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Our Cover—This beautiful typical cluster of pecans may not be as desirable as we have thought. It has been an evoluntary insurance policy in the wild, but it also serves as a difficult to change brake on yield and regular bearing in commercial orchards. See article by Wolstenholme and Malstrom on page 26.

Classified

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PECAN WEEVIL MANAGEMENT IN TEXAS

PEACAN WEEVIL MANAGEMENT IN TEXAS

MARVIN K. HARRIS, D. R. RING, B. L. CUTLER, C. W. NEEB, and J. A. JACKMAN

Pecan weevil problems are primarily created by the pecan grower in the way he orchard or grove is managed. When pecan weevil problems are especially severe, the grower has done an excellent job of managing pecan trees so they will produce a good supply of nuts on a regular basis, but an inadequate job of pecan weevil management. Research over the past several years has shown that solutions to the pecan weevil problem are available with conventional and traditional approaches (2, 3, 8). Regrettably, no easy cure-all has yet been found, although significant refinements will certainly be forthcoming in the future due to research currently in progress. The purpose of this paper is to report on recent research findings which should assist the grower in making pecan weevil management decisions. The approach will be to assess the aboriginal pecan/pecan weevil interaction and compare that with the cultivated condition and finally to discuss how specific management decisions can be made.

Aboriginal Pecan/Pecan Weevil Interaction

Wild pecans are notorious for their irregular bearing patterns. This "boom and bust" pattern is usually widespread and relatively synchronous in nature so that wild trees in a given river bottom bear a harvestable crop every 5-8 years or so with significantly fewer nuts produced during the bust years. Reasons for this are complex and will not be addressed here; suffice it to say it occurs and that it has an effect on the pecan weevil.

The pecan weevil is an obligatory nut feeder on pecan and hickory (1,5,7,17,18). The pecan weevil female seeks out and lays eggs in nuts when they are between the gel stage and shuck split. If nuts are still in the water stage, both males and females feed on them causing them to drop. A single female will lay about 60 eggs, placing, on the average, 3 or 4 eggs in each nut she infests. She will not attack nuts that have been previously infested. This adaptation probably ensures that the larvae which develop in each infested nut have adequate food to complete their development, even in years when weevil populations are high and nut supplies are low. Larvae emerge from the nuts about 42 days after the female laid the eggs. The legless grubs drop from the nut and enter the soil near the spot where they land. About 90% of the weevils which survive will emerge as adults 2 years later to repeat the cycle. The remaining 10% will emerge 3 years after entering the soil as larvae. The generalized life cycle of the pecan weevil is shown in Fig. 1.

Since wild trees usually produce low numbers of nuts, the pecan weevil usually exists in low populations in the wild. When the occasional heavy crop of nuts is produced, the pecan weevil is presented with more nuts than it can infest and a reasonably good crop of pecans can often be made despite the presence of the weevil. The weevil population does begin to build up in the heavy crop year but then is "starved" back to low levels again during the series of lean years which usually follow bumper crops on wild trees.

Cultivated Pecan/Pecan Weevil Interaction

Cultivated pecan differs from wild pecan in many ways. The most important difference in relation to
The female pecan weevil cannot successfully infest pecan nuts before they enter the gel stage. (a) The nuts shown are in late water, early gel stage; note the shell formation, the "skin" or testa of the kernel and the thickening liquid endosperm (commonly called "water") which will form the kernel. (b) Note the different stages of nut development based upon variety. (c) Oviposition occurs primarily on the distal third of the nut (end furthest from point of attachment to the cluster) where the kernel begins to form first. Obtaining a good longitudinal section through a nut is done by cutting across the elliptical wound left when the nut was removed from the cluster. Cutting longitudinal sections in other planes fail to give good exposure to the developing kernel and make inspection difficult.

