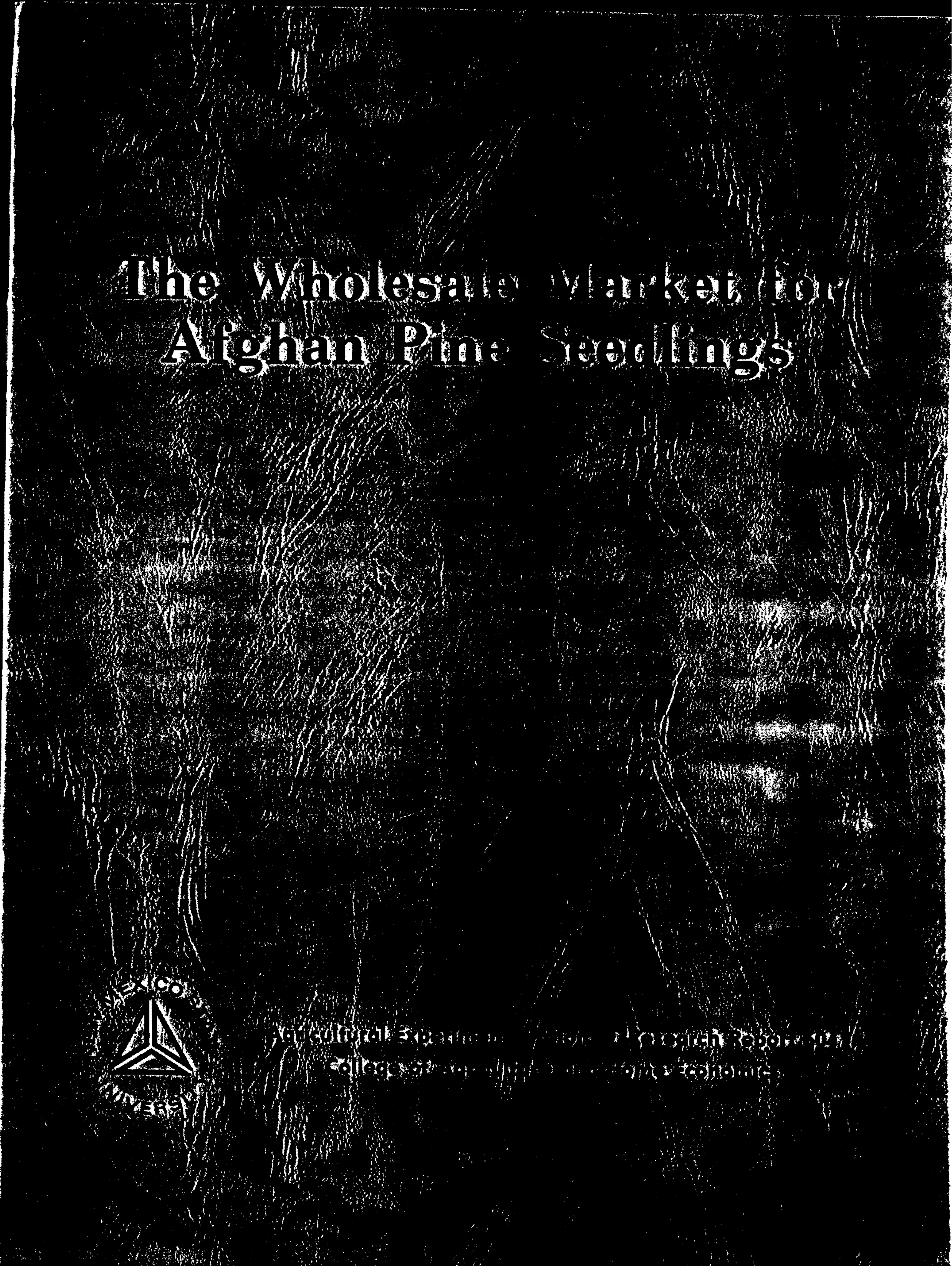

The Wholesale Market for Afghan Pine Seedlings

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SUMMARY

This report estimates the 1985 regional wholesale market for Afghan pine (*Pinus eldarica*), and the potential share of that market that a new Las Cruces, New Mexico, firm could capture. The estimates were based on market information obtained through personal and telephone interviews with Afghan pine producers, consumers and professional foresters.

The Afghan pine seedling product was defined as a plant, 3 to 4 months old, grown in a plastic container, 2 inches by 2 inches by 5 to 10 inches deep. Seedlings in these containers were commonly referred to as container or liner stock. They may be produced year round under greenhouse conditions.

