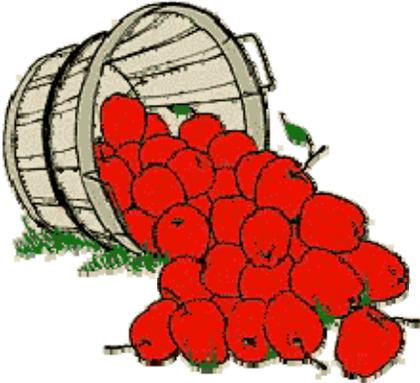


HOME FRUIT PRODUCTION - APPLES

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Adapted from the publication "*Home Garden Fruit Production - Apples*" by Rob Crasweller, Cooperative Extension Service, The Pennsylvania State University.

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Apples are a popular home-grown fruit that can be produced successfully in most areas of the state. The keys to producing quality fruit in a home orchard are proper and timely care of the trees and variety selection. If you are unwilling to maintain the trees and fruit, then you should not plant them. This publication offers the amateur fruit grower some advice on the proper selection and care of apple trees.

Site and Soil Requirements

Plentiful sunlight is a key to maximizing fruit production. Choose an area in your landscape that is in the sun most or all of the day. Otherwise, expect reduced performance from the trees.

Early morning sun is particularly important to dry dew from the plants, thereby reducing the incidence of diseases.

Good drainage is a more important consideration than soil fertility. Avoid soils and sites that are not well drained. Poor drainage would be expected in an area where water stands for more than 24 hours after a rain. In these areas, roots will not receive enough oxygen and will die, resulting in stunted growth and eventual death of the tree. If such conditions exist, planting on a raised terrace will help. In areas with alkaline soils, cotton root rot is a severe problem for which there is no control at this time. If your landscape has a history of losing plants to this organism, avoid planting apples because they are very sensitive to it.

Purchasing Trees

The old adage "you get what you pay for" is an important consideration when buying apple trees. Bargain plants may not be healthy or may be a variety not adapted to your area. Buy only trees of recommended varieties from a reliable source.

Remember the following points when purchasing apple trees.

- A healthy 1-year-old whip, approximately 2- to 3-feet tall with a 1/2-inch diameter trunk and a good root system, is preferred.
- A small tree with a good root system is more desirable than a large tree with a poor root system.
- Trees that are 2 years old or older are often not as good as 1 year old trees. Older trees frequently lack sufficient buds on the lower portion of the trunk to develop a good framework. If older trees are purchased, cut them back to force out buds lower on the main trunk.
- Do not purchase trees that appear stunted, poorly grown, diseased or insect injured.
- Closely check labels to make sure the selection is the desired variety and rootstock; it is critical that the rootstock be specified, otherwise one may get a seedling rootstock which is very slow to bear.
- Do not purchase dried, shriveled plants even at discount prices.

Varieties

Many of the 6,000 named apple varieties have given way to superior tasting varieties. Let's face it...only 3 varieties do well in Houston. So, those are the only ones we are going to talk about. (This is the part we changed from the original version.)

Early to Mid-June

Anna – 200 to 300 chill hours. Medium-size light greenish-yellow with a slight red blush. Sweet, slightly tart, crisp, creamy white flesh with a good flavor. Noted for heavy production. Plant with Dorsett Golden for pollination.

Dorsett Golden – 250 chill hours. Medium to large, yellow skin with an orange-red blush. Firm, smooth, crisp flesh with a sweet-tart flavor. Pollinator for Anna.

Ein Shemer– 350 chill hours. Large, Golden Delicious type with a crisp, tart, good quality flesh. Bears young and very productive. Self fertile, ripens mid to late June to early July, after Anna.

Standard Trees versus Dwarf Trees

The two dominating influences on tree size are the rootstock and the type of strain used (spur or nonspur). Other factors that influence ultimate tree size include general care, variety, soil type, earliness of fruiting and time and severity of pruning.

Apple tree size as influenced by rootstocks is generally divided into three categories: standard, semidwarf and dwarf. Standard trees are propagated on seedling rootstock and produce large trees that may grow 30 feet tall.

Semidwarf trees are propagated on one of the clonal (vegetatively propagated) rootstocks that produce trees about three-fourths the size of standard trees if both are grown under similar circumstances. The most common semidwarf rootstocks used for apples are M 7 (or M 7a), MM 106 and MM 111. Trees on M 7 produce the smallest trees while trees on MM 106 produce the earliest bearing trees. The MM 106 and MM 111 rootstocks produce the larger semidwarf trees.

