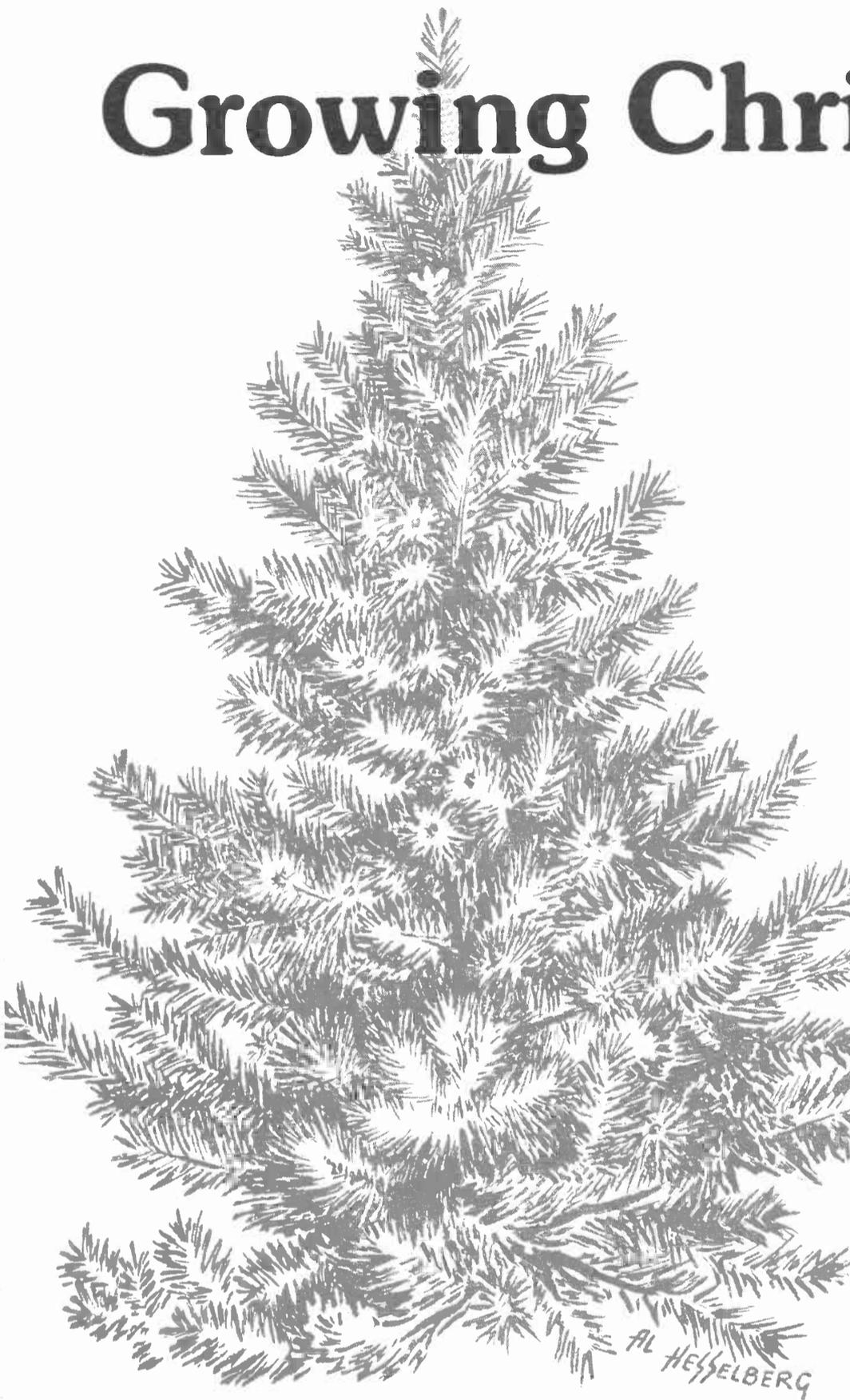


Growing Christmas Trees in Arizona — A Native and a Foreigner Look Promising



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With place names like Alpine, Spruce Mountain, Aripine, Pine Top, Indian Pine, Pine Flat, Pinedale, Piñon, Cedar Creek, Pine, and Christmas Tree Lake, you might think Arizona would be a sizeable producer of its own Christmas trees, mightn't you?

Not so.

Deceiving, the high fir country of the Pinaleno, White, and San Francisco Mountains. Deceiving, the whole ponderosa sweep of the Coconino National Forest. Pine trees, pine trees everywhere, but not a Christmas tree crop to cut. Very nearly.

With few exceptions, the Christmas tree demand

in Arizona is met by plantations in eastern and northern mountain states. The trees are cut in October and lie about drying a month or more in shipment.

So there is economic appeal in growing Christmas trees here to meet the in-state demand, and the Arizona Land Department has, for the past three to four years, been encouraging small land owners to grow such trees. While most of the plantations are small (the largest containing about 1500 trees), there are plans afoot for an 80-acre venture in the Chino Valley, north of Prescott.

To date, one of the primary obstacles to commercial Christmas tree plantations is Arizona's long, dry spring. This is a critical period for survival of seedlings. Frequently there is insufficient moisture.

This study focused on the feasibility of starting small Christmas tree plantations in the White Mountains and on the White Mountain Apache Reservation, with a particular eye on what types of trees are most promising and how to ensure or enhance the survival of seedlings.

