



# SOUTHWEST CHRISTMAS TREE INDUSTRY Research Needs and Commercial Opportunities

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University of Arizona,  
College of Agriculture  
and  
Arizona Christmas Tree Growers' Association

**SOUTHWEST CHRISTMAS TREE INDUSTRY**  
**RESEARCH NEEDS AND COMMERCIAL OPPORTUNITIES**  
Proceedings of the Symposium Held May 11, 1984, Tucson, Arizona

compiled by  
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## HISTORY OF PINUS ELDARICA IN THE UNITED STATES

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The story of the Afghan pine has evolved so that most of the tellings have a great number of similarities. It first came to our attention through the Plant Introduction Program of the U.S. Department of Agriculture (USDA).

The early documentation was expressed in a paper by H.H. Fisher. In July of 1960, J.R. Harlan collected seed of a pine in southern Afghanistan in or near the town of Lashargah in the Helmand Valley. In his notes he commented that the pine had a rapid growth rate, withstood high temperatures, was extensively planted in southern Afghanistan and might have potential as a Christmas tree in the United States.

No natural stands of Pinus eldarica have been reported in Iran or Afghanistan. At Tbilisi, Georgia, USSR, there are about 550 hectares (1,400 acres). This is near the Caspian Sea and on the border of Iran. Pakistani foresters have reported that young trees (8 years of age as compared to 145 year-old trees) produce seeds with much higher viability. This information is particularly useful as we develop seed orchards in the United States. Early plantings in Asia were made on the grounds of palaces, public gardens, government houses — leading to the conclusion that seed was traded as unusual gifts as the caravans crisscrossed the area.

In a year of political overtones, one sees the Afghan pine sold as "Mondale Pine" instead of one of the well-known synonyms. Most common of the names are: pronto pine, Quetta pine, Afghan pine, blue eldarica, desert pine, Mondell pine and eldar pine. Dr. W.H. Critchfield, Institute of Forest Genetics and Dr. Frederick Meyer, U.S. National Arboretum have contributed to the taxonomic status of this pine.

To backdate a while, it is well to remember that this popular pine is not quite a quarter century on our continent. The earliest seedlings distributed by the USDA occurred in 1961 and 1964 from the first seed importation. This collection made in 1960 was PI 271431. These earliest trees are located at 1802 Halfmoon Drive, Las Cruces, New Mexico. Other plantings were made in Placerville, California, and Woodward, Oklahoma.

Another collection, PI 303628, was made near Herat, Afghanistan, by the Agriculture Agency for International Development, Kabul. Five pounds of seed were received May 1965 and turned over to the Forest Service. Ultimately, this seed was given to New Mexico State University. Five seedlings were planted at

the Institute of Forest Genetics, Placerville, California. Most of the trees in Las Cruces were grown from this seed source. Another introduction, PI 362153, was received from Afghanistan (1971) and listed as Pinus brutia. This accession is almost certainly Pinus eldarica. The last of the numbered accessions was PI 432346 from the area of Azerbaijan, Tbilisi, Georgia, USSR, through the courtesy of Tim Symonds of London, England, through British diplomatic channels. Now most growers have either made direct contacts with foresters or seed brokers throughout the area for seed to continue propagation. From experience we observe that some plants produced more nearly resemble Pinus halepensis or Pinus brutia and Pinus eldarica.

An individual who did much to commercialize the Afghan pine was Mondell Bennett. Through Dean Earle, Chief of Forest Management, New Mexico Department of State Forestry, Bennett was introduced to this pine. In 1968, Bennett had a small nursery business, Arizona Cypress Gardens. Here he grew a few Arizona cypress, juniper, pine, spruce and fir. He was the supplier of bareroot seedling Arizona cypress for New Mexico reforestation projects. Earle took Bennett .5 pounds of seed in 1969 from PI 303628. About a year later, he had a visit from the Conservator of Forests, Quetta, Pakistan, who then arranged direct shipments to the Arizona Cypress Gardens. Lloyd Tupper, a real estate developer from San Francisco, purchased the property and business from Bennett who was to remain as a consultant to Tupper Trees but within a few months he died — "A man in love with a tree" — (February, 1973).

After 20 years, growers and consumers still wonder about the growth rate of the tree. Early on, with the tree receiving the same treatment as a lawn, the growth rate was about 3 feet a year. In another stand, a 6-year-old tree with adequate moisture was 48 feet high with a dbh of 12 inches. On November 30, 1976, a sudden freeze resulted in severe injury or death of a number of species in El Paso and Las Cruces: Arizona cypress, Italian cypress, Aleppo pine, Italian stone pine, and Japanese black pine. Pinus eldarica was not injured. The Afghan pine is not the universal plant. It does survive under diverse conditions. There is a lone tree in Ruidoso, New Mexico. It is extremely slow growing. Those at Woodward, Oklahoma are not as tall as the Arizona-New Mexico trees, but their dbh is comparable. Trees in Mora and Taos, New Mexico, have not survived.

The County of Los Angeles' Forester and Fire Warden, in cooperation with the Institute of Forest Genetics and Pacific Southwest Forest and Range Experiment Station, established trial plantings in San Gabriel Canyon. Trees were planted March 25, 1970. According to Arthur Arndt, head deputy forester, the seed sources were from the Baku region of Russia. Growth rates were excellent. For example, tree #2328 produced 6.75 feet of growth from April 1973 to April 1974. The form and drought tolerance was exceptional. These trees were established with only one irrigation.

