

CONTAINERS IN THE ROCKIES AND PLAINS

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Abstract.--Greenhouse-grown, containerized forest tree seedlings are gaining popularity in the Rocky Mountains and the Great Plains, where environment makes conventional nursery production difficult and survival of bare-root seedlings undependable. Several greenhouse operations are underway; more are planned.

The growing popularity of containerized seedlings in the Rocky Mountains and the Great Plains can be accounted for largely by the same reasons as in other places -- perhaps more so in some ways!

Seedling production in conventional nurseries is more difficult in the Rockies and Plains than it is in some other parts of the Continent, due to such elements as short growing season, extremes of temperature, strong winds, etc. Because of these and other factors, not only does a new seedling have a difficult time surviving and growing, it is also exposed to the rigors of growth and survival in the nursery bed for a longer time in order to get large enough for outplanting. These same environmental factors dictate that, in order for seedlings to make it in the real world of the planting sites in much of the Rockies and Plains, they must be relatively large, and they must be healthy and well-balanced.

It is quite understandable then, I think, that the development of containerized seedling operations in this part of the country follow quite closely the pattern developed by Dr. Dick Tinus in his research work at Bottineau, North Dakota. Those of you who have visited Bottineau on other than a couple of warm days that usually occur there sometime in July, know that Dick is qualified to address himself to the subject of producing trees in harsh climates! The details of his work will be discussed later in the program, so I won't go into them here. I would like to say, though,

that those involved in reforestation in the Rockies and Plains are deeply indebted to Dick, not only for the outstanding research results he has produced, but also for his willingness to assist in putting those research results into operational use. We have, of course, also profited greatly from the research and practical experience of many others in the field.

Containerized seedlings are not new in this part of the country -- Colorado State Forest Service, Kansas State and Extension Forestry, and others have been potting seedlings for years -- most of these have been used in windbreak and shelterbelt plantings in the Plains. Production of container stock in controlled-environment greenhouses, however, is new. Two years ago there were virtually no such operations on a production basis in the Rocky Mountain/Great Plains area. Now there are several and, what might be called "a quiet revolution in seedling production" continues to progress.

I'd like to take you on a quick slide tour of some of the forest seedling greenhouse operations now in existence. Working generally from north to south, we'll begin at the Forest Service nursery in Coeur d'Alene, Idaho: This project consists of a 22' x 96' plastic greenhouse which produced its first crop of 35M ponderosa pine this spring. A second crop of 60M grand fir, Douglas-fir, western larch, and Engelmann spruce will be ready for delivery this fall. Three additional greenhouses will be in operation in September, and will produce a first crop next spring. These facilities will be used to produce two crops per year, and total production capability of the four greenhouses is estimated at 1MM seedlings per year. Part of this production will be native shrub seedlings in support of the Surface Environment and Mining Project. This greenhouse operation is under the direction of Nursery Supervisor 'Bud' Mason.

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The U. S. Plywood greenhouse project in Missoula, Montana is a 22' x 48' fiberglass house, producing 180M ponderosa pine and western larch seedlings per year in three growing cycles, using styroblock containers. Tentative plans call for construction of another 1,000 sq. ft. greenhouse next year. This operation is directed by Silviculturist Wayne Hite, who also designed it.

The Colorado State Forest Service greenhouse project in Fort Collins is a 27' x 100' greenhouse facility, which produced its first crop of about 50M blue spruce, white fir, and Douglas-fir this spring; many of these have been outplanted in windbarrier plantings in eastern Colorado and in neighboring States. Tar-paper pots, along with a few Spencer-LeMaire book planters, were used for the first crop. The operation is now utilizing the 'Tinus Model' Spencer-LeMaire book planter. Materials are on hand to construct a fiberglass house this fall. The U. S. Forest Service has assisted in this project through the Clarke-McNary and Title IV cooperative forestry programs. Nursery Manager Mary Strachan is in charge, and will conduct a tour of his operation as the final part of the Symposium, on Thursday afternoon.

A new forest seedling greenhouse project is under construction in Manhattan, Kansas. Kansas State and Extension Forestry has contracted to build a headhouse and the first of four planned 34' x 130' fiberglass greenhouses. State Forester Harold Gallaher predicts the project will be ready for operation this fall, barring problems in delivery of materials. This facility will produce windbarrier conifers, and rooted cuttings of genetically improved walnut and cottonwood. The U. S. Forest Service has also cooperated in this project through cooperative program funding assistance, and by providing the design/specification package. Copies of a brochure on this project are available.

Another operation, this one in New Mexico, is run by Burgett Floral in Artesia. This is a floral greenhouse complex, which has converted part of its capacity to production of forest tree seedlings. This year's crop included approximately 300M ponderosa pine, Douglas-fir, and Engelmann spruce in styroblock containers. These seedlings are grown under contract with the U. S. Forest Service for National Forest plantings.

This is a brief look at most of the "going" forest seedling greenhouse operations in the Rocky Mountain/Great Plains area of the United States. As I mentioned, these have come into existence very recently. Within the next few years I feel it's safe to predict there will

be quite a few additional projects initiated, and existing ones will continue to be expanded. I will forego the temptation to relate the interesting rumors I hear in this regard!

Looking ahead, containerized seedlings seem destined to play an increasingly important role as a forestry tool in the Rockies and Plains. For instance, tree planting on private lands has been given a big boost by the Forestry Incentives Program, and this will likely be expanded. As legislative bodies and the public become more aware of the critical need for intensive forestry, funds will likely be appropriated for accelerated reforestation of public lands. As tree improvement programs yield increasingly better sources of seed for genetically improved planting stock, chances are that public and private landowners will be less and less inclined to accept natural regeneration on the more highly productive timber sites.

I would like to close with these observations:

1. Notwithstanding the large numbers of containerized seedlings currently being produced in so many places, the technology is still in its infancy. I would submit, along with many others, that a continuing strong research program in this field is absolutely essential.

2. As in other applications of forestry, we need to improve our methods of getting containerized seedling research and practical experience knowledge effectively communicated to the people who have need for it. That's one important function this Symposium will serve, but it's certainly not the whole answer.

3. It's perhaps not a big concern, but I think there exists at least a minor problem in terminology. Use of the term "containerized seedling" often seems to raise more questions than it answers. One prominent editor recently asked, rather pointedly, why we couldn't at least stick to the English language. I checked, and sure enough, the word "containerized", isn't even in the dictionary!

Question: Are container systems adaptable to production of woody ornamentals, fruit trees, or other agricultural crops?

Greffenius: The Denver area is considered, in horticultural circles, to have an ideal climate for greenhouse production. I will be surprised if conifer, hardwood, and shrub species are not soon produced for landscape use in greenhouse facilities that already exist here.