The Pecan weevil requires 2-3 years to complete an entire generation. The majority of the population requires 2 years, as shown above, and those taking 3 years accomplish this by remaining in larval diapause an additional year. The common 2 year life cycle means that events concerning pecan weevil last year have no bearing on problems in the current year. Events 2 years ago influence what happens this year, and events this year primarily influence what happens 2 years from now.

pecan weevil is that cultivated pecans (both improved and native) are managed with the intention, if possible, of producing a heavy crop of pecan nuts each year. In the case of newly planted orchards, pecan weevil must invade the orchard after it comes into bearing (about 3 to 5 years after planting). Generally speaking, pecan weevil adults do not move very far in any great numbers so that the initial infestation of large young orchards occurs when a few weevils wander in. This early infestation may pass virtually unnoticed due to the rapidly increasing crops of nuts produced each year and the 2 to 3 years the weevil needs to complete each generation (see Fig. 1). As much as 4 or 5 years may pass after the initial infestation of a new orchard has occurred before nut production begins to level off a little bit. By then, the pecan weevil populations have had an opportunity to increase to quite high levels. Suddenly, pecan weevil larvae appear to be in every nut.

A similar scenario can be drawn for rehabilitated wild trees which are referred to as "natives". If the
increased management (fertilizer, zinc, pruning, etc.) needed to bring these trees into regular bearing is begun following a series of lean production years, the pecan weevil population in the grove is likely to be low and scattered. Again, the increasing nut production obtained in the first few years of management may outstrip the pecan weevils ability to manifest itself in large numbers. Within 3 to 5 years though, weevil populations have usually risen to unacceptable levels.

In order to experience bad pecan weevil problems, a grower must be able to produce a reasonable crop of pecans on a regular basis so the weevil population has an opportunity to increase in numbers. Growers with severe pecan weevil problems should not despair, for in all likelihood, only the pecan weevil stands between them and making a profit; and, the pecan weevil can be managed.

**Pecan Weevil Management on Pecan in Texas**

The pecan weevil damages pecans in 2 ways; first, adult feeding on nuts in the water stage results in nuts dropping off the tree and second, females placing eggs in nuts results in larvae which consume the kernel (3). Adult feeding damage is far less important than larval damage because the latter not only ruins the nuts which are infested, but also forms the nucleus of subsequent infestations which will occur 2 and to a lesser extent 3 years later (see Fig. 1). Since serious weevil problems tend to originate within the orchard or grove, the long term solution to weevil problems must revolve around reducing larval infestations to low levels. A total commitment to this end is required before one can have any hope of preventing all damage.

Reducing larval populations involves the prevention of oviposition by killing adult weevils after they emerge from the soil but before they lay eggs in the nuts. There is a window in time of about 3 to 5 days after a given female weevil has emerged from the soil before she begins laying eggs. This is usually referred to as the preovipositional period.

There is no feasible way to kill adults or larvae while they are still in the soil (5), or eggs or larvae in the nuts. Treatment must be directed at the adults after they have emerged from the soil but before oviposition takes place. Rates and chemical recommendations are available in the literature (6,9,10,11,13,16).

The pecan weevil female cannot successfully oviposit until the nut has passed through the water stage and is in the gel or dough stage. The oviposition window extends from the gel stage to shuck split, although, as will be seen, the period of greatest risk is usually as the nuts are entering the gel stage and shortly thereafter (late Aug. to mid Sept.). Fig. 2 shows nuts that have been sectioned to show various stages of internal
determine how many weevils are expected to emerge, add up all the weevils caught in your traps through that date; 3) find the cumulative percent of weevils expected to have emerged by that date on the graph; 4) divide the weevils actually caught by the cumulative percent expected to determine how many weevils are expected to emerge beneath your traps during the season. For example, suppose we have 30 cone traps covering a total of 210 sq. ft. which have captured 8 weevils through August 21st; 8 weevils × 1.10 (the expected cumulative percent emergence from the graph) equals 88 weevils which is the predicted population that will emerge beneath the cages for the entire season. This is definitely an economic infestation requiring treatment (see text for additional discussion).

