



## Arizona Pecan Orchards Thrive on Climate and Mechanization

The 1981 pecan harvest cracked records in Arizona and nationwide.

The state record is safe for this year because pecan yields usually alternate from heavy one year to light the next, said Dr. Michael W. Kilby. He is the fruit and nut specialist for the UA Cooperative Extension Service.

However, he added, the record probably won't last long. About half of the pecan trees in Arizona have not even reached their mature production age yet. That takes 10 to 12 years.

Nationwide, pecans have the highest-value harvest of any food plant native to the United States (not introduced by humans before or after Columbus). The Southeast, where they are native, produced almost all of the pecans in the world until recently. Georgia still ranks number one, but most new orchards being planted are in the Southwest.

The orchard that travelers south of Tucson see stretching for miles near Interstate 19 started the modern pecan industry in Arizona. With

Photograph: A bin of newly harvested pecans is lowered into place on the drying platform at Farmers' Investment Company near Green Valley. Nuts from early in harvest season must be dried for best texture and flavor. Warm air blown under the platform comes up through the mesh-bottomed bins. (Photos by Ted Bundy.)



**Above: Pecans pour out of processing-plant hoppers where they are sorted by size.**

**Below: Workmen at Picacho Pecans cull broken and inferior nuts from the new harvest passing them on a conveyor belt.**



nearly a quarter-million trees on 5,000 acres between Sahuarita and Green Valley, this pecan orchard of Farmer's Investment Company (FICO) is still the world's largest. But since FICO planted it in 1965-69, other orchards of 1,000 or more acres have been established near Picacho Peak, the town of Maricopa and Kansas Settlement. Slightly smaller orchards, still vast compared to Southeastern standards, are maturing at Elfrida, Queen Creek, Wenden, Yuma and in the upper Verde Valley.

The ability to harvest pecans mechanically has been crucial to their growth in Arizona, said Kilby.

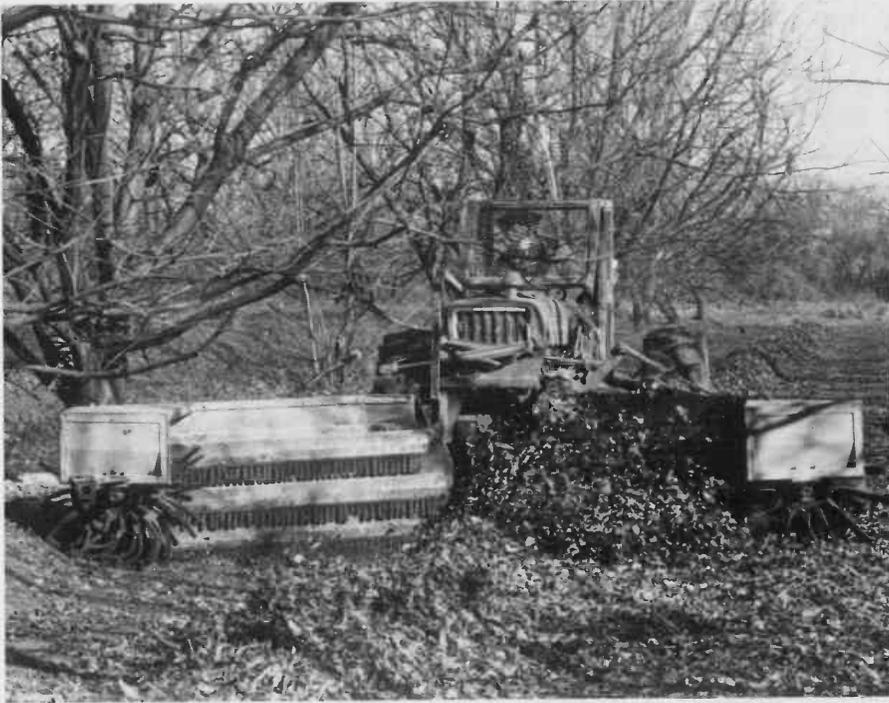
The FICO orchard resulted from founder R. Keith Walden's decision around 1960 to replace his cotton with another major crop because synthetic fibers were hurting the demand for cotton. FICO planted tests of several tree and vine crops. "Through a process of elimination, we settled on pecans primarily due to mechanical harvesting for them instead of hand harvesting for wine grapes," said company vice president Richard S. Walden, Keith's son.

Arizona pecan orchards use two types of mechanical harvesting. Nuts from young trees are shaken onto mobile catch-frames with large surfaces. The nuts roll down the tilted surfaces to a conveyer belt that drops them into a trailer bin.