The interstem tree, a different type of semidwarf rootstock, may be available from certain nurseries. They have a small section of M 9 grafted between an understock, such as MM 111 or MM 106, and the variety. These trees are slightly larger than dwarf trees but smaller than the semidwarf. Because of the extra propagation needed, interstem trees are the most expensive. Plant these trees with the bottom of the interstem just above the soil line.

Trees on semidwarf and dwarf rootstocks are ideally suited for home fruit production. Although more expensive to purchase, smaller trees are easier to prune, spray and harvest and they produce fruit at an earlier age than do full-sized trees. Dwarf trees will be about 30 to 40 percent as large as standard trees and require support by either a trellis or a post. The most common dwarf rootstock is M 9.

Pollination

Apple varieties require pollen from another variety to set fruit; therefore, plant two or more varieties with overlapping bloom periods. Some varieties bear heavy crops when pollinated by another pollen-producing variety but do not produce good pollen themselves. Plant at least two of the varieties which are recommended for your area of the state.

Soil Preparation and Planting

When fruit trees arrive from the nursery, open the bundles immediately and inspect for damage and general condition of the trees. Soak the roots in water 1/2 to 1 hour before planting. Plant trees while still dormant in the early spring if the soil is not too wet.

Thoroughly prepare the soil with deep cultivation, either by hand or with a rototiller before planting. If this is not possible, pull out the grass and weeds in a 3-foot circle around the tree once they green up in the spring. Glyphosate herbicide is an excellent product to use. One must not allow the product to contact the foliage on the tree.

In planting, dig holes large enough to receive the roots freely without cramping or bending from their natural position. Cut off all broken or mutilated parts of roots with pruning shears. Set the plants with the graft or bud union no more than 1-inch above the soil line (Figure 1). Work soil in and around the roots. When the hole is half filled, firm the soil with your feet. Finish filling the hole and again pack the soil firmly. Do not leave a large depression around the tree. Also, do not place fertilizer in the planting hole or fertilize immediately after planting.

After planting, apply sufficient water to thoroughly soak the soil in the area of the tree roots. This watering brings the soil into closer contact with all sides of the roots and eliminates air pockets around the roots.

Pruning and Training

The day you plant your trees is the day you begin to prune and train for future production. Neglect results in poor growth and delayed fruiting.

Pruning a young tree controls its shape by developing a strong, well-balanced framework of scaffold branches. Remove or cut back unwanted branches early to avoid the necessity of large cuts in later years. The currently preferred method of pruning and training nontrellised trees is the central leader system.

Pruning in late winter consists of removing undesirable limbs as well as tipping terminals to encourage branching. Summer training is most beneficial if done in early June.

First Growing Season

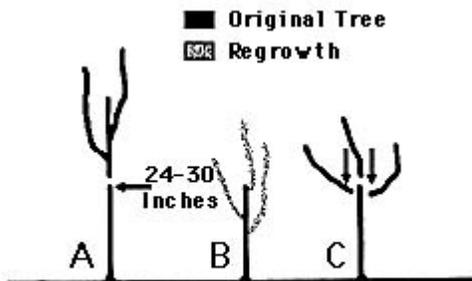


Figure 2. Pruning at planting (A), resulting regrowth (B) and location of clothespin placement (C).

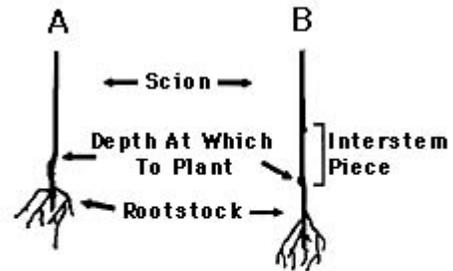


Figure 1. Planting depth is important in establishing new apple trees. If an interstem tree is planted, place the base of the interstem just underground. Trees without interstems should not have their graft union buried.

Figure 2A shows the height to which the tree should be cut back at planting. Heading back the tree to this height brings the top and the roots back into balance and causes buds just below the cut to grow and form scaffold branches (Figure 2B).