Carbaryl has been the treatment standard, and research indicates this material requires reapplication about every 8-12 days when weevils continue to emerge, depending on the intensity of the infestation. If no weevils have emerged for the 4 consecutive days preceding the anticipated time of retreatment, spraying operations may be halted. One should continue to check for emergence and, if it is found, beginning the treatments again should be considered. Treatments should be terminated when shuck split begins.

Fig. 3 shows the time and rate at which adult pecan weevils normally emerge from the soil. One can use this graph to assist in making pest management decisions as follows: The vertical axis represents the cumulative percent emergence of the pecan weevil population and the horizontal axis represents time. If one wants to know what percent of the population normally emerges by a given date, the date in question is found on the horizontal axis of Fig. 3 and an imaginary vertical line is extended upward to a point where it crosses the curved graph line. A line extended horizontally to the left will intersect the vertical line where the percent adult emergence can be read. On Aug. 21, for example, 10 percent of the population are expected to have emerged. One can also use the graph to find the date when a given percent of the population will emerge.
normally have emerged. For example, 50 percent of the weevil population will usually have emerged by Aug. 31.

Fig. 3 should only be used as an aid to pecan weevil management and not as the sole basis for deciding when to treat for 3 primary reasons. 1) The statistics used to generate this graph indicate that in a particular year the curve may be moved in time from 3 to 6 days, even when conditions are apparently ideal for weevil emergence. This reliability is still pretty good, but it also means that the curve will not exactly predict when the population will emerge. 2) When drought conditions occur during the time of normal emergence, a portion of the pecan weevil population will be delayed in emergence until irrigation or natural rainfall occurs. Experiments at Hamilton, TX have shown that naturally occurring drought conditions can delay a portion of the population in emerging for as long as 60 days. We have also artificially created drought conditions by keeping the soil dry with a tent beyond the time of normal emergence and then adding water to simulate rain in September. Some weevils always were observed to emerge during the normal emergence period, regardless of the severity of the drought conditions. These weevils emerged through soil cracks and root channels that happened to be present in the dry hard soil. The weevils which were delayed in emergence by the drought were confronted with a hard layer of dry soil between them and the soil surface. Wetting this layer of hard soil with rainfall or water changed the soil condition so that it became friable and the trapped weevils could emerge. Fig. 4 shows the ways pecan weevil emergence was affected by drought conditions. Other permutations are possible, and these simply illustrate the principle involved.

All soils do not exhibit the same characteristics of hardness in relation to drought. Our work was conducted in a 20 percent clay, 36 percent sand, and 44 percent silt, soil; and, soil moisture levels below 20 percent made the ground seem like adobe bricks. Soils with lower percentages of clay will generally retain their friability longer than the soils in which we have studied pecan weevil emergence. To prove this to yourself, think of how a soil with a high percentage of sand, a low percentage of silt and almost no clay would soften and harden as it were wetted and dried. Weevils could probably emerge through that kind of a soil in a normal fashion regardless of drought severity because such a soil is quite friable through a very wide range of soil moisture. Contrast that soil to one with a high percentage of clay, intermediate in silt and intermediate in sand. Such a heavy clay soil would be very mushy when wet and almost like concrete when dry. Drought conditions in the latter soil would definitely delay emergence of weevils that could not find root channels or soil cracks through which to emerge. Most locations with pecan weevil infestations contain soils between these 2 extremes, and emergence is affected by drought accordingly. Of course, timely irrigation can eliminate problems associated with delayed emergence due to drought within the irrigated area. Irrigation will not affect neighboring unirrigated trees and weevils, and, depending on the

![Figure 4](image-url)