The regional wholesale market for seedlings was defined as southern California, Arizona, New Mexico and Texas. The market was limited to those geographic areas that met the Afghan tree growing requirements for temperature, rainfall, soil pH and soil texture. The market was also limited by transportation costs relative to those of competitors.

The total annual market was estimated to be approximately 4,835,000 seedlings. Competitors' price differentials resulted from a combination of production factors including species, plant container and seedling size. Seedling size was influenced by the amount of greenhouse space and the turnover time (planting seed to sale) for seedlings. These influence the eventual seedling survival rate after transplanting. Greenhouse space and turnover time were influenced by demand for seedlings relative to the desired return per square foot. Price differentials also occurred because of large volume discounts. Prices ranged from $.28 per seedling to $.75 per seedling. The weighted average price received FOB (loaded Free on Board transportation) production point was $.43 per seedling. The lower price ranges were heavily influenced by the volume discounts for sales to producers of trees for fuel, and the sale of small sized seedlings by one firm in the commercial market segment. An average $.45 per seedling price was recommended for a firm planning for market entry, development and penetration. Volume sales for reforestation or biomass would be at a lower price than those to wholesale nurseries. The $.45 average price would permit a new firm entering the market to capture a share of existing markets and competitively develop new markets.

A new firm entering the Afghan pine seedling market with an average price of $.45 per seedling could expect to capture 5% (241,750 seedlings or $108,787 annually in gross sales) to 15% (725,250 seedlings or $326,362 annually in gross sales) of the 1985 market of 4.8 million seedlings. Indications were that biomass, reforestation, export and new domestic markets were developable markets. The exact extent to which they could be developed was unknown.

Although the commercial wholesale nursery and Christmas tree market segments appear to be dominated by a combination of business agreements among a few firms, a firm using an aggressive marketing strategy could successfully compete in the market place. Since the mid 1960s, the market demand for seedlings has increased from negligible to approximately 4.8 million per year for total annual sales of approximately $1,700,000. The Afghan pine tree is an established product in wholesale nursery channels. The biomass and reforestation market segments, domestic and for export, may hold potential for seedling sales beyond the volumes estimated here.

An aggressive marketing strategy requires choosing the market segments desired and identifying each buyer's specific needs. It is essential to have the seedling product at the right place at the right time, and in the right form for buyers. This would require individual contact and sales arrangements before actual production.

Forward contracting for advanced sales allows the necessary time element to successfully produce the desired product and reduce risk. Buyers usually expect a lower price if they commit to a contractual arrangement.

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The market for Afghan pine trees (*Pinus eldarica*) has developed in the United States over the past 20 years. The demand for seedlings has steadily increased since the early 1970s when Afghans became available through wholesale nurseries. The tree is grown principally for ornamentals and as Christmas trees. It may also be grown to produce manufactured boards, paper pulp and fuel wood.

The Afghan pine tree seedling product is defined as a plant, 3 to 4 months of age, grown in plastic containers 2 inches by 2 inches by 5 to 10 inches deep, and is commonly referred to as liner or container stock. The product would be grown in controlled environments (greenhouses) affording the opportunity to accelerate seedling growth through optimal growing conditions.

The market region was defined as the area where Afghan pine seedlings, when sold, can be field grown successfully. The Afghan pine tree is adapted to a wide range of growing conditions. It tolerates temperatures from −13 °F to 115 °F. Because it is deep rooted and adjusts its growth to drought, it can survive prolonged periods of moisture stress. The most critical restrictions are climate (i.e. winter temperatures too low), availability of irrigation water and soil texture. This potential plantable area is restricted by the occurrence of poorly drained soils in eastern Texas. In Texas, Interstate 35 running north to south from Dallas - Ft. Worth through Waco, Temple, Austin and San Antonio, and Interstate 37 from San Antonio to Corpus Christi may be the eastern boundary for field production of Afghan pine trees. The Afghan pine is considered poorly adapted to the acid soils (pH7 and below) and high rainfall east of Interstate 35 that promote poor soil aeration. However, some foresters believe Afghan pines can be successfully grown on sandy sites in southern coastal areas of the United States.

Unlike most pine species, the Afghan tolerates alkalinity, evidenced by its ability to grow well in soils with high concentrations of soil calcium carbonates. However, Afghan pine performs poorly when rooted in clay soils or when provided inadequate soil drainage.

Afghan pine seedling production and marketing is a specialized component of the wholesale nursery industry. Afghan pine seedlings are produced by a small number of firms.

