



WEST TEXAS PECAN MANAGEMENT

For Small Orchards and the Home

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Pecans are the most important horticultural crop in the United States that is native to our country. These stately and majestic trees were valued by the Indians and early settlers as a source of food. Within a short 100 years, pecans have vaulted into the position of most treasured nuts grown in the United States. In addition to production of food, pecan trees have been used extensively for landscape purposes. The presence of dense foliage and cool shade enhances the importance of this dual purpose tree. The semi-arid portions of West Texas are particularly suitable to the growth and production of pecans as evidenced by the large native trees found on the banks of creeks and rivers.

Varieties

The influence that variety has in pecan production is tremendous. The ability to bear nuts at an early age (prococity), limb structure, strength of tree, quality, kernel percentage and size of the nuts, and the production record must all be considered when selecting a variety.

In areas of West Texas, located miles from any native pecan trees, pollination also becomes critical in variety selection. The male flowers, or catkins, produce pollen which fertilize the female nutlets located on the terminal ends of the shoots. There are two types of flowering patterns in pecans: those producing pollen first (protandrous), and those producing nutlets first (protogynous). To ensure pollination, both types should be planted.

The following pecan varieties are well adapted for home and small orchard use:

Cheyenne - (protandrous) an excellent quality nut of 51 per pound and 57 percent bright kernels. The trees produce early and heavy. They lack the foliage for a beautiful yard tree but are great pollinators in orchard situations. *Hopi* - (protogynous) a medium size and uniform producer of very high quality kernels. Shelling percent can exceed 60 percent kernels with many halves of light color. The tree, with its abundant leaves, is well suited to West Texas and is a good choice for landscape use.

Oconee - (protogynous) a medium to large sized pecan with good scab resistance and developed for the Eastern United States but performs very well in West Central Texas. The tree is a rapid grower but is slow to begin production yet yields high quality easy shelling nuts

Wichita - (protogynous) a very productive and precocious variety. Nuts average about 45 to 55 per pound and run about 60 percent kernel. The high oil content of this pecan makes prompt harvest and proper storage essential. This tree tends to produce narrow angled branched, which make for weak limb structure, if proper pruning practices are not followed. Highly recommended for commercial production because of the large yields.

Pawnee - (protandrous) a very early ripening, medium sized flattened shaped nut. Nuts average 50 per pound with a 58 percent kernel. Pawnee is not as precocious as Wichita but makes a good pollinator.

Sioux - (protogynous) a good producer of very high quality pecans averaging about 60 to 70 nuts per pound. Crisp, oily kernels make up 58 to 61 percent of the nuts. This tree is well adapted for use as a shade tree due to its dense foliage and strong limb structure

Western - (protandrous) an early bearing, heavy producing, strong built tree which is very well adapted to the western third of the state. Size of nuts average 55-66 nuts per pound with fair kernel quality. Western is somewhat tolerant of zinc deficiency (discussed later).

Some of the older varieties of pecans such as Mahan, Stuart, and Burkett have been superseded by varieties with fewer flaws and are no longer recommended.

Transplanting

Proper transplanting techniques are vital to the survival and quick establishment of trees. For optimum results pecan trees should be dug and transplanted during the dormant months of December, January, and February. The root system must remain moist from the time it is dug until it is replanted.

The transplant hole should be slightly wider than the root system and only as deep as the tap root. This prevents a settling of the tree and insures a proper planting depth. When planted too deep or too shallow, trees adjust to the change in oxygen level slowly and death or stunted growth may result. A dark line is evident where the original soil level existed.

The following steps outline the correct pecan transplanting procedure.

1. Place tree in hole at exact same depth as it was originally grown. Spread the lateral roots out and avoid wrapping them around the hole. Prune split, damaged or excessively long roots.
2. Fill the hole about one-half full of water.
3. Begin backfilling with the soil slowly to allow the escape of air.
4. Soil will settle with time and additional soil should be placed in the hole until the proper level is reached.
5. A well or terrace erected around the tree will aid in holding water.

It is recommended that trees be placed no closer than at 35' x 35' spacing in an orchard set up or at least 300 square feet of soil space per tree on an individual landscape planting. This allows adequate areas for optimum tree growth and good nut production for many years.

Training and Pruning Pecan Trees

Young pecan trees are trained to a central leader type of growth, where the strongest, straightest shoot is selected for the future single trunk. Shoots that develop from ground level to six or seven feet up are allowed to grow, but are terminated at a length of six to eight inches by pinching the tips for the first few years. This trashy trunk method produces shade for the young trees, therefore preventing damage from sun scald. Also, leaves of these

shoots produce carbohydrates which are essential for good tree vigor. As the tree enters the third growing season, permanent scaffold limbs will be selected.

These limbs should be approximately six to seven feet above the ground and have a wide angle at the base of the limb and trunk. An angle of not less than 45 degrees is necessary to insure a strong crotch for supporting a heavy crop of leaves and nuts during later years. Permanent limbs should be selected in a clock-like manner with limbs being stationed at three, six, nine, and twelve o'clock. A space of six to ten inches between branches is ideal.

Trees in the range of 20 years old or older are often pruned severely by homeowners. This dehorning practice has its drawbacks. Yield is halted for several years, the aesthetic appearance of the trees are often ruined, and some trees are even killed by extreme pruning.

Older trees should be pruned only for the removal of dead or diseased wood, of limbs located in unwanted areas, or of weak structured angles and crotches. All major pruning of pecan trees should be done in December, January, or February. Tipping of young shoots should be performed while trees are actively growing. A tree with good shape and structure will make future tree practices more manageable with less effort.

