

Managing Native Pecans

Dr. Dean McCraw, Professor/Extension Tree Fruit & Pecan Specialist, Oklahoma State University, Stillwater

Oklahoma native pecans are an original natural food. History and folklore have recorded incidences of Native Americans, and early explorers as well, surviving exceptionally hard winters on the tasty, high-energy kernels from native pecans. Pecan kernels consist of 70 to 75 percent fat. In these diet-conscious times, all fat was considered bad until the "good fat" concept, i.e. unsaturated fat, was discovered. The good news for pecans is that from 92 to 97 percent of the fat in pecans is unsaturated. Recent studies conducted at Loma Linda University and New Mexico State University showed that pecan oils (which are 56 percent monounsaturated and 29 percent polyunsaturated) in a heart-healthy diet result in lower cholesterol. According to those studies, pecan oil dietary benefits exceed those of olive oil.

The fats that help your heart also put the pecan at risk of losing eating quality by becoming rancid after harvest. The only way to slow this chemical reaction is to store them at low temperatures. Pecans stored at seventy degrees Fahrenheit will develop rancid flavor within three months. Lowering the temperature to thirty-two degrees extends storage life to twelve months. At zero degrees, storage pecans will remain fresh-tasting for six to ten years.

Those who have never tasted a fresh pecan have missed a real treat. Native pecan trees grow from Wisconsin south across western Missouri and southeast Kansas. The widest band of the native pecan belt occurs

as it crosses Oklahoma and Texas into Mexico. Commercial pecan production is minimal in areas north of Kansas City. Pecans from trees farther north are just as tasty but are much smaller and have little commercial value. Pecans in southeastern states like Georgia, and western states such as New Mexico result from planted trees rather than native trees.

Oklahoma's pecan industry averages about 17 million pounds annually with a wholesale value of about \$13 million. The wholesale value of native pecans averages about \$0.70 per pound, with varieties at about \$1.14 per pound. The backbone of Oklahoma's industry is native pecans, which account for about 90 percent of our production. Native pecans are typically sold to processors for use in confections such as pies and cookies. The bulk of Oklahoma's variety pecan crop is sold in shell at retail outlets. Oklahoma's planted orchards average about thirty-five acres, while managed native acreages average about one hundred acres. Most of Oklahoma's pecans are double-cropped with forage used for hay or grazing for beef cattle.

Management requirements for native and variety pecans vary somewhat, depending on the variety in question. In comparison to varieties, native pecan trees generally have better pest resistance and require fewer inputs, but they produce smaller nuts and are less efficient, with more yield variation and lower value per pound. Varieties almost invariably require more inputs in order to maximize their potential. If they are properly managed, varieties are

About Dr. Dean McCraw

Dean McCraw was born and raised on a small farm in Pottawatomie County. After graduation from Maud High School he earned a BS degree in Agriculture Education (1968) and MS degree in Horticulture (1974) from Oklahoma State University and PhD degree in horticulture (1977) from Kansas State University. He has served as high school Vocational Agriculture teacher, Oilton, OK (1968-69) and Superintendent of the Oklahoma Vegetable Research Station, Bixby, OK (1973-74).

In 1977 he joined the Texas Agricultural Extension Service where he provided leadership for educational programs in horticulture for the Intensified Farm Planning Program for small and part time farmers in Central, East and South Texas. In 1985 he moved to Oklahoma State University, Stillwater, OK, to accept an assignment as Extension Vegetable Specialist with the Oklahoma Cooperative Extension Service. In 1993 he assumed his current responsibility for applied research and Extension

educational programs for Oklahoma pecan and fruit producers.

Several commodity groups and professional organizations have recognized Dr. McCraw for his service as an Extension educator. In 2000 Dr. McCraw retired at the rank of Colonel from the United States Army Reserve after serving 31 years combined active and reserve time. He lives in Stillwater with his wife Sue Goodin McCraw, also a native of Maud, OK. They have three grown children and two grandchildren.

For more information, contact:

Dr. B. Dean McCraw
Extension Horticulturist--Pecans
360 Agriculture Hall
Oklahoma State University
Stillwater, OK 74078
(405) 744-5409
dmccraw@okstate.edu

higher yielding with more profit potential. Variety selection is critical to success in pecan management, particularly if the variety is to be managed in conjunction with a larger stand of native trees.

A typical management program for native pecans might consist of one hundred pounds of nitrogen per acre, zero to one spray for pecan nut casebearer, and zero to two sprays for pecan scab. Varieties, on the other hand, might require 125 to 150 pounds of nitrogen per acre, one spray for phylloxera, up to two sprays for pecan nut casebearer, and three to six or more sprays to control pecan scab. For some varieties, crop thinning and irrigation may be required to achieve top quality.

Sustainable pecan management is a viable alternative for native pecans and for varieties suitable for a native pecan management system. Sustainable management is fully compatible with double-crop systems including livestock and pecan production. If management techniques are properly applied, native pecans can be managed with minimum external inputs.

In order to achieve maximum benefit from a management program, the trees must be in condition to utilize the inputs provided. Native pecan management practices can be prioritized in long-term and short-term categories. Long-term practices consist of: 1) thinning the trees to the proper density per acre; 2) providing proper surface and subsurface drainage; 3) proper management of the orchard floor vegetation; 4) grafting seedlings to proven performers; and 5) efficient annual fertilization. These practices may not return their investment for one to three years or more. However, they are necessary to allow the trees to be in condition to respond to short-term management practices.

Short-term management practices are those necessary to protect the current crop. Costs should be returned when the crop is sold. Short-term practices consist of: 1) controlling pecan weevil; 2) controlling wildlife depredation; 3) controlling pecan nut casebearer; and 4) controlling pecan scab.

