



PLANT THEM RIGHT

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INTRODUCTION

Buying beautiful, well-grown plants is a great way to start your future landscape and orchard. The next step to your success lies with the correct planting procedure.

Let's start with your soil, as this is the basic foundation of your plant's future. Each plant likes certain soil characteristics. It helps to have a basic understanding of what this plant would enjoy if it were growing in its native habitat, so we can duplicate these conditions in our own yards. Plants that love wet mucky soils can be planted in low lying, wet areas or the soil can be amended with organic matter and watering can be more frequent. Plants that originate in drier climates may be accommodated by picking a higher, dryer location, planting on a mound with less organic matter in a sandy soil, or amending a clay soil with sand or coarse organic matter to loosen it up. Avoid over watering these plants to keep them happy. Soil pH is also very important to the success of your plant. Plants that originate in acidic or low pH soils love soil with higher iron content. Plants that like alkaline or high pH soils enjoy calcium. These two elements as well as other micronutrients are absorbed more efficiently when the soil pH is in the correct range. Put a plant in soil with the wrong characteristics and you'll probably stunt or even kill your treasured flowers and fruits.

Fortunately you don't have to be a Rocket Scientist or a Master Gardener to get it right. A few simple steps and you'll have gone a long way to ensure great results. Here we'll focus on 4 issues: (1) soil acidity and how to adjust it, (2) soil amendments, (3) proper planting procedures, and (4) choosing the right fertilizer. Let's get gardening!

SOIL ACIDITY AND HOW TO ADJUST IT

Soils vary in acidity. Technically, soil acidity is measured by pH. The pH scale ranges from 0 to 14. In terms of soils, a pH of 6.0 is neutral, a pH less than 6.0 is termed **Acid**, and pH of more than 6.0 is termed **Alkaline**. You may also have heard the terms **Sweet** for Alkaline soils and **Sour** for Acid soils. The growing range for most plants is 4.2 - 6.7.

The best way to determine your soil acidity is to have it tested. Here in Florida we are fortunate that the Agricultural Extension Service in each county will test soils for pH and/or major

nutrients (cost is less than \$10, check the phone book for contacts). For best results collect several small samples of soil from where you are planning to garden and mix them thoroughly. We highly recommend soil testing as the best way to determine what your soil needs to give you the best results. Soil should be retested every few years and pH adjusted as needed.

Based on the soil test, soil pH may need to be adjusted. Generally pH is raised using **agricultural lime** and lowered with **sulfur** or **iron sulfate**. The amount added depends on the amount that pH needs to be lowered or raised for the plants you wish to grow. Read and follow label directions. Sometimes **aluminum sulfate** is used, but we strongly recommend against it. Aluminum sulfate is toxic to blueberries and some other plants. At the end of this handout there is a table of optimal pH ranges for common fruit and ornamental plants.

SOIL AMENDMENTS

We add a brief discussion of soil amendments here, because some readily available amendments may affect soil acidity. Most plants will need additions of organic matter when they are put in the ground. Organic matter increases the water holding capacity of the soil and releases nutrients as it decays. Adding organic matter is one of the best things you can do for your soil. On sandy soils, water runs right through the soil without organic matter. On clay soils, organic matter opens up the soil and increases drainage. All soils are improved by adding organic matter!!

However, some types of organic matter affect soil acidity. In general, pine bark, pine needles, oak leaves and peat moss are acid and so will tend to lower soil pH. Mushroom compost and most rotted animal manures will do marvelous things for a garden, but these are alkaline and will tend to raise soil pH. At the Nursery we're sometimes asked why blueberries and gardenias turn yellow and drop their leaves. After questioning, we've often learned that the well-intentioned gardener has added mushroom compost to these plants that require strongly acid soils. This will injure and possibly kill the plants.

So if we plant an acid lover with alkaline soil amendments, it won't grow well, and vice versa. Choose acidic soil amendments for acid lovers and alkaline to neutral soil amendments for alkaline lovers. But, by all means, add organic matter when you plant your vegetables, fruits and flowers.

