

**State Forest Nursery Program  
Fiscal Year 2020 Legislative  
Report**

5/4/2021

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As requested by Minnesota Statute 3.197: This report cost approximately \$1,200 to prepare, including staff time, printing, and mailing expenses.

*Upon request, this material will be made available in an alternative format such as large print, Braille, or audio recording. Printed on recycled paper.*

## **Statutory Reference**

***Minnesota Statutes, section 89.36***

### **PRODUCING AND PROCURING PLANTING STOCK**

Subd. 4. **Annual report.** The commissioner (of natural resources) shall submit an annual report to the legislature relating to the production of planting stock at state nurseries. The report must include the following: sale figures; income figures; and expenses for operations and administration.

***Minnesota Statutes, section 3.197***

## **Required Reports**

A report to the legislature must contain, at the beginning of the report, the cost of preparing the report, including any costs incurred by another agency or another level of government.

## Table of Contents

State Forest Nursery Program Fiscal Year 2020 Legislative Report .....	1
Executive Summary .....	4
Introduction – State Forest Nursery Program, Division of Forestry .....	6
Sales and Production Summary, Fiscal Year 2020 .....	6
Figure 1: FY2020 Seedling Sources .....	7
Figure 2: FY2020 Seedling Distribution .....	7
Figure 3: FY2020 Seedling Sales by Types .....	7
Table 1: FY2020 Seedling Sales by Species and Producer .....	8
Table 2: Nursery Expense Breakdown .....	9
Table 3: Payroll Expenses Breakdown .....	9
Table 4: Non-payroll Expenses Breakdown .....	9
COVID-19 Financial and Work Impacts.....	10
Challenges and Opportunities .....	10
Bare-root and Plug Seedlings .....	10
Labor.....	11
Modernization .....	11
Reforestation and Climate Mitigation .....	12
Appendices .....	13
Appendix 1: FY2020 Statement of Revenues and Expenses, State Forest Nursery Account* .....	13
Appendix 2: FY 2020 Accounts Receivables and Cash Sales* .....	14
Appendix 3: Ten-Year Summary Analysis of Revenue and Expenses FY2011-2020 .....	15

## Executive Summary

The Minnesota State Forest Nursery (Nursery), located ten miles south of Akeley in the Badoura State Forest, grows coniferous, deciduous, and shrub seedlings for reforestation on public and private lands. It is currently the only large-scale Minnesota nursery for native, conservation-grade coniferous and deciduous seedlings. Primarily supported by seedling sales, the Nursery is known for seed sourcing controls, seed extraction and cleaning, and tree cultivation that creates high-quality seeds and seedlings to support public and private reforestation efforts.

Cones and seed, purchased from private pickers, are prepped and cleaned for aerial seeding or planting to grow seedlings. After two or three years of growing, seedlings are lifted from the field and shipped to final planting - or reforestation - sites across Minnesota. Conservation-grade seedlings grown at the Nursery are different than landscape-grade seedlings produced in many private nurseries. Conservation-grade seedlings are smaller (5-12 inches high) making them easier to plant in large quantities. They are also produced from seed collected in Minnesota, thereby helping to preserve and promote local genetic diversity and ensure the trees will grow where they are planted.

Like so many other public and private endeavors in Minnesota, the COVID-19 pandemic significantly affected operations at the Nursery in FY2020, particularly seedling sales. The implementation of necessary public health restrictions to limit and slow the spread of COVID-19 – including the Stay at Home Order that went in place on March 27, 2020 – meant that the annual spring seedling harvest (or “spring lift”) could not occur. The only seedlings available for sale, therefore, were those that had been harvested in the fall of 2019 and stored in a cooler over the winter. The fall harvest is a much smaller operation than the annual spring lift. All told, only 415,250 tree and shrub seedlings were sold and distributed for reforestation efforts in FY20, about 2.5 million fewer seedlings than in FY2019.

Seedlings for public lands—including state, county, and federal lands—accounted for 16 percent of total sales, or 68,000 seedlings. Private and industrial landowners comprised the remaining 84 percent of sales, or 347,250 seedlings. Most of these seedlings went to Soil and Water Conservation Districts, which distributed them to private landowners.