Figure 4. Drought conditions can delay emergence of some adult weevils from the soil. Emergence under natural drought conditions at Hamilton in 1977 in the top graph shows 75% of weevils emerging during the normal period in Aug.-Sept. with the remaining 25% emerging following a rain in late Oct. Drought conditions were artificially created with a tent in 1978 and this resulted in 25% of the weevils emerging during the normal period with the remainder emerging in late Sept. after water was added as shown in the bottom graph. Since drought only delays a portion of the pecan weevil population from emerging, both the normally emerging and the drought-delayed weevils pose a threat to pecan production and both require management. The portion emerging and the portion delayed under drought conditions are present and please see the text for additional discussion.
proximity of such trees, some consideration of preventing late season immigration of drought delayed weevils may be called for. Perimeter spraying may be sufficient in this situation. 3) Finally, Fig. 3 does not describe the population density of pecan weevils in the orchard or grove. This must be ascertained from the past history of weevil infestations or from trap catches in the growing season, or both. If heavy weevil populations were encountered 2 and/or 3 years previously, treatment is most probably warranted. But, emergence cages in the orchard will verify that adult weevils are present and treatment is needed.

Pecan Weevil Management Options

The first and simplest management option is to assume that sufficient weevils are present in the orchard or grove to cause economic damage and treat 3 or more times beginning at gel stage of the earliest maturing cultivar, repeating treatments at 8-12 day intervals until sometime in mid-September. The basic drawbacks here are that initial treatments may begin earlier than necessary, critical treatments may not coincide with peak emergence (Aug. 29-Sept. 2), drought delayed pecan weevil emergence may not be detected, and one isn't sure when it is safe to terminate treatments.

A second option is possible based on the history of infestation within the orchard or grove. If more than 1700 nuts/acre were lost to pecan weevil larvae 2 years previously, the assumptions in the first option will generally apply and one could proceed by initiating treatments at gel stage, as above, and terminating them in mid September when emergence in Fig. 3 indicates. Basic drawbacks listed above still apply.

A third option is to initiate a trapping system to monitor the weevils in the orchard or grove and use the additional data to supplement the information used to make your management decisions. This is discussed below.

A simple trap design is provided in Fig. 5. Each such trap will cover about 7.1 square feet. Traps should be placed within the drip line of the trees in late July, and checking should begin based on when emergence is expected from Fig. 3.

Trapping considerations

The number of weevils one should trap before economic damage is expected and treatment indicated depends primarily on the size of the area being sampled and whether or not

![ADULT PECAN WEEVIL TRAP](image)

Figure 5. Design for a cone trap to detect adult pecan weevil emergence from the soil. The screen is rolled out and cut in the half circle pattern shown. Then it is grasped in the center of the straight side and set upright. The screen assumes a natural cone shape and the 34" lathe is overlapped and the screen stapled to it. The 6" rim forms the skirt of the cage which is covered with soil to hold the cage in place in the field. The collection jar (a small size baby food jar is sufficient) sits on the top of the cage and consists of a screw top with a hole in the lid which sets over the hole in the top of the cage. This lid should be secured with caulking. The jar is then screwed onto the lid. Snap-lid clear plastic boxes also work well by cutting a hole in the box away from the lid and setting it in the cage and caulking it down. Regardless of the type of top used, the screen top of the cage should be allowed to protrude about half-way into the collection device as this virtually eliminates weevils emerging into the device from leaving through the small hole by which they entered.
not the trapping area is truly representative of the orchard as a whole. Generally speaking, 1 weevil emerging in every 50 square feet of area withing the drip line during the season is sufficient to warrant treatment. This density of weevils can be conservatively expected to destroy at least 5000 nuts/acre and to triple the problem to be faced 2 years later determined as follows: A pecan weevil female will attack and oviposit in about 20 nuts, laying 3 or 4 eggs in each nut. This means about 250 females are required to destroy 5000 nuts. Since the sex ratio is known to approximate 1 male for each female, 500 weevils (male + female) per acre will destroy at least 5000 nuts. An even distribution of weevils across the acre would result in 1 adult emerging from each 87 square feet; however, larvae primarily enter the oil within the drip line of the tree canopy and adult emergence almost always occurs there as well. Therefore, emergence cages are only placed within the drip line and a 60% canopy cover/acre is assumed resulting in about 1 weevil/50 square feet. The 3 times increase of the weevil problem 2 years later, if left untreated, is derived from field and laboratory observations of mortality which lead to the assumption that about 10% of the larval population entering the soil will emerge 2 years later as adults.