PLANTING PROCEDURES

Dig a planting hole approximately three times the width of the pot and the same depth as the root ball. In sandy soils, the larger the hole the better. Enrich the planting hole with organic matter mixed with soil dug from the hole (approximately 50:50 mix). Select the organic matter based on the pH requirements of the plant. **For acid lovers, DO NOT add mushroom compost or manure to the planting hole, or use it as mulch**

Remove the plant from the pot and place in the planting hole. Loosen the root ball gently. On root-bound plants, make vertical cuts $\frac{1}{2}$ inch deep into the root zone and then loosen the root ball. To avoid burying too deep, make sure plant is positioned with the top most roots at the soil line. Build a mound of the 50/50 mix in the bottom of the hole to correct the height of the plant in the hole. Place the plant on the mound and spread the plant's roots over the hill in their natural growth habit. Fill the planting hole with the mix of soil and organic matter, using a water hose to wash the mix into the plant's root system; gently tamp it in. Repeat with a new layer until the hole is filled. Water thoroughly to settle the roots and eliminate air pockets. If desired, construct a water basin around the base of the tree approximately 36 inches in diameter. At this time it would be a good idea to mulch a 3 foot area around the plant to discourage future weeds.

STAKING YOUNG TREES

Large and tall trees require staking for the first 6 months or until the roots become established. It is best to tie padded ropes of wire from the trunk to stakes driven into the ground around the tree. This method provides the best protection from strong winds.

CHOOSING THE RIGHT FERTILIZER

Fertilizers come in many forms. We recommend organic slow-release fertilizers with micronutrients. Organic fertilizers are composed of natural ingredients like dehydrated manures, crab meal and kelp meal. These products are better solutions for feeding our plants because they are first digested by soil bacteria which your plant then eats. This helps build healthier soils, improves root growth and feeds roots gently while also producing less soluble nitrates and other unhealthy chemicals that leach into our aquifers, streams and estuaries. If you feel the need to give your plants a boost during the growing season with a quicker release type fertilizer, use fish emulsion or a tea made from mushroom compost or your own home made compost.

We use and recommend the Espoma line of organic fertilizers. When not available look for an organic mix that contains an analyst of roughly the same combination as the blends we recommend. Make sure they contain iron, zinc, manganese, magnesium, molybdenum, copper and boron. These minor elements are very important to plants and most soils are low in these elements. Fertilizer labels usually have 3 numbers (e.g. 10-10-10). The first number is the amount of Nitrogen in the mix, the second Phosphorus and the third Potassium (often abbreviated by the symbols N-P-K). Lime lovers (plants that grow in the pH range of approximately 5.5-7.0) require an organic fertilizer like Espoma Flower Tone 3-4-5 or Citrus Tone 5-2-6. Acid lovers (plants that grow in the pH range of approximately 4.2-5.5) require an organic fertilizer like Espoma Holly Tone 4-3-4 or Citrus Tone 5-2-6. Vegetable gardens and flowering perennials also like Espoma Flower Tone or Garden Tone. Some plants like palms and bananas require special mixes.

Application rates vary according to type and age of plant, so read the instructions on the bag and fertilize accordingly. Be sure to spread the fertilizer evenly under the entire canopy of the plant avoiding a 5-inch area around the stem or trunk. Water or rake in. A table at the end of this handout summarizes the correct fertilizers for many plant types and approximate application times. Stand back and watch them grow!

WATERING

The first year is a critical time for the establishment of a new plant. Water thoroughly twice a week on light soils and once a week on clay soils. Soak the entire root system deeply - this usually takes 40-50 minutes. Plants should receive at least 1 inch of water each week for best growth. Water regularly, especially during dry periods.

MULCHING YOUR PLANTS

Mulching has so many benefits. It conserves the plant's moisture, keeps the soil cooler and saves the water you do put on your plant. Mulches also build the organic matter in the soil and increase the density of soil bacteria that use the fertilizer you applied. Here again choosing the right mulch for an acid or alkaline plant is important. Pine and hardwood barks, most leaves and pine needles are mulches that acid loving plants enjoy. Mushroom compost or rotted animal manure mixed with these acidic mulches sweetens the mix and satisfies the lime lovers.