No price increases occurred in FY2020. Price increases on shrub species including chokecherry, nannyberry, juneberry, red osier dogwood, and wild plum are anticipated for FY2021. This increase is due to difficulty propagating and procuring seed, as well as price increases from private nurseries that source some shrub species.

Collected revenue in FY2020 totaled \$236,925, reflecting the significant reduction in seedling sales. FY2020 Nursery expenditures totaled \$1,155,975. Although the spring lift was canceled, and the seasonal workforce that staffs the lift was therefore not employed, expenditures were needed in the later spring and summer to replant the fields harvested in the fall of 2019, tend the seedlings not yet ready for harvest, and process seed for aerial re-seeding efforts and future planting. The Nursery continues reviewing staffing needs and implementing cost-saving measures to ensure operational efficiencies. The FY2020 year-end balance forward in the State Forest Nursery Account was \$554,187 (Appendix 3 provides a ten-year fund history).

Looking forward, new investments are needed to ensure the Nursery can effectively serve its role in meeting Minnesota's future reforestation needs. Climate change adaptation, carbon sequestration, water quality, wildlife, and the forest industry all depend on healthy forests. Healthy forests depend on planting and seeding efforts. Increased planting activities for climate mitigation and water quality are expected to increase demand for Nursery seedlings. Demand for deciduous species will likely increase, since they are more likely to thrive in future climate conditions. We anticipate the Nursery will not be able to meet increased demand for seedlings in the future. Specifically, seed extraction, seed source controls, and seedling storage are all challenged by the Nursery's aging facilities. Investments are needed to modernize the seed extraction facility, improve seed and seedling storage capacity, and increase energy and water efficiency.

These needs are reflected in the Governor's 2021 bonding proposal, which recommends significant funding to the Minnesota Department of Natural Resources (DNR) for Betterment of Buildings and Natural Resources Asset Preservation. The "betterment" funding in particular would provide resources that could be used for Nursery modernization needs. In addition, the Governor's FY2022-2023 biennial budget proposal includes a General Fund appropriation to DNR to accelerate tree-planting in Minnesota by increasing the number of seedlings produced by the Nursery (within the statutory limit of 10 million seedlings per year), and providing those seedlings at low (or no) cost to private landowners to reforest unproductive or vacant land and increase tree density on existing forests. This proposal is an important component of the Governor's climate initiative, and would offset 5 million tons of greenhouse gas emissions over the estimated 50-year lifetime of the trees.

## Introduction – State Forest Nursery Program, Division of Forestry

The Minnesota State Forest Nursery began producing conservation-grade seedlings for reforestation in the early 1930s. To date, more than one billion seedlings from the Nursery have been planted on public and private lands.

*Minnesota Statutes*, section [89.36](#), authorizes the Nursery to produce, exchange, or purchase up to 10 million seedlings each year. To supplement Nursery operations, each year 100,000 to 1 million seedlings are purchased from private producers for resale. Seedlings purchased from the Nursery must be used to establish or reforest harvested lands, wood lots, windbreaks, and shelterbelts or for erosion control, soil and water conservation, environmental education, or permanent food and cover for wildlife. The Nursery grows coniferous and deciduous tree species, as well as some shrubs, for these purposes.



### State Forest Nursery Mission Statement

*Our mission is to produce bare-root seedlings that are Minnesota-hardy, high quality, and reasonably priced for public and private landowners. We are dedicated to helping protect the sustainability of Minnesota's diverse forest resources and continuing our state's proud tree planting heritage.*

## Sales and Production Summary, Fiscal Year 2020

In FY2020, the Nursery shipped 415,250 tree and shrub seedlings. Of these, the Nursery produced 362,250 seedlings and 53,000 seedlings were purchased from licensed private producers or obtained via trades with other state or federal government nurseries (Figure 1). Public lands received 16 percent and private lands received 84 percent of the seedlings (Figure 2). Most of the private land seedlings went to soil and water conservation districts, which distributed them to private landowners.

