

A Century of Seedlings

By Karin Verschoor



The Saratoga Tree Nursery in the early 1940s

Late fall is quiet season in the fields at the DEC Saratoga Tree Nursery. Irrigation pipes have been lifted and stacked for the winter, deer fences have been erected, and the overwintering tree seedlings are settling into their winter dormancy. The constant activity of cultivating, fertilizing and transplanting is done for the year.

Looking across the fields, it's hard to imagine that over a billion tree seedlings have been grown in these fields. In the days when most work was done by hand, men and women worked shoulder to shoulder during seedling harvest, digging, sorting and packing the conifer seedlings destined for huge plantations across the state. In peak years, the nursery was shipping more than 20 million seedlings a year. They left by train, in wooden crates, to various destinations to grow timber, provide windbreaks for soil conservation and flood protection, farm woodlots, Christmas trees, wildlife habitat and to protect water supplies. The resulting trees are woven into the history and the landscape of New York State, witnesses to the beginnings of forest conservation.

Exploitation to Sustainability

At the turn of the 20th century, New York State's forests were in bad shape. With a lot of land already cut for timber and cleared for agriculture, the Forest and Game Conservation Commission warned that New York would soon run out of timber. Their concerns were valid: as timber companies continued to cut trees at an alarming rate, less than 25 percent of the state was forested. In addition, a series of warm, dry summers made forests unusually vulnerable to fire. The expansion of

railroads into the Catskills and Adirondacks brought spark-spewing steam locomotives and tourists who carelessly dropped cigarette butts. The woods didn't stand a chance. Forest fires burned thousands of acres, leaving hillsides bare, accelerating runoff, and increasing flood frequency and severity. Few attempted to replace logged or burned stands until the Commission began to plant seedlings on state land.



Workers planting trees at the Saratoga Nursery.

Since no sizeable North American sources existed, seedlings were imported from huge European nurseries. Europeans had a history of forest management, and grew many trees, including North American species, in tightly managed plantations.

The high demand for European seedlings resulted in multiple introductions of a deadly fungus disease, white pine blister rust. This disease was a major impediment to early reforestation efforts, and continues to be a serious forest problem today.

The United States needed to develop its own seedling sources, grown near where they would be planted, and free of imported pests and diseases. Federal and state nurseries were deemed the best way to supply the millions of seedlings needed, at reasonable cost. New York State's tree nursery system was founded in 1902, making it the oldest state-run nursery in the nation (see the February, 2003 *Conservationist* for a detailed history). In the early years of the state nursery system, seedlings were grown for state land, with as many as nine nurseries scattered across the state. A small nursery, started in Saratoga in 1911, was the beginning of the present Saratoga state tree nursery.

In 1972 all of the state nurseries were consolidated at the Saratoga nursery on land originally bought by the state to protect the mineral springs in Saratoga State Park.

Seedlings for People

With much of the state's land deforested, those in power saw a need to replace cleared acreage. "If our people could get trees at cost I have no doubt that many would commence planting immediately. To my mind it would be practicable and very desirable to have the State



While clothing styles have changed, the spirit of conservation remains strong. Above, the Saratoga Nursery today, where workers sort seedlings.

furnish seedling trees to all who would plant..."

—Conservation Commissioner James Whipple, 1907.

Acting on this suggestion, the state legislature passed a law that offered seedlings to the public at cost. The first year of seedling sales brought only a modest response, but by the second year orders increased by several fold. Within five years, the state nurseries sold almost two million seedlings and could have sold more had they not run out. Seedlings were shipped all across the state to a wide range of buyers, including timber companies, private estates, water departments and private landowners. One of the first big commercial customers was the Great Bear Spring Company, which bought hundreds of thousands of seedlings to protect the watershed around their springs. The majority of buyers were private landowners and some of the trees grown from these early seedlings are still alive today (see sidebar).

The Nursery Today

In fall and winter, nursery staff gather and process seed of more than 50 different species, prepare cuttings, take phone orders for seedlings, maintain equipment, get ready for planting season and prepare for the main seedling harvest in April.

Almost every species grown at the nursery comes from New York seed sources, many from the nursery's own seed orchards. Seed for most of the conifer species come from small plantations at the nursery, stands on state forest lands, and at sites of former regional nurseries. Picking cones from tall conifers can be challenging, but pickers get a break when they harvest Norway spruce cones. Red squirrels dash energetically through the spruce crowns, biting off all the cones they can reach. The cones pile up under the trees—making it easy to fill the picking bags.

In January, seed is extracted from cones and fruits, cleaned, sorted and graded. The large room in the seed processing plant is crowded with machinery: hoppers, dryers, sorters, conveyers and arcane sounding devices like dewingers. Tall air stacks and ducts, all made of galvanized stovepipe, dominate the upper part of the room and give the seed plant a decidedly industrial look. In the adjacent cold room, the processed seeds are packed in big glass bottles, and stored on their sides in long racks of steel shelving. When stored at 28 degrees F., conifer seeds maintain their viability for up to ten years. Most hardwood seeds do not store as well, and only last two to three years.

The nursery starts taking seedling orders for spring delivery in January, and competition for some species is intense. The phones ring constantly and half a dozen nursery staff take seedling orders nonstop.