The cost of 500 weevils/acre calculated to at least 5000 nuts/acre lost in the present growing season. This represents 56 lbs (90 nuts/lb) of natives and 83 lbs (60 nuts/lb) of improved and if the former sell for 75¢ a lb, and the latter for $1.00, the expected loss would be $41.70 and $83 per acre, respectively, plus losses which result from the increased population 2 years later. Note that some losses due to adult feeding will also occur and have not been accounted for. These feeding losses should be less than 1000 nuts/acre and contribute less than an additional $10/acre to natives and $15/acre to improved dollar losses.

Clearly, even if one quibbles over the prices or exact density of weevils or nuts attacked/female, etc., it does not take very many weevils to cause economic damage. In fact, so few weevils are required to cause economic damage that the cost of detecting them can exceed the cost of treatment, and even then, there is room for error. Present economical technology using traps is primarily limited to 1) ensuring that weevil emergence is underway in the orchard or grove at the time treatment is contemplated, 2) that emergence continues to occur so that retreatment is justified and 3) to detect late emergence due to drought or other factors.

Research efforts are underway to develop trapping systems which will provide more reliable measurements of sub-economic and borderline economic infestations. Ray Eikenbary in Oklahoma (Entomology Dept., OSU, Stillwater, OK) and David Boethel in Louisiana (Entomology Dept., LSU, Baton Rouge, LA) have done much of this research (2) and have instituted cooperative research demonstrations with growers and other researchers (including Texas). We hope their work will be developed for general grower use. Presently their system requires 120 cages (12 each under 10 trees) checked every other day and trap catches evaluated with a standard chart they provide to determine if treatment is needed. Predictions are thought to be valid for about each 80 acres of orchard. These researchers have improved, revised and simplified this system for the past several years. We believe one additional modification needed is to delay the first treatment for weevil until the earliest maturing pecans are on the verge of entering the gel stage, even when the trap catches indicate that treatment should occur earlier. With this modification, the Eikenbary-Boethel System is probably more accurate in assessing pecan weevil density than any devised anywhere else, including the one described below. However, the number of traps required (120) and the frequency with which they must be sampled (every other day), if the system is to be effective, often discourages growers from using it.

An alternative system calls for 30 cone cages placed, in late July, 6 to a tree under each of 5 trees in the orchard. The 5 trees should be those known to contain pecan weevil populations of 2 years previously or, if their infested condition is unknown, the 5 trees should be chosen to include early and intermediate maturing trees. Nut development of the earliest maturing trees in the orchard or grove should be followed closely so that the end of the water stage and the onset of the gel stage can be anticipated.

Timing of Initial Treatment

Cages should be checked once or twice a week for weevil emergence during this initial period and if any weevils are found, an insecticide treatment should be applied to the orchard or grove just when the gel stage of nut development on the earliest maturing trees is reached. If pecan varieties have been planted so each can be treated separately, those varieties still in the water stage can be left untreated. Feeding damage will occur at a rate of about .25 nut/weevil/day on the untreated trees but oviposition will not occur until after the gel stage is reached (3, 8). If such pecans are initially left untreated, nut development on them must be followed very closely to ensure that they are treated when the gel stage begins. Any slippage past that point, and oviposition will occur, thereby eliminating any savings to be had in delaying the treatment.