Figure 1: FY2020 Seedling Sources

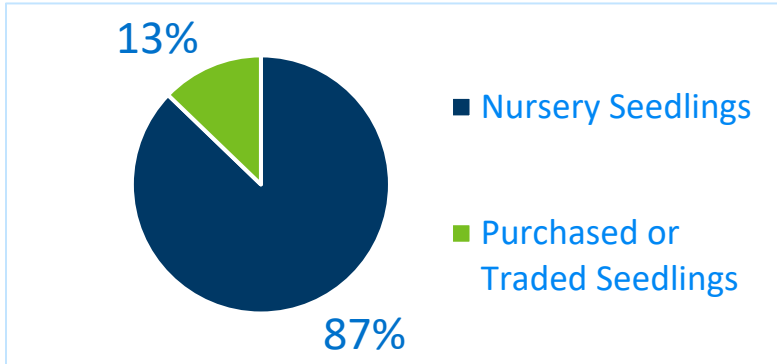
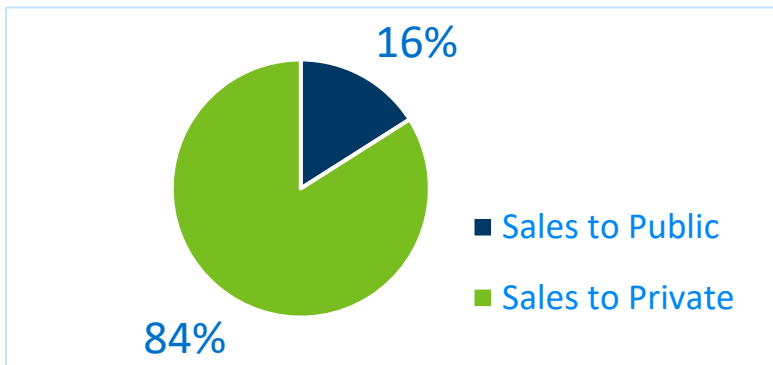


Figure 2: FY2020 Seedling Distribution



The Nursery grows and sells three types of seedlings: coniferous, deciduous, and shrubs species. The majority of trees grown and sold are coniferous (Figure 3). Shrubs are sold in much smaller quantities, primarily to private customers. Shrubs include dogwood, wild plum, chokecherry, and other small woody plants. These varieties are often sold in mixed packets to landowners for wildlife habitat. Table 1 contains a complete list of seedlings sold in FY2020.

Figure 3: FY2020 Seedling Sales by Types

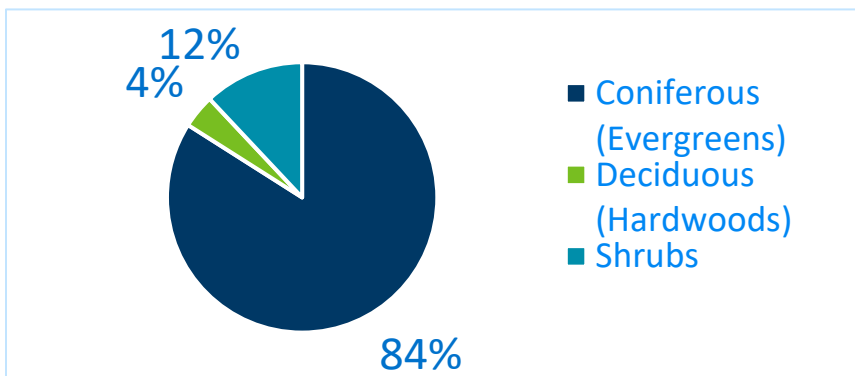


Table 1: FY2020 Seedling Sales by Species and Producer

Product	State-produced Seedlings	Purchased/Traded Seedlings	Total Seedlings Shipped
BLACK CHERRY	0	2,000	2,000
BALSAM FIR TRANSPLANTS	575		575
BALSAM FIR	8,725		8,725
BUR OAK	2,400		2,400
BLACK SPRUCE TRANSPLANTS	2,500		2,500
BLACK SPRUCE	5,000		5,000
BLACK WALNUT	1,100		1,100
CHOCHECHERRY		10,300	10,300
COTTONWOOD	100		100
JUNE BERRY	0	8,800	8,800
JACK PINE	102,000		102,000
KENTUCKY COFFEE TREE	1,100		1,100
NANNYBERRY	0	9,000	9,000
NORWAY (RED) PINE TRANSPLANTS	42,000		42,000
NORWAY (RED) PINE	83,525		83,525
WILD PLUM	0	9,500	9,500
RED OSIER DOGWOOD	0	11,600	11,600
SILKY DOGWOOD	0	1,800	1,800
SIOUXLAND POPLAR	9,200		9,200
SUGAR MAPLE	1,425		1,425
SWAMP WHITE OAK	200		200
WHITE PINE TRANSPLANTS	29,100		29,100
WHITE SPRUCE TRANSPLANTS	25,900		25,900
WHITE SPRUCE	47,400		47,400
<b>TOTAL</b>	<b>362,250</b>	<b>53,000</b>	<b>415,250</b>