PURPOSE

The purpose of this study was to estimate the price and quantity of Afghan pine tree seedlings that could be sold by a new business in the southern Arizona, California, Nevada, New Mexico and Texas regional wholesale market. Firms producing and selling Afghan pine tree seedlings were also identified. The result was a market analysis, and not a production or financial feasibility analysis.

PROCEDURES

Firms producing Afghan pine seedlings were identified through individual contacts. Producers, and the firms to whom they sold seedlings, were interviewed using a structured questionnaire.

The sales volume by firm and selling prices were determined through the interviews, as were interrelationships among business entities. Seed sources, containers and seasonality of sales were determined. The types of market outlets and means of transportation were identified.

Transportation costs were estimated using published information. Additional truck transportation rate verification was obtained from a truck brokerage firm.

The sales volume and price for Afghan pine seedlings that a new Las Cruces firm could attain in the market were estimated. This estimate was based on total seedling sales for the industry, sales by type of end use, market share by firm, prices, and information from buyers and sellers regarding the ability of a new firm to enter the market. The estimate was also based on the potential for capturing the market from existing suppliers, a transportation advantage over Arizona and California competitors to Texas and the southern coastal region markets, the advantage of selling a quality *Pinus eldarica* product, and an assumed aggressive marketing-sales strategy.

SEEDLING PRODUCERS

To produce seedlings, a grower must have seeds. Seeds are imported from Russia, Afghanistan and Pakistan, with only a small volume produced in the United States. Seed quality can be a problem, but reputable suppliers exist.

There were ten firms, two state forest agencies, and about 250 individuals in California, identified as "others" (E), producing Afghan pine seedlings in 1985 (table 1). Table 1 identifies seedling producers as well as tree producers by type of market segment. In Utah, for example, Firm H produces seedlings but does not produce trees.

It was estimated that 4,835,000 Afghan pine seedlings were sold in 1985 (table 2) by those firms, agencies and others listed in table 1 as seedling producers. The major seedling producers were firm H, which produced 2,300,000 seedlings much of which was under contract with firm B; firm E consisting of approximately 250 producers in southern California, which sold an estimated 1,250,000 seedlings; firm I, which sold an estimated 400,000 seedlings; firm C, which sold 250,000 seedlings; and firm F, which sold 50,000 seedlings annually. Others sold less than 40,000 seedlings each per year, with combined sales of 585,000 seedlings.

Firm B subcontracted their seedling production to firm H. This arrangement was the result of a friendship and a desire to keep the seedling

Table 1. Identified firms, agencies and individuals producing Afghan pine seedlings, and those producing trees by market segment, 1985.

			Market Segments					
			Commercial			Environmental		
State	Firm	Seedling Producer	Container Christmas trees	Container stock	Cut Christmas trees	Reforestation	Wind break	Reclamation or biomass
California	A	X	X	X	X			
	B		X	X	X	X	X	X
	C	X	X	X				
	D	X	X	X				
	E[1]	X	X	X				
Arizona	F	X	X	X	X			
	G						X	X
Utah	H	X						
Colorado	I	X						
Nevada	J	X	X	X	X			
New Mexico	K				X[3]		X	X
	L	X	X	X				
	M[2]				X			
	N[2]				X			
	O				X			
	O				X			
	P	X						
	Q[4]				X			
Texas	R	X					X	X
	S		X	X	X			
	T		X	X	X			
	U[4]				X			

[1]About 250 individuals.
[2]Both firms are part of the same syndicate.
[3]Land owners are permitted to cut trees obtained from State Forestry. They are not allowed to dig trees.
[4]Other smaller growers in New Mexico and Texas, respectively.

Table 2. Estimated Afghan pine seedling volume, price and weighted average price by firm, 1985.

Firm	Total Number of Seedlings Sold	Number for Christmas Tree Production	FOB Price	Total Dollars
I	400,000.	133,333	.55	220,000
F	50,000	16,666	.75	37,500
J	25,000	8,333	.65	16,250
H	2,300,000	0	.35	805,000
C	250,000	83,333	.28	70,000
D	30,000	10,000	.60	18,000
E	1,250,000	416,666	.55	687,500
G, K & R	80,000	0	.72	57,600
S, T & U	450,000	150,000	.50	225,000
Total or Weighted Average Price	4,835,000	818,331	.43	2,079,250

source in low profile. Firm B was seeking a new seedling supplier. Based on information from competitors, a price of $.35 per seedling for sales by firm B was assumed.

The 250 firms or "others" in California (E) selling seedlings were in southern California. Seedlings were usually grown by the individual firms as part of their existing nursery operations.

Firm I grew seedlings in cooperation with firms F, D, L, T, S and U. Firm I, in cooperation with these firms, produced a standard *Pinus eldarica* and a trademarked Afghan tree.