We found two species — one native and one exotic — that seem most promising: the Arizona cypress and the brutia pine (also known as quetta pine), native to southern Russia and planted commonly in Afghanistan. These species were planted as seedlings along with three other native types at three sites of differing elevations in the White Mountains of east central Arizona.

Also included in the study were Douglas fir, piñon pine, and southwestern white pine. Douglas fir is widely planted as a Christmas tree. Arizona cypress has been popular as a Christmas tree for more than 20 years in the southeastern United States, and southwestern white pine has been suggested as a good bet for Christmas tree usage. We selected piñon and brutia because they do well in dry climates.

The lowest site was at 4,600 feet on an old field surrounded by riparian vegetation on the east fork of the White River. A second was located at 5,800 feet near Post Office Canyon (south of McNary), and the

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third was at 6,000 feet near the Wagon Wheel Ranch (east of Show Low). The two higher plots were previously cleared woodlots located above the Mogollon Rim in ponderosa pine woodland.

Compared on the three sites were the effects of containerized plantings, different mulch covering, and artificial shading.

Seedlings were grown in two types of containers: half-gallon metal juice cans and 6-inch-deep by 1-inch-wide plastic mesh tubes. Both containers were filled with a mixture of four parts desert topsoil, two parts mortar sand, and three parts peat. To this potting soil was added 6 kilograms of 7-40-6 NPK fertilizer per cubic meter of soil. The containerized seedlings were grown in green houses and lath houses during the winter and early spring of 1975.

Planting was done in May and June, with a space of 4½ feet between trees in each row and 7½ feet between rows. The seedlings were watered every ten days until the summer monsoon rains came July 1. Thereafter rainfall kept soil moisture adequate.

The seedlings shaded for the purpose of the study were protected from the sun from noon until 5 p.m. during the summer growing season.

Can- and tube-grown brutia and piñon pine were planted on a quarter acre plot on the east fork of the White River, shaded and unshaded, to see if there were any differences in survival due to these various methods.

At Post Office Canyon, a quarter acre was planted with Arizona cypress and piñon pine seedlings, all having been grown in metal can containers. These seedlings were observed for different treatments of wood chip mulch, black polyethylene mulch, and shade applied to both species.

At the Wagon Wheel Ranch plot, a half acre was planted with Douglas fir and southwestern white pine. For comparison, some were planted bare root, some planted from the containers in which they had been grown with no disturbance to earth around the roots. All Douglas firs were shaded, since it has been shown that Douglas fir seedlings require shade to survive.

In November 1975 — after a full growing season — and in April 1976 — after a winter — the survival of the seedlings on the three plots was checked. The first check was made to see what the different treatments of mulch, shade, and containerized plantings had on survival of the various tree types.

Other than discovering that the brutia pine seedlings grown in metal cans survived better than those grown in the plastic mesh tubes, it was found the various treatments had no effect on survival. Apparently the irrigation during the spring plus regular weeding did more than any of the various treatments to ensure survival.

During the November check the brutia pine and Arizona cypress seedlings enjoyed the highest per-

centage of survival and the greatest growth as well (see table).

But survival of the brutia dropped drastically over the winter and there was damage to the cypress. Rabbits apparently found the succulent brutias to their taste, killing many. The piñon pine seedlings at the White River site (same site as brutia) grew slowly, and many died apparently due to poor adaptation after transplanting.

Both the cypress and the piñon pine seedlings survived nicely at the Post Office Canyon site, with the growth of the cypress suggesting that it has great potential as a Christmas tree type for Arizona.

Eight of the cypress did suffer dead tops from frost, and the tips (terminal leaders) of many others darkened considerably, leading to the conclusion that this species is near its upper elevational limit at 5,800 feet. The piñon there grew slowly, but its survival shows that it is well adapted to that site.

Douglas fir and southwestern white pine seedlings on the Wagon Wheel Ranch site didn't survive particularly well over the summer growing season and suffered frost heave during the winter which killed an additional 20-25 percent of the seedlings that had survived the first growing season. Both grew fairly slowly compared with the brutia and cypress, and they do not look promising as Christmas trees, given the site conditions in this study.

The Christmas tree project will continue with further studies of the brutia and cypress. Cypress seed from six isolated mountain ranges (Catalinas, Chiricahuas, Rincons, Blue Range, Santa Teresas, Apache) was gathered at varying elevations and will be planted at the White River and Wagon Wheel Ranch sites in a comparison of survival. The brutia will be replanted at the White River site and enclosed with wire mesh to prevent predation during the first winter.

While we continue with our experimentation with these two species, there are indications that commercial growers are taking brutia pine seriously. Reports are that the venture north of Prescott will see much planting of brutias, and the trees have already been raised for several years on small acreage near Willcox and sold successfully as Christmas trees.

Table 1. a listing by species of the total numbers planted, percent survival and average height for each plot in the study

	Total Planted	Percent Survival (Nov. 1975)	Percent Survival (Apr. 1976)	Average Height (Nov. 1975)
East Fork of the White River Plot				
Brutia Pine	126	94%	13%	25.06 cm
Pinon Pine	126	71%	45%	6.39 cm
Post Office Canyon Plot				
Arizona Cypress	93	90%	90%	49.73 cm
Pinon Pine	94	90%	89%	7.93 cm
Wagon Wheel Ranch Plot				
Douglas Fir	126	75%	51%	12.59 cm
Southwestern White Pine	167	86%	67%	6.50 cm