The largest Nursery expense is labor and labor-related costs. In FY2020, expenses totaled \$1,155,975. Of this, \$721,480 were payroll expenses and \$434,945 were non-payroll expenses (Table 2). Seasonal and part time labor accounted for over half of the payroll expenses (Table 3). Supplies accounted for most non-payroll expenses (Table 4). Supplies include field amendments like fertilizers and pesticides, in addition to shipping boxes and office materials. The FY2020 expenses are less than the 10-year average (see Appendix 3) due primarily to the cancellation of the spring lift and associated staffing reductions that extended through the year

**Table 2: Nursery Expense Breakdown**

Type	Number	Percent
Payroll Expenses	\$721,480	62%
Non-Payroll Expenses	\$434,495	38%
<b>TOTAL</b>	<b>\$1,155,975</b>	<b>100%</b>

**Table 3: Payroll Expenses Breakdown**

Type	Number	Percent
Full Time Salary	\$374,800	52%
Part Time and Seasonal Salary	\$252,803	35%
Other Employee Costs (Includes Unemployment and Worker's Compensation)	\$93,877	13%
<b>TOTAL</b>	<b>\$721,480</b>	<b>100%</b>

**Table 4: Non-payroll Expenses Breakdown**

Type	Number	Percent
Supplies, printing and Advertising	\$194,865	45%
Fleet and Travel	\$56,235	13%
Computer Systems and Communication	\$60,840	14%
Utilities	\$436,516	8%
Other Operating Costs	\$11,710	3%
Agency Costs	\$63,242	15%
Equipment and Repairs	\$11,087	3%
<b>TOTAL</b>	<b>\$434,495</b>	<b>100%</b>

## COVID-19 Financial and Work Impacts

COVID-19 had significant impacts on Nursery operations in FY 2020, and will continue to do so in FY2021 and beyond. The implementation of necessary public health restrictions to limit and slow the spread of COVID-19 – including the Stay at Home Order that went in place on March 27, 2020 – meant that the annual spring seedling harvest (or “spring lift”) could not occur. Since this work is time-sensitive and must be completed before seedlings come out of dormancy, it could not be completed later in the year. Approximately 15 percent of the seedlings on order were distributed, using seedlings that had been harvested the previous fall and stored over the winter and purchased shrub seedlings. Most orders went unfilled and refunds were issued. Over 300 full or partial refunds were processed for a loss of approximately \$965,210 in revenue. While some expenses decreased, such as seasonal labor, revenue generated was not enough to offset fixed costs. As a result the Nursery Account fund balance decreased by \$919,049 (see Appendix 1).

The ongoing social distancing and gathering limitations necessitated by the COVID-19 pandemic also affected crucial weeding activity and pesticide and fungicide applications during the spring and summer. The lack of seasonal work crews reduced the DNR’s ability to effectively and efficiently tend fields in the spring and summer of 2020. The Nursery did what it could with existing staff, but some seedlings were lost. We anticipate these limitations on field work will affect harvest operations for the next three years. Lifting and sorting seedlings harvested from fields with remaining weeds will require additional time and effort as the weeds will have to be separated from the seedlings before distribution. Fewer seedlings will also be available for harvest due to the effects of weed competition.

Summer 2020 bed seeding was reduced because of limited crews and social distancing requirements. As a result, inventory will be reduced for 2022 and 2023 sales. Additionally, some seedlings, particularly transplants, will be unavailable in 2022 because seedlings were not transplanted in 2020. These impacts will result in reduced revenues for at least the next three years.

## Challenges and Opportunities

The Nursery faces many current and future challenges, including impacts related to COVID-19, weather, disease, climate change and labor shortages.