Firm C was a large supplier of lower quality seedlings, usually selling below $0.30 each. Their seedlings were smaller, 3 to 4 inches tall, and grown in paper containers. Fixed geometry container systems are considered superior to paper pot systems because seedling growth is more uniform among cells. Firm C had a large portion of the *Pinus halepensis* and *Pinus brutia* Afghan pine varieties in their seedling sales, which contributed to lower quality and lower prices for their product. Firm C appeared to have no contractual arrangements with other seedling producers.

Firm J was apparently not affiliated with other seedling producers. It sold about 25,000 seedlings annually.

The average FOB (Free on Board transportation) price per Afghan pine seedling for all firms, weighted by sales volume, was estimated to be $.43 (table 2). The seedling price ranged from $.28 per seedling for firm C to $.75 per seedling for firm F. Price differences were primarily the result of volume discounts, container and seedling size, varieties, and trademarks. The sale of seedlings by firms B and H at an estimated $.35 reflected their high volume sales for biomass production to produce fuel for burning.

THE WHOLESALE AFGHAN PINE SEEDLING MARKET

The wholesale market for Afghan pine seedlings consisted of two market segments or outlet categories — commercial and environmental (table 1). There were 4,835,000 Afghan seedlings sold or planted by firms in 1985 (table 2). The three ultimate end uses for the Afghan seedlings in the commercial market were containerized Christmas trees, container stock and cut Christmas trees. In the environmental market, seedlings were used for reforestation or biomass for energy production, wind breaks and land reclamation.

Commercial Market

There were 12 firms and three groups of "others" who sold seedlings in the commercial market (table 1). In California, the group of "others" (E) was estimated by industry sources to be about 250 individuals. In New Mexico and Texas, the groups of "others", identified as Q and U, respectively, represented smaller groups. As shown in table 1, nine firms and the California group of "others" (E) sold containerized Christmas trees and container stock. Eleven firms and the Texas group of "others" (U) sold cut Christmas trees.

Container Stock and Container Christmas Trees. Among those that sold trees produced from Afghan seedlings for container stock and container Christmas trees were firms D, F, L and S. These firms had close business arrangements with each other.

Firm L had one of the largest U.S. plantings of Pinus eldarica for container stock and con-

tainer Christmas tree sales with about 100 acres. Firm L received seedlings from firm I and approximately 1,000 to 1,200 seedlings were planted per acre. The trees were removed at various stages of growth by hand and containerized. The container sizes used were 1 gallon, 3 gallon, 5 gallon, 71/2 gallon, 15 gallon, 24 gallon, 24 inch box, 36 inch box, 48 inch box and 54 inch box. Containerized trees were shipped to firm F and New Mexico and Texas outlets where they were sold as Christmas trees or ornamentals.

Firm S was reported to have planted 220 acres of seedlings furnished by firm I for later sale as container stock and container Christmas trees. The contract was reported to state to whom the seedlings were to be provided, and that firm S would pay half the profits to firm I upon sale of the finished tree. It was not determined if this contractual arrangement applied to all *Pinus eldarica* seedlings, or only to a trademarked Afghan tree.

Firm C and the group of "others" (E) in California did not have contractual production arrangements. Firm B was disengaging from the commercial nursery market in favor of the biomass segment of the environmental market.

Cut Christmas Trees. Participants in the cut Christmas tree market segment were firms F, L, S and T. The same business arrangement as in the container stock and container Christmas tree market existed between firms F, L and S with firm T. Others that grew cut Christmas trees were firms J, M, N, O and Q (table 1).

Environmental Market

One firm and three state forestry agencies sold seedlings in the environmental market (table 1). Firm B sold primarily in the biomass market segment, and also for reforestation and land reclamation. The Arizona, New Mexico and Texas state forestry agencies (G, K and R) sold seedlings primarily for wind break and land reclamation uses.

State Forestry Agencies. State forestry agencies in Arizona, New Mexico and Texas (G, K and R) sold seedlings to state residents for windbreak and reclamation purposes. The seedlings for G were produced under bid by firm I. Seedlings for K were produced by New Mexico State University. The Texas forestry agency (R) produced its own seedlings in Lubbock, Texas.

Reforestation. Many reforestation efforts are underway worldwide. In the United States, sandhills along the southern coasts of Louisiana, Mississippi, Alabama, Florida, Georgia and South Carolina represent a potential annual reforestation project of approximately 2,000 acres or 1,300,000 trees per year. Although the predominant timber tree planted in the Southeast is loblolly pine (*Pinus taeda*), Afghan pine could capture a part of this market because of the tree's rapid growth on course textured, well drained sites.