Feeding damage, in our opinion, has been unduly emphasized in proportion to present and future damage which results from oviposition and larval infestation. The rate of feeding damage has been calculated at about .25 nuts/weevil/day. Note in Fig. 3 that adult emergence from the soil does not really get under way until the last week in August and note also that for most pecan varieties, gel stage does not occur until late August or
September. Therefore, the bulk of the pecan weevil population is not susceptible to insecticide treatment until the pecan tree is at or near the gel stage, and the small proportion of pecan weevils emerging earlier do not represent the damage potential yet to come. For maximum effective ness, the initial insecticide treatment should be directed at the most adults possible, just prior to the pecan nut being susceptible to oviposition. Furthermore, if pecan weevil populations are so enormously high that adult feeding damage prior to normal gel stage of early maturing trees (generally Aug. 24–30) is economically important, then very poor weevil control was obtained 2 years previously. Avoiding this same problem 2 years down the road requires preventing oviposition in the current year. Proper timing of the initial insecticide application and appropriate retreatment will prevent oviposition and reduce subsequent feeding damage, thereby protecting the crop in the current year and greatly reducing problems from pecan weevil 2 years later. Early insecticide application to prevent adult feeding damage should be considered only if very high populations of adults are present and the grower is totally committed to preventing oviposition by the bulk of the adult population which has yet to emerge from the soil. If this argument is still unconvincing, and the additional treatment(s) is used, this should only be necessary for the first 2 or 3 years of the program, since preventing oviposition will have resulted in substantially lowering pecan weevil populations (and hence their capacity to cause feeding damage in the water stage) in later years.

Retreatment

The need for retreatment is dependent upon whether the weevils continue to emerge after the residual activity of the insecticide is abated. Carbaryl is thought to provide continued protection against weevils emerging for at least 5 days or so after treatment, barring rain washing the treatment off earlier. Emergence cages should be emptied 4 days after treatment and checked again 3 days later for additional weevil emergence. If weevils are found, retreatment should occur within the next 4 days. If no weevils are found, cages should be checked again 2 days later and if weevils have emerged, retreatment should occur within the next 2 days. Whenever retreatment occurs, emergence cages should be emptied 4 days later and checked again as before.

Fig. 3 provides a useful guide to anticipate adult pecan weevil emergence from the soil as long as drought conditions are not present. Note that even under ideal emergence conditions, the spread in the time of emergence requires a minimum of 2 treatments for low but economic populations and probably 3 for higher ones. Note also that drought conditions will delay a portion of the population in emerging for long periods of time. If drought conditions are present in the orchard and weevil catches in the traps fall to zero after the first or second treatment, do not relax. Continue checking the cages every few days and be immediately attentive following a drought breaking rain. Prior research has shown that the majority of drought delayed weevils emerge within the first 3 days following a rain and that damage and oviposition can occur on up into November if shuck split has not taken place.
Summary:

1. Use Fig. 3 to anticipate the time and rate of pecan weevil activity unless drought conditions are present. Fig. 4 shows how drought can affect emergence.

2. Place at least 30 pecan weevil emergence cages (6 each under 5 trees) in the orchard or grove in late July.
3. Check nuts on early maturing trees for the cessation of the water stage and the onset of the gel stage (see Fig. 2).
4. Check pecan weevil emergence traps as gel stage of nuts on earliest maturing trees approaches.
5. Spray at gel stage if weevils are found or, if weevils are not found, continue to check traps at least every other day and spray when weevils are found. If no weevils are found by Sept. 15 and drought conditions were not present the preceding 4 weeks, check traps twice a week for the next 2 weeks and if no weevils are found, terminate checking.
6. Clean out emergence cages 4 days after each treatment and check them again 3 days later; if weevils are found retreat within the next 4 days; if no weevils are found, check again 2 days later and if weevils are found, retreat within 2 days; if no weevils are found, continue checking every other day until Sept. 15 and twice a week for 2 weeks thereafter, treating only if weevils are found. If no drought conditions were present the preceding 4 weeks, the weevil problem can be considered over. If drought is present, the final flush of weevils can be expected within 3 days after the next rain and this should be a matter of concern until shuck split is complete. The emergence cages should reflect drought delayed weevil emergence and contain some adults if this occurs. Check them to verify this late emergence and spray if they are found and shuck split has not occurred.

