

State Forest Nursery Program 2019 Legislative Report

05/14/2020

Department of Natural Resources

Division of Forestry, State Forest Nursery

13885 MN-64

Akeley, MN 56433

Office: (218) 652-2385

Email: kristina.somes@state.mn.us

Webpage: [Minnesota State Forest Nursery | Minnesota DNR](#)

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Statutory Reference

Minnesota Statutes, section 89.37

PRODUCING AND PROCURING PLANTING STOCK

Subd. 4. **Annual report.** The commissioner (of natural resources) shall submit an annual report to the legislature (by April 15 of each year) 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.

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Fiscal Year 2019 Executive Summary

The Minnesota State Forest Nursery (Nursery) is located ten miles south of Akeley in the Badoura State Forest. The facility grows conifer, hardwood and shrub seedlings for reforestation on both public and private lands. The Nursery is currently the only large-scale Minnesota source for native variety, conservation-grade conifer and hardwood seedlings. It provides important seed sourcing controls, seed extraction and cleaning, and tree cultivation services to support public and private reforestation activities. The Nursery efforts are largely supported through seedling sales.

Cones and seed are purchased from private pickers and extracted for aerial seeding, and planting in fields for later seedling harvest and use. The conservation grade seedlings grown at the Nursery are uniquely different than landscape-grade trees produced in many private nurseries. They are smaller, typically measuring 5 to 12 inches in height. At about two to three years old, the trees are harvested in the spring and shipped to reforestation sites across the state. Their small size makes them easy to plant in large quantities, where they grow into mature forests years later. Seedling production began at the Badoura Nursery site in 1933.

The Nursery sold 2.89 million tree and shrub seedlings in Fiscal Year (FY) 2019. This is a decrease of approximately 580,000 seedlings from FY2018. Seedlings for planting on public lands—which include state, county, and federal—accounted for 58 percent of total sales, or 1,664,486 seedlings. Private and industrial landowners comprised the remaining 42 percent of sales, purchasing 1,226,150 seedlings. No price increases occurred in FY2019 and no price increases are anticipated for FY2020.

In FY2019, receipts totaled \$1,339,985, and expenditures totaled \$1,436,427 (Appendix 1 and 2). The Nursery will continue reviewing staffing needs and implementing cost saving measures to ensure operational efficiencies. The FY2019 year-end balance forward in the State Forest Nursery Account is \$1,473,206 (Appendix 4).

There were approximately 4.26 million seedlings inventoried and available for shipping in FY2019, but only 2.89 million were sold. Some of the imbalance between available and sold seedlings can be attributed to the preference for containerized stock over bareroot stock by state, county, and other partners that manage large tracts of forested land. The Nursery does not grow containerized seedlings. In fact, there are no Minnesota-based vendors capable of producing containerized conservation grade reforestation stock in the quantities required each year. In order to obtain ecotype appropriate containerized seedlings for state reforestation efforts, DNR currently extracts the seed at the Nursery, then provides it to a vendor to plant and raise into containerized seedlings the state purchases. While the Nursery does not currently have the capacity to grow containerized seedlings, it is researching options for building this capacity going forward.

A second contributing factor to the imbalance between available and sold seedlings in FY2019 is that bareroot seedlings must be planted two to three years before the actual sale year, which means that the Nursery must estimate demand well in advance. Conditions driving demand can change from when a seedling is planted to when it is harvested due to factors such as weather, fire, disease or the availability of cost share programs for private landowners. Higher risk of impacts from bad weather events and disease outbreaks can and have occurred in certain species with greater frequency in recent years, affecting availability. In FY2019, some seedling species were overabundant while others were in short supply. Newer growing technologies, like

containerized seedlings and greenhouse production, as well as equipment upgrades can reduce the planting-to-shipment timeline, and therefore the risks of a supply/demand imbalance.