Begin training the tree when 2 to 3-inches of growth are evident. Position wooden spring-type clothespins between the main trunk or branch and the new succulent growth (Figure 2C). The clothespins force the new growth outward and upward and form the strong crotch angles needed to support the fruit load in years to come. Allow the most vigorous upright branch to continue growing straight up and become the central leader.

1 Year Old Tree

A number of branches will develop during the first growing season. If they are clothespinned they will form good crotch angles. The objective now is to develop a strong central leader and framework of scaffold branches. Figure 3 illustrates what the tree might look like before and after pruning done in the winter following planting. The objective is to leave only four or five main scaffold branches, spaced around the tree. When viewed from above, the tree should present a branch arrangement similar to that shown in the insert in Figure 3. Always prune the ends of the scaffold branches so they are below the end of the central leader and head the central leader back by one-fourth to one-half in length each year.

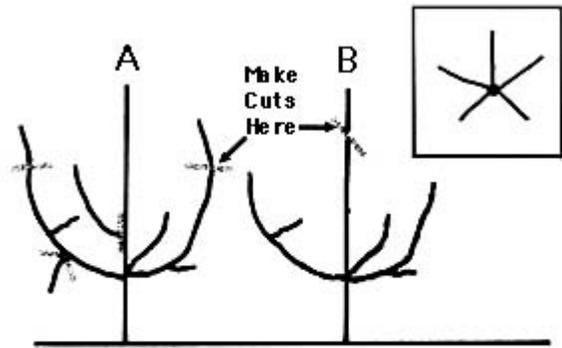


Figure 3. Pruning done during the first winter after planting: before pruning and with cuts marked (A) and after pruning (B).

Special note: Occasionally a tree does not grow as well as it should during the first year. In this case, prune the tree back to a whip and start over again. Fruiting will be delayed a year, but it will be a much more manageable tree.

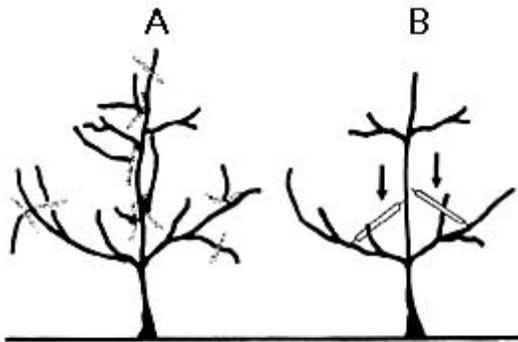


Figure 4. Two-year-old tree before (A) and after pruning (B). Note the placement of the spreaders in the tree.

produce vigorous suckers along the topside of the branch. Leave spreaders in place for 1 to 2 years while the branch stiffens. Figure 4 illustrates a 2 year old tree before and after pruning; the arrows indicate spreaders.

Always spread the tree before pruning. The pruning consists of entirely removing undesirable upright limbs and reducing the length of new shoot growth by one-fourth.

Succeeding Years

Continue to head back new terminal growth by one-fourth each year and remove other upright limbs. Remove broken or diseased limbs. Always maintain the central leader as the highest point on the tree and keep the ends of the primary and secondary scaffolds below the top of the tree. Prune the trees every year in late winter (February or March).

Fertilization

Apple trees are generally fertilized with nitrogen each year. In fact that is the only fertilizer most apple trees will need, especially if the soil pH is above 7.8. If your soil pH is between 6 and 7.5, or if your soil test indicates you need P or K, your first fertilizer application can be a 3-1-2 ratio fertilizer such as 15-5-10, otherwise just use nitrogen; usually ammonium sulfate.

Second Growing Season

During the second growing season, develop a second layer of scaffolds 24 to 36-inches above those established the year before. Be sure to clothespin the second level to develop wide crotch angles. Figure 4 illustrates a properly trained apple tree late in the season.

2 Year Old Tree

The use of limb spreaders encourages earlier fruit production, better tree shape, stronger crotch angles and better fruit color. Spreaders can be short pieces of wood with sharpened nails driven into each end or sharpened metal rods. Do not spread limbs below a 60 degree angle from the main trunk. When spread wider, limbs

One month after planting, broadcast 2 cups of Bat Guano over a 2-foot circle around the tree if the tree has made 6-inches of growth. Keep the fertilizer 6-inches away from the trunk and broadcast it evenly over the recommended area. In May and June following planting, broadcast another 2 cups of Bat Guano around the tree.