7. Remember, the pecan weevil oviposition window is from the gel stage to shuck split. Weevils normally emerge early in this period about when most pecans are entering the gel stage and these weevils must be prevented from ovipositing. Fig 3 depicts the normal pecan weevil emergence and if drought conditions occur during this period, a portion of the population will be delayed in emerging until the drought is broken. Drought delayed weevils can be verified by emergence cages and will cause damage if shuck split has not occurred.

8. Usually 2 and often 3 properly timed treatments are needed to control pecan weevil. Droughts during the normal emergence period can result in delaying a portion of the population for 2 months or more. If this occurs, an additional treatment will be needed within 4 or 5 days after the drought is broken.

9. Rainfall following insecticide treatment but before the normal time for retreatment is necessary depends on if weevils continue to emerge from the soil. If they do, retreatment within 3-5 days of the rain is called for to prevent oviposition.

10. Ground application of insecticide has, in general, been better than aerial application for pecan weevil management. However, satisfactory results have been obtained by some growers as a supplemental means of applying treatments and in a few cases as the major mode of management. Both proper timing and coverage are essential to pecan weevil management. Aerial application can improve timing where treatment areas are large and equipment scarce, or when muddy fields prevent entry with ground equipment. This feature of improved timing can, to some extent, outweigh the anticipated problem of reduced coverage and should be considered.

Continued to page 14

July 1
Third Biennial Meeting of the California Pecan Growers, Visalia, California.

Third California Pecan Growers Meeting Set

New and established pecan growers, growers interested in potential for pecans and those associated with pecans in California will meet in Visalia, July 1, 1980 for the third meeting of this kind. The meeting usually on a biennial basis was last held in 1978 when more than 230 persons attended. Speakers from many locations in the western states will discuss economics, nutrition, marketing, varieties, production potential and the concepts of a pecan growers association. The meeting is organized by Steve Sibbett and Lyndon Brown, Tulare and Kings County farm advisors, respectively.

While in California, out-of-state participants will visit several established pecan plantings and other fruit and nut orchards. A wine tasting and other social gatherings will be provided by local growers. The interest in pecan culture has been growing steadily over the past 10 years in California.

July 14-16
Fifty-ninth Annual Conference, Texas Pecan Growers Association, Abilene Civic Center, Abilene.

August 14, 15, 16, 1980
Annual International Pecan Conference, Hermosillo, Sonora, Mexico. For more information contact Ing. Francisco Tapia, Asociacion Agricola Local de Productores de Nuez, de la Costa de Hermosillo, Yucatan y Pino Suarez, Hermosillo, Sonora, Mexico.
A Word From Chihuahua, Mexico On High-Density Plantings

I am not sold on close planting, with the idea of removing trees later. Many Mexicans cannot finance close spacing for two reasons. One is the extra cost of trees, and the other is the difficulty in growing an inter-crop. We prefer to plant fewer trees, which will serve as our permanent trees, and inter-crop with corn, beans, peppers, and even cotton as long as we can.

Wider spacing allows the trees to spread more. I am in favor of topping the trees to prevent them from getting to such extreme heights, which would also help spread them more.

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Parral, Chihuahua, Mexico

Homer and Tom were long-time neighbors, living on opposite sides of the street, east and west. A storm blew over two elm trees in Tom’s front yard. Homer had four sizable sycamore trees in his west front yard which provided a dense shade. Sitting under Homer’s trees one morning, Homer said, “Tom, why don’t you set out some sycamores so we can sit in your yard in the afternoon?” Tom said, “No, Homer, when I set more trees, they will be pecans.” “Yeah, but it takes pecans so-o-o long to bear, Tom,” Homer said. Tom pointed to the sycamores and asked, “How long will it take these sycamores to bear?” Startled, Homer answered, “Come to think about it—it will take quite a while, won’t it?”

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