Looking forward, Minnesota's ability to meet future reforestation needs is at risk. Climate change adaptation, carbon sequestration, water quality, wildlife and the forest industry all depend on healthy forests, and healthy forests depend on planting and replanting efforts. We are beginning to see an increase in reforestation efforts to address climate mitigation and adaptation, as well as to improve water quality. This increased planting activity is expected to increase demand for Nursery seedlings. In fact we are already observing that some seedling species sell out at the nursery each year. Hardwoods are anticipated to see the largest increase in demand due to climate changes that are predicted to favor those species. We anticipate challenges in the Nursery's ability to meet increased demand for seedlings. Seed extraction, seed source controls, and seedling storage are all challenged by the nursery's aging facilities. To mitigate these challenges, the Governor's 2020 bonding proposal includes funding to modernize the seed extraction facility, seed and seedling storage capacity, and the energy and water efficiency of the State Forest Nursery. These investments will improve the quality of bareroot seedling stock now and support containerized stock if containerized growing is added to the Nursery operations in the future. The benefits of these investments are discussed in further detail in the Current and Future Challenges section of this report.

Introduction – State Forest Nursery Program, Division of Forestry

The Minnesota State Forest Nursery program began producing conservation-grade seedlings for reforestation in the early 1930s. Through 2019, public land managers and private landowners have purchased and planted more than one billion seedlings.

Minnesota Statutes, section 89.36, subd.1, requires the Nursery to limit its production to not more than 10 million seedlings each year. In addition to producing seedlings, the Nursery purchases between 100,000 and one million seedlings each year from private producers for resale. Seedlings purchased from the Nursery must be used to establish or reforest 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 both conifer and hardwood tree species, as well as some shrubs, for these purposes.



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.

[State Forest Nursery Mission Statement](#)

Sales and Production Summary, Fiscal Year 2019

In Fiscal Year (FY) 2019, the State Forest Nursery shipped 2,890,636 trees and shrubs. Of that number, the Nursery produced 2,794,336 seedlings and 96,300 were purchased from licensed private producers or obtained via trades with other state or federal government nurseries (see Table 1 and Figure 1). Public lands received 58% of the total seedlings while private lands received 42% (see Table 2 and Figure 2).

Table 1: Seedlings Produced, Purchased, and Sold by the State Forest Nursery

Item	Number	Percent
Seedlings Produced and Sold by the State Forest Nursery	2,794,336	96.7%
Seedlings Traded and/or Purchased and Sold by the State Forest Nursery	96,300	3.3%
TOTAL	2,890,636	100%