In early spring of the second season, broadcast 2 cups of Bat Guano fertilizer over a 3-foot circle; again avoid contact with the tree. Repeat this again in April, May, and June. In year three, use 2 cups four times and in year four, 3 cups four times. After 4 years, fertilize the trees as if they were mature.

Mature Trees

Once trees begin to bear fruit, use the length of shoot growth as an indication of whether previously recommended fertilization rates need to be decreased or increased. Growth of 12 to 18-inches per year is ideal for bearing trees. Typically we will use 2 pounds of organic fertilizer per inch of trunk diameter. Hence if the trunk diameter of the tree is 8- inches at 3½ feet off the ground, we would apply 4 lbs of organic fertilizer at bud break and the other 4 lbs in May. However, we only apply the 4 lbs in May if we set a good crop. If the crop set is poor or nonexistent, leave off the second application.

Irrigation

DO NOT WATER YOUR TREE THE 1ST YEAR UNTIL IT STARTS TO GET LEAVES!!!

In most sections of Texas, supplemental water is required for healthy tree growth. Water young trees weekly. Mature trees normally receive adequate moisture in a landscape setting if the lawn or garden area is irrigated. As a general rule of thumb, most fruit plants would like 1- inch of water per week. This can be applied weekly, but never go longer than 3 weeks without water.

Weed Control

Eliminating weed competition around young trees is critical for tree survival and rapid growth. Ideally, keep the soil surface weed-free in an area at least as wide as the limb spread of the tree.

The safest way to do this is with a hoe. However, there are chemicals that do a good job of weed control. However, before using such herbicides all aspects of safety and sprayer calibration should be well understood.

Fruit Thinning

Apple trees grown under favorable conditions will set more fruit than they are capable of successfully carrying to maturity. Removing excess fruit from the tree ensures satisfactory development of color, shape and size of the apples that remain on the tree. Failure to remove excess fruit decreases formation of flower buds for the following year and causes trees to produce a crop only every other year.

The earlier hand thinning is completed, the more effective it will be in achieving the desired results. Midsummer thinning helps improve fruit size and aids formation of next year's flower buds. Most of the flower buds for next year are initiated during a 4-to 6-week period following full bloom. Therefore, thinning should be done before this time.

Remove fruit by hand. Leave one apple per cluster, and space the clusters about every 6-inches. Start at one end of a branch and systematically remove fruit. To remove the fruit without damaging the spur or other apples on the spur, hold the stem between the thumb and forefinger and push the fruit from the stem with the other fingers. This method removes the apple and leaves the stem attached to the spur.

Caution: The insecticide carbaryl or Sevin(TM) can cause thinning if applied shortly after petal fall. Avoid using it during this period. If using a general purpose, home orchard mix, check the label for ingredients.

Harvesting

Harvest time varies with individual tastes and locality. One may consider a fruit ripe while another individual believes it is immature. However, fruit picked too soon does not store well and does not develop full flavor. When picking apples, it is important to avoid injury to the fruit. Remove the apple from the spur by pulling upward and outward while rotating the fruit slightly. On some of the thin, long-stemmed varieties such as Golden Delicious, it is sometimes necessary to firmly place the index finger at the point of attachment on the stem and spur to prevent the spur from breaking. Apples picked with the stem attached to the fruit keep longer.

Disease and Insect Control

The best quality fruit is produced when diseases and insects are controlled. Common apple diseases that should be controlled include Scab, Cedar Apple Rust, Fireblight, Sooty Blotch and Bitter Rot. Damaging insects are Spider Mites, Plum Curculio, Aphids and Coddling Moth. To control fruit tree pests, use one of the home orchard fruit spray mixes that are sold by several companies. Be sure to read and follow all label instructions when applying these or any other pesticide.

Recommended Varieties

The following varieties are recommended for the respective areas of the state (Figure 5):



Figure 5. Apple variety recommendations for Texas.

Zone 1 Jersey Mac, Adina, Gala, Mollie's Delicious, Ozark Gold, Starkrimson Red Delicious, Golden Delicious, Braeburn, Fuji, Granny Smith, Pink Lady

Zone 2 Jersey Mac, Adina, Gala, Mollie's Delicious, Starkrimson Red Delicious, Braeburn, Granny Smith, Pink Lady, Anna, Dorsett Gold

Zone 3 Anna, Dorsett Gold

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