Looking ahead, the DNR is concerned with the Nursery’s continued ability to provide large quantities of reliable, high-quality bare-root stock. Adverse weather and disease outbreaks, intensified by climate change, have negatively affected growing conditions and the availability of seedlings. From year to year, this leads to increased need for trading or purchasing seedlings from other state, federal, and private nurseries to meet demands. This can lead to unknown sourcing of planting stock that may not be suitable for Minnesota sites. Growing challenges will continue to increase as climate change progresses.

### Bare-root and Plug Seedlings

Currently, no private or public nursery in Minnesota produces large enough quantities of plug seedlings to meet the State of Minnesota’s reforestation needs. Aptly named, the roots of plug seedlings are surrounded by a soil

plug and grown in containers inside a large greenhouse. Land managers often prefer conifer plug seedlings over bare-root stock because of plugs are easier to plant and better suited to some sites. For future reforestation efforts, there is likely to be a strong preference for plug seedlings for some conditions, while the bare-root seedlings currently produced at the Nursery will be suitable for some other efforts. Producing plug seedlings at the Nursery would reduce Minnesota's current dependence on one, sole, out-of-state commercial grower for plug seedlings. This would thereby help ensure the state has the capacity to produce appropriate seedling stock for future reforestation and climate mitigation needs. A shift to include the ability to produce conservation-grade plug seedlings at the Nursery, grown indoors under controlled conditions, would help mitigate adverse weather, disease, and climate change impacts.

## Labor

Skilled, temporary manual labor is always in high demand. Pairing this need with the Nursery's location in a small, rural community creates significant staffing challenges. Many seasonal workers supporting the Nursery's spring seedling lift and shipping season are retiring, and younger workers have not shown interest in replacing them. Low unemployment rates in recent years have amplified recruitment, hiring, and retention difficulties. Approximately 90 temporary workers are needed to complete the six-week spring lift and shipping season. As a result, the Nursery also relies on seasonal, migratory contract labor. Finding qualified permanent staff continues to be a challenge due to the specialized skill sets needed.

## Modernization

The Nursery has been unable to secure funding for necessary modernization and facility improvements that will increase operational efficiency and better support high-quality seedling production. The following investments are pertinent to the success of the Nursery going forward.

### Modernized and energy-efficient seed extraction facility

Seed cone acquisition and seed extraction are critical aspects of the Nursery's operations to ensure climate-appropriate seed is available. Seed is used for both planting seedlings and aerial seeding. New seed extraction equipment that better controls heat and humidity will, improve energy efficiency, reduce water use, and decrease seed extraction time. The current seed extraction equipment, which dates from the 1980s, is costly to run, energy inefficient, and difficult to repair.

### Improved seed and seedling storage

In the event of a prolonged power outage or equipment failure, tens of thousands of dollars of processed seed and seedlings would be at risk of loss because of the lack of sufficient backup systems. This includes generators and generator hook ups that can operate in a power failure. Installing a temperature and humidity regulation systems, with backup power support, will improve seedling quality and energy efficiency.

### Increased seedling storage capacity.

As Minnesota winters continue to warm and the frequency of extreme weather events such as polar vortices increase, reliable climate controlled cooler storage is crucial to ensure healthy, high-quality

seedlings are available each spring. Predicted climate change favors deciduous trees in Minnesota's future. Deciduous seedlings require winter storage of dormant seedlings lifted in the fall to be ready for early spring planting in central and southern regions of Minnesota. Since fields at the Nursery are typically frozen when southern Minnesota needs trees for spring planting, many seedlings need to be lifted in the fall and stored over winter in a climate-controlled environment. The Nursery has barely enough seedling storage capacity to meet the current need, let alone future needs identified above.

These investments would allow the Nursery to improve current seed and bare-root seedling production capabilities to meet anticipated seed source, seed extraction, seedling, and seed storage capacity needs now and into the future. Such upgrades would also facilitate the development of plug seedling production and help the Nursery meet demands for diverse, Minnesota-native seedling stock in the future.