Figure 1: Seedlings Produced, Purchased, and Sold by the State Forest Nursery

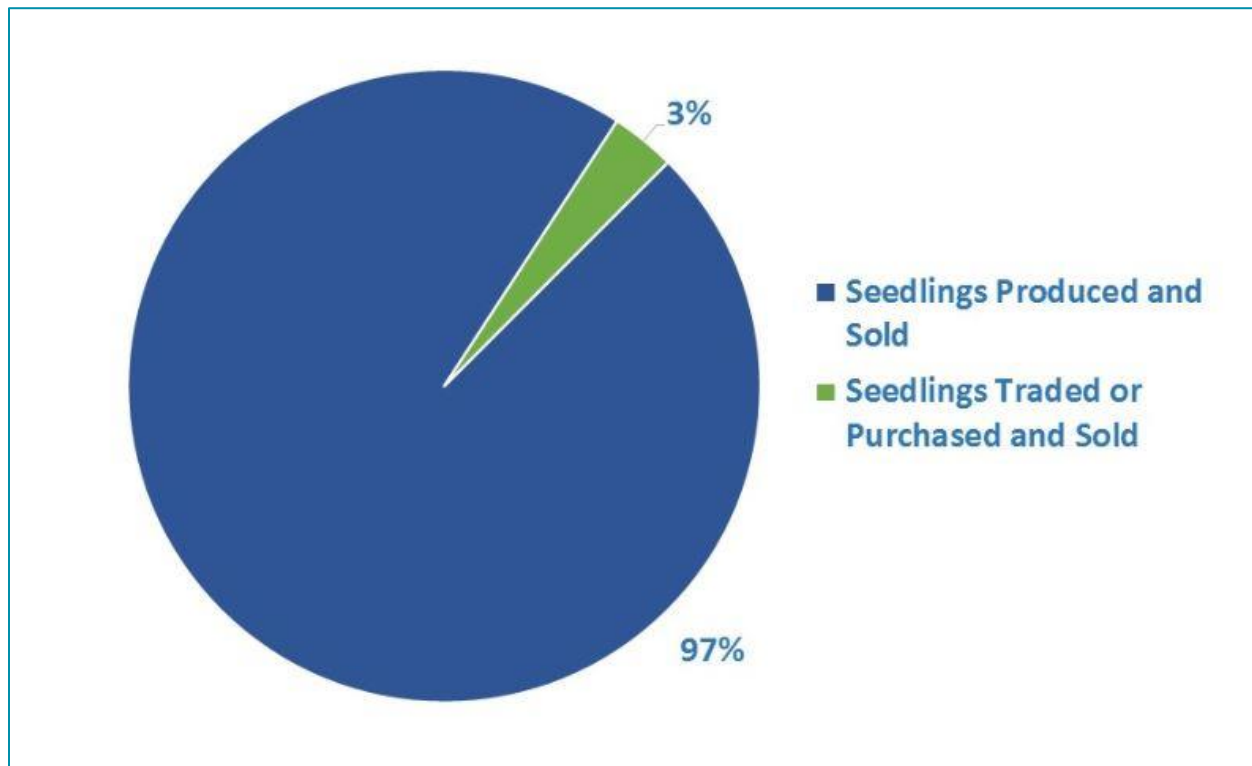
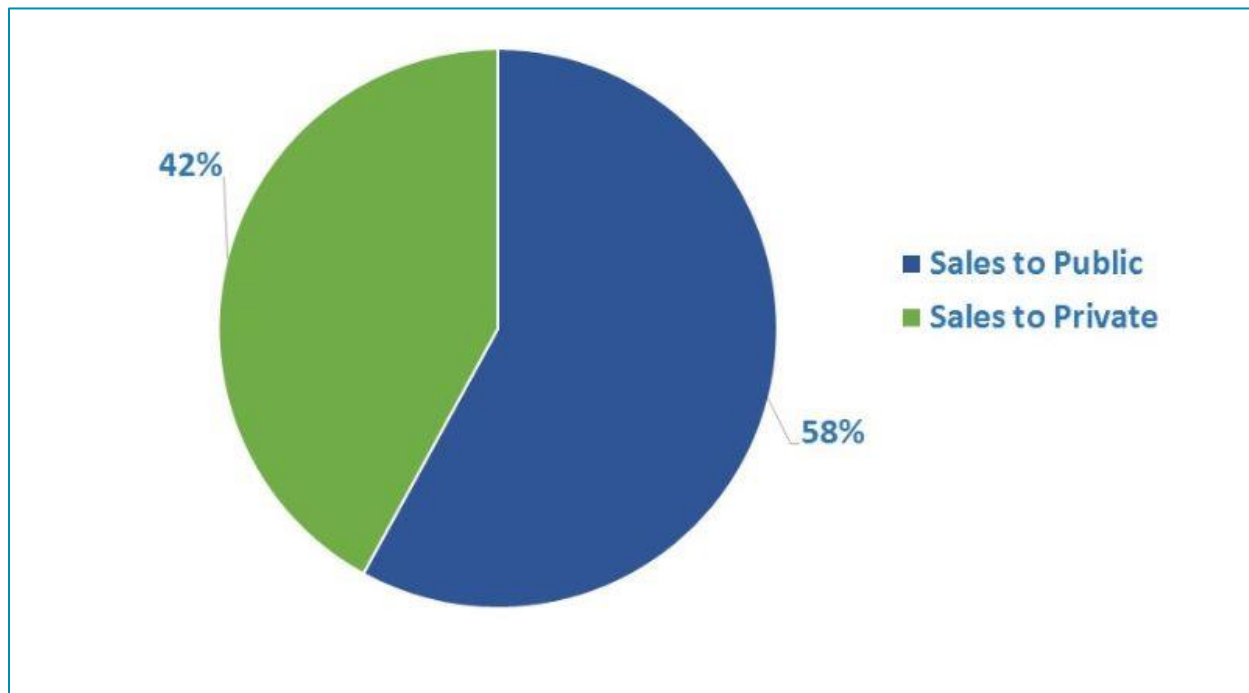