Millions of seeds are kept in cold storage until they are planted and nurtured into seedlings on the farm.

Seedlings destined for areas with early planting dates, such as Long Island, are harvested in November, graded and packed, and kept in a refrigerated storage building until spring. Since the late 1950s, seedlings have been stored over the winter in walk-in coolers. Steady, controlled temperatures increase seedling survival tremendously. Although it seems as though the green-needled conifers surely must need some light, they are kept cold enough to go into a deep dormancy—almost akin to hibernation in animals. Inside the dark cooler, wooden crates are stacked to the ceiling, each holding thousands of sleeping tree seedlings waiting for spring.

The main seedling harvest begins as soon as the ground is soft enough to dig, usually the beginning of April. In earlier years, seedlings were dug, graded and packed in the field. Today, bare root seedlings are brought inside immediately after they are dug, to be kept moist and cool while they are sorted and packed. The nursery grows some species as “plugs” in seed flats with long, deep compartments. Seedling plugs are removed from their container and shipped complete with soil.

State Fair Seedlings

A popular program at the New York State Fair, held in August each year, is the tree seedling giveaway at DEC's Log Cabin. A limited number of seedlings are

given away each day, and anxious fair-goers line up early. To get a free seedling, they must first answer a short quiz based on the exhibits in the Log Cabin. Children and adults alike wander through the building with their quiz cards, examining the exhibits for answers. Hoping for a perfect score, they wait while a DEC staffer checks their answers. Many people really care about getting all the answers correct, even though a perfect score isn't required to get a seedling.

When the day's supply of seedlings runs out, disappointment is intense. Some people will actually return the next day to try again. For some families, planting a new seedling each year has become a tradition, and they speak proudly of their row of trees that represent years of planting state fair seedlings. Some bring pictures to support their claims.

The Future

Over the past 100 years, the nursery has adapted to the changing needs of forestry and land management. The days of planting huge conifer plantations are past. Although there will always be a steady, if smaller, market for conifers, there is increasing demand for native species grown from local seed sources, particularly those with value for wildlife, riparian buffers and wetland restoration. Many of the native shrubs are extremely challenging to grow, partly because there is so little information on them. Some species have seeds with a tricky double dormancy and may require two seasons to germinate. Nursery staff test various seed germination and cultivation methods for these challenging species, and then document the results; in effect, writing their own book where none previously existed.

The experience gained from working with difficult native species has paid off in the ability to grow



Rows of seedlings still grow on the Saratoga farm.

crops of new species quickly, an ability which could be used to meet new challenges. For example, there is promising research about the use of sentinel trees



Teaching our children the importance of sustainability and stewardship is one of the DEC's primary goals.

to attract Asian longhorn beetles to verify their presence. A couple of Asian maple species appear to be irresistible to the beetles. If further research proves the value of these maples for Asian longhorn beetle control, the Nursery has the facilities for rapid response to help control this invasive insect. Our future may literally depend on trees and other plants

FDR's Forests

While Theodore Roosevelt's forest legacy was the preservation of lands by putting them into public ownership, Franklin D. Roosevelt restored lands by planting forests. His massive tree-planting programs employed thousands during the Great Depression, including the Civilian Conservation Corps, whose buildings and trails can still be seen today in many public forests and parks.

To Roosevelt, tree-planting was more than just a public work project; it reflected his personal belief in the importance of reforestation. He knew from his own experience that reforestation was the best way to reclaim land. As a young man, he was keenly interested in the practice of scientific forestry, and began to buy farmland adjacent to Springwood, the Roosevelt estate in Hyde Park. His first plantation was completed in 1912 with white pine seedlings from the state tree nursery. Over the next 30 years, he planted more than half a million seedlings bought from the nursery, primarily conifers such as white pine, red pine, scotch pine, Norway spruce, white spruce, larch, balsam fir, white cedar and Douglas fir. Although the Saratoga Tree Nursery did not routinely grow hardwoods until the 1970s,

because of their tremendous potential to help us meet today's environmental challenges, such as renewable energy production, reduction of urban heat island effects, lowering heating and cooling costs and flood control. Many of the impacts of changing climate can be mitigated by wider use of plants to moderate local temperature extremes, and to capture increased precipitation run off.

Today, landowners who want to plant trees and shrubs in quantity can do so at a reasonable cost. The Saratoga Tree Nursery's primary mission is to provide New York State citizens with high-quality seedlings, most grown from local seed sources, at cost. Even landowners with limited financial resources can afford to plant trees on their land. Regardless of its intended use, whether for timber, for Christmas trees, for beauty, for wildlife, for flood protection or to buffer climate change, each seedling contributes toward a better future for New York.

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Franklin D. Roosevelt's forester stands in front of Norway spruce trees that started out as seedlings in his nursery.

staff did grow occasional crops of various species. In the 1920s, FDR planted a stand of tulip poplar, his favorite tree, from seedlings grown there.

Although much of the farmland was sold off after his death, the core remains relatively undeveloped. Fortunately most of the land has been bought by Scenic Hudson, a nonprofit conservation organization dedicated to land preservation. Much of the preserved land is forested, and FDR's 1912 white pine plantation still stands. (For further reading, see *FDR's Trees* in the April 1995 *Conservationist*.)