## Reforestation and Climate Mitigation

Minnesota's forests play an important role in the sequestration and long-term storage of atmospheric carbon. One important strategy in the challenge to mitigate climate change is to increase the amount of carbon that forests can store in the trees and in the forest soils. Reforestation, increasing the tree density in existing forests and planting new forests on open lands where forests once stood –are among the most promising opportunities to achieve long-term offsets to carbon emissions from other sources. Modernizing and upgrading the Nursery would help to meet the anticipated demand for tree seedlings to support increased reforestation efforts in Minnesota.

The modernization and climate mitigation needs and opportunities are reflected in the Governor's 2021 bonding proposal, which recommends significant funding to the DNR for Betterment of Buildings and Natural Resources Asset Preservation. The "betterment" funding in particular would provide resources that could be used for Nursery modernization needs. In addition, the Governor's FY2022-2023 biennial budget proposal includes a General Fund appropriation to DNR to accelerate tree-planting in Minnesota by increasing the number of seedlings produced by the Nursery (within the statutory limit of 10 million seedlings per year), and providing those seedlings at low (or no) cost to private landowners to reforest unproductive or vacant land and increase tree density on existing forests. This proposal is an important component of the Governor's climate initiative, and would offset 5 million tons of greenhouse gas emissions over the estimated 50-year lifetime of the trees.

## Appendices

### Appendix 1: FY2020 Statement of Revenues and Expenses, State Forest Nursery Account\*

Description	Amount
<b>Balance beginning FY20</b>	1,473,236
<b>Revenues</b>	
Nursery Seedlings	185,160
Nursery Seed Cones	33,629
Investment Income	18,137
<b>Total Revenues</b>	<b>236,926</b>
<b>Expenses</b>	
Salary and Other Compensation	721,480
Supplies and Expenses	434,495
Equipment and Capital Improvements	0
Remaining Encumbrances in FY20	0
<b>Total Expenses</b>	<b>1,155,975</b>
<b>Ending Balance Roll forward to FY21</b>	<b>554,187</b>
<b>Revenues minus expenses</b>	<b>(919,049)</b>

\*Adjustments are used to cancel and/or correct invoice amounts and write-offs (e.g., people canceling or changing their seedling order amounts)

Appendix 2: FY 2020 Accounts Receivables and Cash Sales\*

<b>Description</b>	<b>Amount</b>
Receivables remaining from prior fiscal years	3,507
FY20 Accounts Receivables	58,211
FY20 Write Offs and Adjustments	(2)
<b>Total Receivables</b>	<b>61,716</b>
Outstanding Receivables in FY20	61,716
Collected on Receivables in FY20	52,003
Remaining Receivables to be collected in FY21	9,713
Collected Cash Sales in FY20	250,132
Collected on Receivables in FY20	52,003
Refunds in FY20	(65,210)
<b>Total Collected Revenue FY20</b>	<b>236,925</b>

\*WIRES reports were used for the amounts billed, collected, and adjusted. WIRES is the Department of Natural Resources' revenue/receivable system and stands for Web Integrated Revenue/Receivable System.

### Appendix 3: Ten-Year Summary Analysis of Revenue and Expenses FY2011-2020

Year	Beginning Balance	Revenues	Expenses	Ending Balance
FY 2011	619,090	2,491,715	2,097,044	1,013,761
FY 2012	1,013,761	2,121,324	1,674,691	1,460,394
FY 2013	1,460,394	1,962,297	1,567,588	1,855,103
FY 2014	1,855,103	1,812,082	1,703,114	1,964,070
FY 2015	1,964,070	1,810,865	1,787,504	1,987,431
FY 2016	1,987,431	2,058,630	2,127,752	1,918,310
FY 2017	1,918,310	1,546,417	1,956,735	1,507,991
FY 2018	1,507,991	1,583,790	1,522,104	1,569,678
FY 2019	1,569,678	1,339,985	1,436,427	1,473,236
FY 2020	1,473,236	236,926	1,155,975	554,188
3 Year Average	1,516,969	1,053,567	1,371,502	1,199,034
5 Year Average	1,691,329	1,353,150	1,639,798	1,404,681
7 Year Average	1,753,689	1,484,099	1,669,944	1,567,844
10 Year Average	1,536,906	1,696,403	1,702,893	1,530,416

### Ten-Year Summary of Revenues and Expenses FY2011-2020