Overcrowding is the most common limiting factor in Oklahoma native pecans. Trees should be removed to achieve the following criteria: tree density of about thirty to thirty-two square feet of cross-sectional trunk area per acre; 50 percent shade on the orchard floor at noon, and/or ten feet between canopies of adjacent trees. This allows sunlight to penetrate into the depth of the tree canopy, encouraging growth of new terminals, which bear the nuts. Tree thinning is usually also beneficial to the forage growing under the trees and the livestock that graze the orchard floor. During the thinning process, trees that get pecan phylloxera or pecan scab as well as those that yield poorly, fail to bear regularly, or have poor nut

quality should be targeted for removal.

Trees growing on sites which drain slowly after heavy rains or which have a high water table during much of the year will not give maximum response to added inputs. Grading, ditching, or clearing clogged waterways often will allow tree root systems to grow and prosper, leading to improved top growth. If limiting, improved drainage is always beneficial to pecans and usually to the forage and animals that share the site.

A legume-based orchard floor management system can provide all the nitrogen needed by the trees. Even if grazed, legumes can contribute to nitrogen needs of the trees while increasing beef production per acre. Cool-season legumes are best. Annual or perennial, they can be seeded in September and make a good harvest surface in late fall. They grow while the pecan is dormant and are most competitive in the spring, when moisture is generally ample for both trees and forage. They also can be harvested by mid-July, which allows deferment from grazing before pecan harvest. A good stand of legumes can contribute up to 150 pounds of actual nitrogen per acre if not harvested and thirty to sixty pounds of nitrogen if harvested for hay or by grazing. Legumes can contribute two to four tons of forage production per acre without nitrogen fertilizer.

Cool-season legumes in pecans can be perennial or annual. They are soil improving and have a beneficial effect on the insect population in the orchard by attracting aphids, which serve as a food source for beneficial insects that prey on injurious insects. Perennials such as white or red clover are functional over a wide range of soils. White clover is the most flood-tolerant and generally best suited to grazing. Red clover is short lived but fixes the most nitrogen. Of the annual clovers, arrow leaf produces the most forage, while crimson fixes the most nitrogen. Clovers are small seeded and must have short residue for establishment in the fall.

Native pecan fertilization is usually of minimal value without other management actions. Trees that are crowded or standing on waterlogged soil may give little or no positive response to added fertilizer. Pecans require 100 to 150 pounds of nitrogen per acre each year, and other nutrients may also be needed. They should be applied as determined by a leaf analysis. Nitrogen should be applied in split application, the first application in March, and the second in June if crop load warrants. Maintenance application of phosphorus (P), potassium (K), and zinc (Zn) should be made only if leaf analysis indicates the need.

Each native tree is genetically different. As such, there is much variability from tree to tree. When developing a native orchard over the long term, grafting smaller trees to pecans of known performance is beneficial. Use only low-input, scab-resistant varieties with medium nut size

and which mature early enough to avoid early fall freezes. Proven selections from native trees in the area are frequently good choices for grafting because they are likely to be best adapted to the area and have management requirements compatible with the other trees.

Of the short-term management priorities, pecan weevil control is paramount. The pecan weevil is responsible for the grub worm frequently found in pecans. It is most prominent in native pecans due to the minimal management program often applied to them. The weevil adults spend winter in the soil under trees and emerge after rain between July and September. Treatment must be applied soon after emergence. For optimal insect control, it is critical to spray trees fully before the insect lays eggs in the nuts. Presently, insecticides must be used to control the weevil, easily the biggest danger to organic pecan production.

Circle traps for weevil monitoring are effective tools to determine when to spray to control this insect.

Instructions for use of the traps can be found within the Oklahoma Cooperative Extension Service fact sheet F 7190, available online or from county extension offices. That fact sheet contains instructions on how to make the traps. Traps can also be purchased from several suppliers of pest management supplies, including Gemplers Supply (800) 382-8472, www.gemplers.com and Great Lakes Pest Management Supply (989) 268-5693, www.greatlakesipm.com. A good source of prebuilt traps is Blarney Toe Enterprises (405) 744-8116.

A three-year study of a legume-based native pecan and beef grazing system now nearing completion in Okfuskee County shows the benefits of legumes. The study shows increased pecan yield and beef gain from plots seeded to a mix of red, crimson, and white clover compared to native vegetation. The benefit is amplified in areas which tend toward periodical natural flooding.

In summary, native pecans are well adapted to sustainable management. For maximum utilization of applied inputs, trees should be thinned to the proper number and spacing per acre. A cool-season, legume-based forage management program can meet the nitrogen needs of the trees and improve beef gain per acre, especially on flood-prone sites. Investment inputs should be focused on trees with the most potential. Pests, particularly pecan weevil, should be controlled to protect the crop. Spray decisions should be based on a monitoring program. For long-term benefit, small trees should be converted to superior native selections or varieties with management requirements compatible with native management programs.

Additional information is available from the following:

1) Oklahoma Pecan Management web page www.okstate.edu/OSU_Ag/asnr/hortla/ftpcns/pecans.htm

This site contains information and links to other sites of interest and is applicable to Oklahoma pecan production.

2) Individuals who want in-depth information on pecan management in Oklahoma should consider taking the Oklahoma Pecan Management Course. That course meets one afternoon each month from February through October at the Pecan Research Station in Perkins, Oklahoma. The agenda and registration information are available at the above website or by calling Dean McCraw at (405) 744-5409

3) The Oklahoma Pecan Growers Association conducts an annual meeting and publishes a quarterly newsletter with current management information. Information can be obtained from the association treasurer, Cathie Shelton, 15857 S. 49th West Ave, Glenpool, OK 74033. (918) 321-9032.

4) Your local OSU County Extension Office can provide much information on the local pecan industry. Each county has an office with the number listed in the telephone book.