There are also opportunities for large scale reforestation projects in the international market. Countries with potential include Portugal, Brazil, Spain, Mexico, China and Pakistan. The sales potential in these markets was not evaluated.

Biomass. The use of wood chips as fuel source is also a potential market for the rapid growing Afghan pine tree and, therefore, seedlings. Firm B has projects underway in California (5 million trees), Hawaii (2 million trees), Portugal and Brazil. Wood chips from Hawaii could also be sold to Japan, which imports woodchips from Washington and Oregon for paper production.

MARKET STRATEGY

The market for a new firm entering the industry can be viewed from two perspectives. One may be able to take sales in existing markets from others, and it is possible to develop entirely new markets. Once the estimated capturable market share has been secured from competitors, a firm desiring accelerated growth can follow several courses of action. A market penetration strategy would encourage more use of the product by existing consumers. A product development strategy would create new products for existing markets. A market development strategy would seek out new markets for existing products. The use of Afghan pine as a wood product would constitute market development.

Seedlings sales for nursery stock production by others as containerized trees and containerized Christmas trees has been a traditional market for Afghan seedling producers. Contacts for seedling sales to these markets could be through nurseries, growers and investor groups. The commercial market outlet to growers of cut Christmas trees also would be a market for increased seedling sales. The environmental market for seedling sales is quite large and could be expanded.

TRANSPORTATION COSTS

It is necessary to describe the containers in which seedlings are shipped to determine transportation costs. The standard cardboard box for shipping seedlings is 12 inches by 16 inches by 20 inches deep, holds 50 containerized seedlings and weighs about 10 pounds when full. A standard semi-load would be about 1,100 cartons or 55,000 seedlings, and would weigh 11,000 pounds.

Table 3 indicates various points of origin, destination and trucking rates per semi-load (42-45 ft. trailer) within the competitive market region. Using table 3, comparisons can be made to determine if a new Las Cruces firm would have a transportation advantage over existing firms. For example, the cost per box for firm H from Salt Lake City to Los Angeles was $.65, while the cost was $.73 for a firm in Las Cruces. On the other hand, the cost was $.85 per box from Las Cruces to Corpus Christi, Texas, whereas the cost for firm I from Denver was approximately $1.35 per box.

The buyer customarily pays the freight cost. Therefore, freight may be an important negotiating tool to a seedling producer. A transportation advantage does not necessarily mean the seller can get a higher product price; it does mean the seller has a competitive edge in the market at the going price.

Table 3. Truck rates per standard trailer[1] and cost per 10-pound box of Afghan pine seedlings[2]

Origin	Destination	Mileage	Cost per — Load	Carton	Seedling
			------- *dollars* -------		
Las Cruces	Dallas	680	765	.70	.014
Las Cruces	Phoenix	360	425	.37	.007
Las Cruces	Los Angeles	800	800	.73	.015
Las Cruces	Corpus Christi	800	935	.85	.017
Salt Lake City	Los Angeles	715	715	.65	0.13
Denver	Las Cruces	620	555	.50	.010

[1]Most usual load was a 42-45 ft. trailer containing about 1,100 boxes.

[2]Prices per mile may vary, but the transportation differential remained fairly constant.

Sources: U.S. Department of Agriculture, Fruit and Vegetable Truck Rate Report, Federal State Market News, 630 Sansome Street, Room 727, San Francisco, California 94111. Current issues.

Phone call — May 16, 1985 — Mosley Truck Brokerage Co., Hwy 292 and Amador, Las Cruces, New Mexico. Represents available rates during spring. Truckers anticipate other business at destination.

RECOMMENDATIONS

The following recommendations were based upon interviews with Afghan seedling producers and buyers, their market shares and judgment on the nature of the competitive environment. A new firm in Las Cruces, New Mexico, could capture an estimated 5% to 15% (241,750 to 725,250 seedlings) of the 4,835,000 seedling market based upon information from competitors. The range would be a function of aggressiveness of the marketing program.

It was estimated that sales could be made by market segment as follows: container stock and container Christmas trees, 170,000 seedlings; cut Christmas trees, 58,750 seedlings; state forestry agencies, none; reforestation, 13,000 seedlings; and biomass, none to 483,500 seedlings. In no case would this represent sales greater than 5% to 15% of the market segment. These sales would be from capturing competitors' markets and a limited market development, particularly in Texas, the Southeast, and for export where the market for seedlings is in its infancy. This market share could be captured with an estimated average sales price of $.45 per seedling, FOB Las Cruces.