavy soil has a heavy clay content. This makes it difficult to work with and prone to holding too much water, or waterlogging. Add compost, mulch, or grow cover crops to add organic matter to the soil.

Three Basic Textures of Soil:

1. Sandy-Large molecules or particles
2. Sandy Loam
3. Clay-Tiny molecules or particles

 How do the above TEXTURES of soil affect water needs?

Good soil, ideal soil, contains around 40% sand, 40% silt, and 20% clay.

Silt definition – The very small particles of sand, soil, or mud that are carried by flowing water and settle at the bottom of a river, lake, or other body of water.

Potting Mix – Contains no actual soil. It is a blend of materials like peat moss and perlite and used for good drainage.

Potting Soil – This is soil that is denser than potting mix and can contain other materials, e.g., compost, peat moss, perlite, or vermiculite. Potting soil is not sterile. In the nursery a bag of potting soil will most likely be called garden soil.

Just in case you’re interested…The difference between vermiculite and perlite. Vermiculite has a water-holding capacity. Perlite is added to soil but has no water retention capacity.

Perlite can be used to keep plants moist; Perlite is used in succulents when moisture retention is not important. Too much vermiculite can rot plants by keeping them too wet. Vermiculite is an ore and is found in 4 sources with three of them being in the US—Montana, Virginia, and South Carolina.

Soil texture test to do at home

You will need a quart jar, soil sample, colander or sieve, 1 tablespoon Borax, and water.

* Using a mesh sieve or old colander, sift the soil to remove any debris, rocks, and large organic matter (leaves, sticks, roots, etc.).
* Fill the jar ⅓ full of the sieved soil.
* Fill the remainder of the jar with clean water leaving some space at the top.
* Add 1 tablespoon of Calgon to the soil/water mixture and shake for 5 minutes.

Allow jar to sit undisturbed for 24 hours. At that time the soil will be clearly separated. The large sand particles will be on the bottom, smaller sand particles (if there are any) will be a layer on coarser sand. Next will be silt, and finally the smallest particle soil will be the clay. Ideal soil contains around 40% sand, 40% silt, and 20% clay.

pH

Acidity and alkalinity range from 0 to 14, with 7 being neutral.

Why should the gardener be concerned about the soil’s pH ? The pH determines how readily plants can absorb the essential nutrients. Most garden plants thrive in a slightly acidic to neutral pH range, typically between 6.0 and 7.0. When the pH level is too high or too low some nutrients become less available even though they may be present in the soil. Some plants prefer a slightly acidic soil, such as azaleas or blueberries. Roses, for example, prefer a neutral pH.

An interesting fact when testing your soil’s pH—A pH of 6 is ten times more acidic than a pH of 7.

Soil testing laboratories:

https://ucanr.edu/county-office/merced-county-cooperative-extension/soil-testing-laboratories-fresno-madera-merced

## Fertilizers

Macro Nutrients in Soil:

1. Nitrogen(N) –This nutrient is what makes for the healthy GREEN in plants or grass. You may buy nitrogen in the form of nitrate or ammonium or both. Nitrogen in nitrate form is water soluble and fast acting but is easily leached away by irrigation. The ammonium form of nitrogen is released more slowly and lasts longer in the soil because it takes a while to break down into a nitrate form.This is important to know if you are having company in three days and want your grass to be green. Purchase a fertilizer high in nitrogen whose form of is that of nitrate.
2. Phosphorus (P) expressed as phosphate. This nutrient is responsible for healthy blooms, fruiting and strong root growth.
3. Potassium (K)—usually listed as potash. Symptoms of deficiency might include poor fruiting or flowering, curled leaves, weak stems or roots and a look of dehydration. “No matter how much I water my lawn it still looks dull and dead-looking. I have applied Ammonium Sulfate and nothing happens.” This could be a symptom of “K” (potassium) deficiency, try a fertilizer high in potash or a COMPLETE fertilizer.

What is a “complete” fertilizer? It contains all three primary micronutrients, for example, NPK 10-10-10.

Controlled-release fertilizer, e.g., Osmocote

Water-soluble inorganic fertilizer that has been modified to allow for controlled release of nutrients over time. The fertilizer materials are encapsulated in a plastic or polymer coating and nutrients are released over time; the nature of the amount of time depends on the type of coating that is used, contact with moisture, and temperature. Typically, as temperatures get warmer the release rate increases.

Organic vs. inorganic fertilizers

Organic fertilizers are materials that are derived from living materials. Examples of organic fertilizers include animal manures, composted materials, and plant residues. Organic fertilizers are usually considered to be "slow release" fertilizers because many of the nutrients must be broken down by soil microbes before they become available for plant uptake.

Inorganic fertilizers are materials that are mined or synthesized from non-living materials. Examples of inorganic fertilizers include ammonium nitrate, concentrated superphosphate, and potassium chloride. Most inorganic fertilizers are considered quick-release or water soluble

Fertilizer grade: The percentage (by weight) of nutrients in the fertilizer. For example, a 10-5-5 fertilizer has 10% N, 5% phosphorus, and 5% potassium. In a 50 lb. bag of 10-5-5, there are 5 lbs. of Nitrogen , 2.5 lbs. of Phosphorus, and 2.5 lbs. potassium.

## Diagnosing Plant Problems

While learning to do your own diagnosis the following are the steps to use in doing so. If help is needed from nursery staff, the Master Gardener Help Line, or another source, it is important to have the information available to be helped in the diagnosis of a problem. The five steps in diagnosing a plant problem (as listed in the California Master Gardener Handbook) are listed below:

1. Identify the plant – what is the common and scientific name of the plant?
2. Define the problem by describing the symptoms. Most symptoms fall into the category below:
* The plant has died or looks as though it’s dying or diseased
* It looks abnormal. It is yellow (chlorotic), leaves wrinkled, spotty, chewed, etc.
* It is growing poorly
* Wilting
* Has galls
* There are spots on leaves
* It is blighted (typically fungi, such as mildews, and rusts)
* Has a powdery, cloudy look
* Has root rot (literally)
	1. Collect information – soil situation, irrigation, weather, age of plant affected
	2. Look for patterns – e.g., does the problem affect more than one plant, more than one area
	3. Formulate a tentative diagnosis – this could mean narrowing it down to two or three possible answers

 Plant Propagation

 Plant propagation Methods

1. Seed propagation
2. Cuttings, including stem, leaf, or root
3. Layering
4. Division
5. Grafting – Can only be grafted into a tree of the same family. Best done in spring or in fall when bark is easily separated from the wood. It should be timed to be early enough so that warm weather will help ensure a good bud union, yet late enough so that the bud will not begin to grow, and callus will not grow over the bud itself. Citrus budded or grafted in the fall must be protected from frost. Avocados are best grafted in the spring when the bark is easily separated from the wood. (UCANR)

## Weed Control

 To begin with, ask some questions.

1. What is the weed?
2. What is its life cycle?
	1. Annual weeds - go from seed to set seed in one year. The objective is to prevent seed production and deplete seed reserves.
	2. Biennial - 2-year life cycle. First year it develops vegetative growth and a root system. The second year it flowers.
	3. Perennial – lives longer than 2 years and normally has a more extensive root system. The objective is to destroy underground vegetative reproductive organs, or root system.