The Right Fertilizer and When to Apply It				
Plant Type	Species	pH Range of Soil	Suggested Fertilizer	Time to Fertilize
Fruit and Nuts	Apple, Avocado, Black Walnut, Blackberry, Elderberry, Fig, Goumi, Grape, Jujuba, Kiwi, Loquat, Mulberry, Nectarine, Olive, Peach, Pear, Pecan, Persimmon, Pineapple Guava, Plum, Pomegranate, Quince, Raspberry	6.0-6.5	Citrus Tone	February, May, July, but DO NOT fertilize fruiting persimmons in July
	Banana	5.0-7.0	Flower Tone and 20-0-50	Flower Tone in February Then 20-0-50 monthly
	Blueberry	4.2-5.5	Holly Tone	February, May, July
	Citrus (cold hardy rootstock - trifoliates)	4.2-5.5	Citrus Tone	February, May, July
	Citrus (Container), Pineapple	4.5-5.5	Osmacote	Every 2 months
	Chestnut, Mayhaw, PawPaw	4.2-5.5	Holly Tone	February, May, July
	Papaya	4.5-5.5	Flower Tone	Monthly, March to frost
Flowering Shrubs	Azalea, Gardenia, Tea Olive	4.2-6.0	Holly Tone	February, May, July
	Camellia	4.2-5.5	Holly Tone	February, May, July
	Hydrangea	5.2-6.2	Citrus Tone	February, May, July
	Banana Shrub, Vitex, Hawthorn, Spirea	6.0-6.5	Citrus Tone	February, May, July
	Roses	6.0-6.5	Citrus Tone	February, May, July
	Red Anise, Florida Anise	5.5-6.0	Holly Tone	February, May, July
	Loropetalum	4.5-6.0	Holly Tone	February, May, July
	Oleander	6.0-7.0	Citrus Tone	February, May, July
	Crepe Myrtle	5.5-6.5	Citrus Tone	February, May, July
	Abelia	5.0-6.5	Citrus Tone	February, May, July
Flowering Trees	Flowering Cherry, Crabapple, Plum, Pear and Quince	6.0-6.5	Citrus Tone	February, May, July
	Dogwood, Redbud, Tulip Poplar	5.5-6.0	Holly Tone	February, May, July
	Native and Japanese Magnolia	4.5-5.5	Holly Tone	February, May, July
Evergreen Shrubs	Cedars, Italian Cypress, Juniper	4.5-6.0	Holly Tone	February, May, July
	Holly (<i>Ilex</i> spp.)-Burford, Chinese, Carissa, Dahoon, Yaupon	4.5-6.0	Holly Tone	February, May, July
	Viburnum, Ligustrum	6.0-6.5	Citrus Tone	February, May, July
	Pittosporum, Podocarpus, Silverthorn, Ocala Anise, Boxwood	5.5-6.5	CitrusTone	February, May, July
Palms and cycads	Pindo, Date, Washingtonia, Windmill, Sago	5.0-6.0	Palm Tone	February, May, July
	Dioon, Coontie	5.0-6.0	Palm Tone	February, May, July
Trees	Sycamore, Drake Elm	6.0-6.5	Citrus Tone	February, May, July
	Willow, Chinese Pistache	5.5-6.5	Citrus Tone	February, May, July
	Oak	4.5-6.5	Holly Tone	February, May, July
Ferns	Maidenhair	6.0-6.5	Flower Tone	February, May, July
	All Other Ferns	4.5-5.5	Holly Tone	February, May, July
Herbs	Bay Leaf	4.5-5.5	Holly Tone	February, May, July
	All other herbs	6.0-6.5	Flower Tone	February, May, July
Vegetables	All	6.0-6.5	Flower Tone	Each season
Perennial Flowers and Bulbs	Ginger Lily, Peacock Ginger, Spiral Ginger, Angel Trumpet, Datura, Crinum, Agapanthus	6.0-6.5	Flower Tone	February, May, July
	Daylily	5.5-6.5	Flower Tone	February, May, July
	Iris (All)	4.5-6.0	Holly Tone	February, May, July
	All Other Perennials	6.0-6.5	Flower Tone	February, May, July
Miscellaneous	Bamboo, Liriope, Elephant Ear	6.0-6.5	Flower Tone	February, May, July
	Papyrus	4.5-6.5	Flower Tone	February, May, July