Once an orchard matures, too many nuts from a shaken tree would miss the catch frame. Instead, nuts are shaken onto the ground, raked into rows and swept up into trailer bins, all with specialized machinery.

FICO does not have many trees at Sahuarita still young enough for catch-frame harvesting, but Picacho Pecans, Inc. uses that system on its 2,710 acres of orchards southeast and northwest of Picacho Peak. Its trees are 5 to 14 years old.

In an 8-year-old portion of the orchard one day last November, a three-man harvesting crew—Juan Urquides, Juan Villegas and Pete B. Martinez—spent about a minute and a half on each tree. Manager



Jesse Martinez said that after the trees shed their leaves, harvesting could go faster.

Picacho Pecans started harvesting in late October last fall. At that early date, the nuts still averaged 16 percent moisture, about three times the desired level. After cleaning, the early nuts are dried by warming them to 95 degrees F for 24 hours. Tom J. Koflanovich, pecan supervisor for the company, said that the extra step is worthwhile in order to take advantage of better prices early in the season: "There's usually a 5 to 10 cent difference in the price we get (per pound) between the beginning of the harvest and the end of the harvest."

Koflanovich estimated that harvesting, cleaning, sorting and drying a pound of pecans cost about 16 cents last season, excluding overhead costs. Before-harvest costs were about twice that, again excluding overhead.

At the FICO Sahuarita orchard, harvesting lasted from early November 1981 to early February. Almost all of the orchard employees work year-round rather than just at harvest, said Richard Walden. After harvest, trees are pruned and fertilized. They get a winter irrigation if rainfall is not adequate. Before buds appear, pruning scrap and broken branches must be removed. From April to June, trees are sprayed with zinc five or six times to aid leaf development. Aphid control, weed-mowing and irrigation as needed last through the summer. The ground must be prepared as a harvesting surface in early autumn.

Walden and his orchard manager, Lane Brandt, were pleased with results of a new ground preparation method they adopted last season. Instead of scraping and rolling the ground to flatten it and remove weeds between tree rows, FICO crews just mowed the weeds but let them survive as a sod surface. "Harvesting off a sod bed is better than off bare ground," said Brandt. "We take less dirt with the nuts into the (processing) plant, so there's less wear and tear on machinery."

Workers at the FICO Sahuarita orchard prepare for the harvester after nuts have been shaken onto the ground. Above: Operator and machine gather nuts and leaves into a long pile between rows of trees. Below: Edmund Marquez rakes in nuts from areas missed by the mechanical rakes.



Another innovation some Arizona pecan growers are trying is drip irrigation. Drip systems are the rule in sandy-soil West Texas orchards, but still the exception in Arizona, said UA's Kilby.

The 700-acre Pecan Center orchard near Queen Creek was planted with drip irrigation six years ago. "The growers expect drip to be the permanent source of irrigation for the orchard," said UA Extension horticultural agent Lowell True of Phoenix. "They have estimated that it reduces water use by about one-third."

With conventional flood irrigation, pecans need about five to six acre-feet of water per acre, said Kilby. Most Arizona orchards grow on former cotton fields, which used about the same amount of water.

The dryness that makes irrigation necessary also gives Southwestern pecan orchards a big advantage over Southeastern orchards: Moist climates foster several pecan diseases and insect pests. High sunshine levels and control of water also help Arizona growers produce consistently high-quality pecans, said Kilby. High quality means full meats and a light color that indicates sweet flavor.

The new Southwestern pecan orchards also benefit from improved varieties not available in the past or not suited to the Southeast, he said. Western Schley and Wichita varieties dominate Arizona orchards.

Kilby emphasized that new Western orchards are adding to, rather than replacing, Eastern pecan production. The new national record of about 350 million pounds in 1981 testifies to that.

Demand for pecans seems to be rising, too, since prices dropped only slightly despite the big 1981 crop. Prices averaged about 80 cents a pound (in-shell) for nuts to be processed and \$1.50 for direct marketing. About 97 percent of Arizona pecans are sold for processing, mostly in baked goods, candy and ice cream.

Planting of new orchards in Arizona has tapered off in the past two years, but Kilby predicts that the 21,000 acres now planted will increase to 28,000 or more by 1990.

To help encourage corresponding increases in demand, Kilby's fellow UA horticulturist Dr. Eugene Mielke displays a bumper sticker on his office door: "Eat pecans. Millions of satisfied squirrels do."



A well-filled, light-color meat indicates a pecan of high quality.