Fertilizing Pecan Trees

In order for pecan trees to produce nuts with regularity and to be in a good state of vigor, fertilization and zinc management are essential. With the exception of newly transplanted trees, pecan trees should be fertilized in early march with a nitrogen fertilizer such as ammonium sulfate (21-0-0), ammonium nitrate (33-0-0) or some other fertilizer with a high nitrogen content.

The three numbers located on a sack of commercial fertilizer represent the percent of Nitrogen- Phosphorous- Potassium. The following fertilizer rates are recommended for pecan trees.

Ammonium Sulfate (21-0-0)	1 lb. per inch of the trunk diameter
Ammonium Nitrate (33-0-0)	3/4 lb. per inch of the trunk diameter
Urea (45-0-0)	½ lb. per inch of the trunk diameter

The fertilizer should be broadcast uniformly on top of the soil from the trunk on out to just beyond the drip line or leaf canopy. For years, fertilizer was applied in holes drilled around the trees or deep fed with probes. This method is recommended if turf grass beneath trees is thick and healthy. Recent research has indicated that the majority of feeder roots responsible for nutrient and water uptake are located within eight to ten inches of the soil surface. This information dictates a need for surface application of fertilizer. After application, water immediately to leach nutrients into the root zone. Failure to water these high nitrogen fertilizers often will result in burning of lawns. Also, remember that lawns are in direct competition with trees for soil nutrients and grass should be fertilized at proper intervals. Fertilizer application can begin in spring when buds begin to grow and can be made every six to eight weeks throughout the growing season.

Zinc Management

Zinc deficiency causes small stunted leaves and reduced terminal growth termed as zinc rosette. This condition

can be corrected with foliar applications of zinc sulfate or liquid zinc products. Soil applications have not proven satisfactory or economical in the past in West Texas. Young trees prior to bearing age should be sprayed every two weeks beginning with bud break in early spring until mid-July. Older trees should receive at least three sprays in the spring. One application applied in conjunction with the first generation pecan nut casebearer control spray. The following rates are recommended for foliar zinc sprays*.

Zinc Sulfate

2 teaspoons per gallon of water

1 lb. per 50 gallons of water

** Trees should be sprayed to the point of leaf run off.*

Watering

Newly transplanted trees require a minimum of seven to ten gallons of water per week depending upon soil structure. A soaking type action where a hose or drip emitter disperses a small amount over a period of time reduces evaporation and produces a more constant soil moisture at a deeper soil depth. Irrigation requirements increase with the age of the tree. Older trees will require as much as 50 inches of precipitation annually. Since the arid West averages less than 19 inches annually, a considerable amount of supplemental irrigation is required.

During the developmental stages of pecan nutlets, available moisture at two specific periods is critical to large, high quality pecans. The latter part of May and June are when pecans begin to size up. A deficiency of moisture during this period makes for small pecans. Early August and through September moisture is needed to fill nuts properly. Adequate moisture during June and July, but a short supply during August and September results in large poorly filled pecans that even squirrels pass up. Allowing water to soak from a slowly running outlet is one of the best methods of irrigating large trees. Water should be placed near the leaf canopy edge or drip line.

Facts Associated with Pecan Production in West Texas

Pecan trees shed bark. As the tree grows older new bark is produced within the old bark and the older bark is sloughed off. Insects use these crevices and cracks for hiding, but are usually not pests. This bark slough is a natural occurrence and is more pronounced in certain varieties such as Burkett and Choctaw.

Pecan varieties are chosen through breeding programs. Older varieties were improved native pecans. A native pecan is classified as a pecan that developed through generations of natural selection of wild trees. If a Burkett nut is planted, the resulting tree will be a Burkett seedling and not a native or a Burkett. Only one of the parents, the female (Burkett) is known. The male parent could have been any pecan tree in the neighborhood or orchard. The nut produced from this variety seedling may look like a Burkett, like the male parent or like neither.

During summers of optimum relative humidity, clusters of pecans may be covered with a white talcum powder

type substance. This is a powdery mildew fungus which lives on the shuck of the nuts. The fungus rarely penetrates the outer layer of cells and therefore causes no problem. Treatment is not recommended.

Also, in years of frequent rainfall, cloudy days and mild temperatures, pecan scab, another fungus disease, may appear on certain varieties in West Texas. This disease is recognized by brown lesions located on the underside of the leaves ranging from pin head size to 1/4 inch. These lesions are usually found along the leaflet vein. Nutlets exhibit small black dots which, during advanced stages, develop into dark sunken areas. Dropping of infected nuts may result. Fungicidal treatments should be applied only in years with environmental conditions favorable to pecan scab.

The sticky substance dropping from pecan trees like rain is the result of insects feeding on pecan leaves. These tiny insects are aphids which suck sap from leaflets and deposit a sticky substance commonly called honeydew. Large populations of yellow and black aphids sometimes become established in July, August or September. Extensive leaf loss and a sticky mess can result. Control of yellow pecan aphids is extremely difficult. Spraying trees with Malathion or Lorsban may give temporary relief. Sevin will not control aphids effectively.

There are three main possible causes of pecan drop during the latter part of pecan development. These are:

1. An inadequate supply of available moisture. In order to produce nuts, pecan trees must not be in a stress condition due to lack of water.
2. A deficiency in essential nutrients. A poor fertilization and zinc spray program may result in pecans dropping prior to maturing. In addition, a heavy crop load in the preceding years reduces the level of stored food. Trees in this condition may shed pecans due to inadequate food reserves and as a self defense mechanism.
3. Insect or disease attack. Pecan pests will indirectly, through leaf damage, or directly, through nut damage, cause premature shedding of pecans. The following pests are most responsible.

- A) Pecan Nut Casebearer
- B) Hickory Shuckworm
- C) Pecan Weevil
- D) Black and Yellow Pecan Aphid
- E) Pecan Scab

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