Table 2: Seedling Distribution

Type	Number	Percent
Seedlings Sold for Public Lands	1,664,486	58%
Seedlings Sold for Private Lands	1,226,150	42%
TOTAL	2,890,636	100%

Figure 2: Seedling Sales Distribution



The Nursery grows and sells three types of seedlings. Coniferous, deciduous, and shrubs. The majority of trees grown and sold are coniferous (see Table 3 and Figure 3). Shrubs are sold in much smaller quantities and primarily to private customers. Shrubs include dogwood, wild plum, chokecherry, and other small woody plants. These varieties are often sold in mixed packets to private landowners for wildlife habitat. See Table 4 for the complete list of seedlings sold in FY2019.

Table 3: Seedling Types

Type	Number	Percent
Coniferous (Evergreens)	2,495,300	86%
Deciduous (Hardwoods)	324,286	11%
Deciduous Shrubs	71,050	3%
TOTAL	2,890,636	100%

Figure 3: Seedling Types

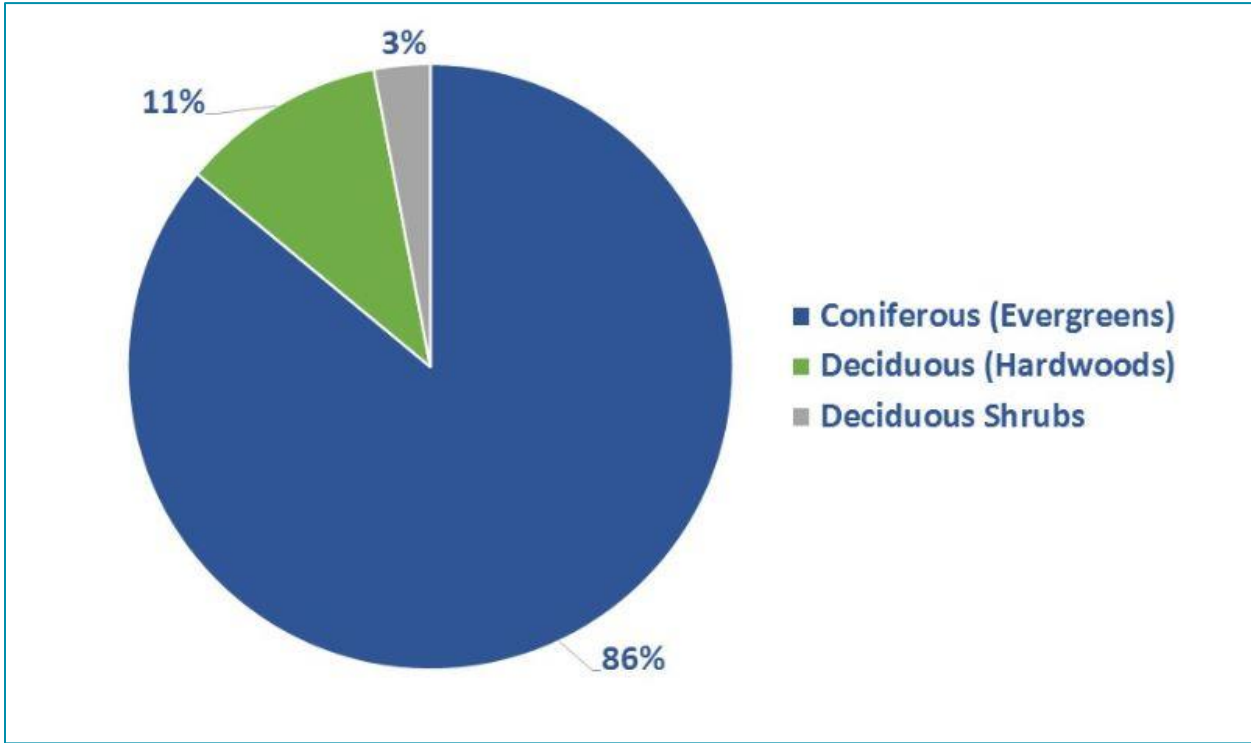


Table 4: Summary of Sales by Species and Producer, FY2019

Product	State-produced Seedlings	Purchased/Traded Seedlings	Total Seedlings Shipped
NORWAY PINE SMALL	475,000	0	475,000
NORWAY PINE 6"+	538,500	0	538,500
NORWAY PINE LARGE	115,300	0	115,300
NORWAY PINE TR	26,025	0	26,025
WHITE PINE SMALL	38,000	0	38,000
WHITE PINE 5"+	180,700	29,200	209,900
WHITE PINE TR	57,300	0	57,300
JACK PINE	172,800	0	172,800
JACK PINE IMP	163,000	0	163,000
WHITE SPRUCE 5"+	126,650	0	126,650
WHITE SPRUCE IMP	331,350	0	331,350
WHITE SPRUCE TR	109,700	0	109,700
BLACK SPRUCE IMP	32,900	0	32,900
BLACK SPRUCE TR	10,000	0	10,000
TAMARACK	36,600	0	36,600
BALSAM FIR	10,500	0	10,500
BALSAM FIR TR	23,175	0	23,175
RED CEDAR	11,800	0	11,800
WHITE CEDAR	200	0	200
WHITE CEDAR TR	6,900	0	6,900
RED OAK	101,811	6,000	107,811