Several other events were of interest in the early 1970s. From New Mexico, seeds of the PI 303628 were supplied to the Forest Nursery at Fort Collins. After planting, a freeze occurred in May. Concern was that all would be dead, which was not the case. The Arizona State Land Office was distributing seedlings under the Clarke-McNary Act. The source of the seeds again was Pakistan.

The mid-1970s brought added changes. A young forester, Dr. James Fisher, joined the New Mexico faculty as manager of the silviculture unit and Mora

Research Center. With his interest in tree improvement, Pinus eldarica seemed to offer a great opportunity, especially since I hoped someone would carry on work with this mystery pine of Asia at my retirement. Through graduate students Fisher has a strong program in weed control using herbicides, seedling production methods in the greenhouse, fertilizer response in the field and greenhouse, water relations and stress physiology and biomass production and agriforestry techniques. An acquaintance of Fisher furnished seeds of Pinus eldarica from the College of Natural Resources, University of Tehran, Karadjy, Iran.

Early in 1976 (March 5) Lloyd Tupper received the trademark for the MONDELL PINE. An aggressive advertising program was launched, which not only helped his business, but all those who grew or sold Afghans. Later, CHRISTMAS BLUE ELДАРICA was trademarked by Southwest Christmas Trees, Phoenix, Arizona. The first commercial Christmas tree planting using Afghan pine was White's, Sedona. This was the year that recommendations were made for the planting of potential seed orchards. The unrest in the areas of foreign seed production necessitated future planning. After New Mexico State's planting, Phillip Archer at LaMesa selected and planted trees as a seed orchard. Toward the end of the year, trial planting of Afghans were recommended for Hawaii. Site selections were made and plantings were made within the next few years. Barry Hawes and Bennett Ventures, a Canadian firm, bought Tupper's, later closing the business in 1977. Wes Harris and Jerry Shepard in 1978 purchased the farm assets including the trademark MONDELL PINE from the bankruptcy court. Dan Childress, at Christmas had 700 trees in Eastland, Texas, which he sold at \$10 each. These trees were more than 9 feet tall in 2.5 years.

The next year brought even more activity. The provenance test supplied by the Food and Agriculture Organization was replanted from gallon containers. The original planting was destroyed by miscalculation of herbicide concentration. Frank Rothe of Colo Hydro became a progressive supplier of Afghans in tubes. He was working with Steve Sutherland and L.E. and Phil Archer. Undoubtedly, he also supplied seedlings to others. New information on the pruning of the Afghan pine resulted from the Frank Robertson Christmas Tree Farm. Kay Starr, a contract manager, reported that late shearing was unsatisfactory and that cut leaders would throw multiple leaders. More precise pruning techniques have been developed by various growers. Archer Farms planted 6,000 seedlings this year that were harvested in 1980. Twelve hundred were sold as ornamentals and 4,000 were sold as Christmas trees. That same year 600,000 seedlings were produced by Shepard and Harris. Probably the most quoted comment of the year was "This introduced pine is the tree of the future" (Steve Sutherland).

Growth of the industry continued and probably more intensively. The tree was further distributed in the United States. Trees have been distributed from the east to the west coast. The Afghan seemed more responsive in the higher alkalinity areas, well drained soils and higher temperatures of the west. Arizona's State Land Office continued to distribute seedlings from the Quetta-Chagai Forest Region. In New Mexico, the demand for Afghan pines increased. Roughly one-fourth of the seedling trees planted in New Mexico are Afghans, which are only planted in the southern part of the state. Trees were introduced to the Dallas-Fort Worth area. Newspaper and special articles have heightened interest throughout the adapted area.

To further our understanding of the Afghan pine, Dr. Fisher, Jerry Shepard and I studied at the Royal Botanical Gardens, Kew, Richmond, Surrey England. From the herbarium specimens, the tree we prefer to grow is undoubtedly Pinus eldarica. In 1976, a columnar Pinus eldarica was selected in Pakistan. The Conservator of Forests, S.M. Irshad, sent us about a kilo of this seed in May 1980. Today some of these trees are about 3 feet in height.

In the past few years, people from all areas have been trying this popular tree. Most are enthusiastic about its response. No one recommends a single species for all areas, but the Afghan certainly fits in our area. So far its uses have included landscapes, windbreaks, Christmas trees, afforestation, reforestation, paper pulp logs and biomass production. New technologies and systems will probably provide additional uses.

Consider the Afghan as a potential if any of these combinations fit your agricultural system: 1) fast growing, under irrigation (4.2 feet average in Las Cruces); 2) quick rotation; 3) useful in semiarid parts of the world; 4) natural Christmas tree form, minimum pruning; 5) adapted to high alkalinity soils; 6) few reported pests — most often aphids and spider mites; 7) low moisture levels. REMEMBER — Living plants require some water; and 8) seedlings are ready to market in 4 to 6 months.

In closing, I would like to quote from two letters in my files. The first was generated when news releases were made about the new pine.

"A new tree, a pine, is being widely advertised recently as the Mondell Pine. The claims indicate it grows faster and is better adapted. It is doubtful these claims are true! We think it is similar to Aleppo pine and may be a variety."

Later another note says: "Pinus eldarica could possibly become the tree of the future. The only drawback is the lack of a permanent place to obtain seed to continue reproduction. Cuttings are being used with varying degrees of success."

Today, the writers of the above are heavily involved in growing and using Pinus eldarica. Their interest, enthusiasm and futuristic thinking is moving the industry ahead. Tissue culture, cuttings and seedlings continue to increase the population.

The Afghan pine, Pinus eldarica — an exciting pine that has come a long way, whose potential is still developing.