BUR OAK	38,650	0	38,650
WHITE OAK	37,100	0	37,100
SWAMP WHITE OAK	20,375	0	20,375
SILVER MAPLE	38,050	0	38,050
RED MAPLE	34,000	0	34,000
SUGAR MAPLE	0	9,900	9,900
KENTUCKY COFFEETREE	4,900	0	4,900
SIOUXLAND POPLAR	6,000	0	6,000
COTTONWOOD	7,300	0	7,300
BLACK WALNUT	5,950	10,000	15,950
BUTTERNUT	1,650	0	1,650
HACKBERRY	400	0	400
BLACK CHERRY	1,900	0	1,900
CHOKECHERRY	0	11,400	11,400
JUNE BERRY	0	6,500	6,500
WILD PLUM	0	21,300	21,300
HIGH BUSH CRANBERRY	7,900	0	7,900
RED OSIER DOGWOOD	17,700	2,000	19,700
SILKY DOGWOOD	2,750	0	2,750
NANNYBERRY	1,500	0	1,500
TOTAL	2,794,336	96,300	2,890,636

Expenses, Fiscal Year 2019

The largest Nursery expense is labor and labor related costs. In FY2019, expenses totaled \$1,436,426.78. Of this, \$929,260.47 were payroll expenses and \$507,166.31 were non-payroll expenses (see Table 5 and Figure 4). Seasonal and part time labor accounts for over half of the payroll expenses (see Table 6 and Figure 5). Supplies accounted for most non-payroll expenses (see Table 7 and Figure 6). Supplies include agriculture items like fertilizers and pesticides in addition to shipping boxes and office materials.

In FY2019, the Nursery continued making changes in staffing and operations to increase the efficiency and effectiveness of operations. These changes included the hiring of a part time Forest Health staff person to assist in insect and disease issues. Testing for *Diplodia*, a fungal disease reducing the survival rate of red pine seedlings, and other disease testing is occurring on a regular basis to ensure healthy seedling stock. Upgrades to the irrigation system were made to reduce groundwater consumption and improve energy efficiency.

Table 5: Nursery Expense Breakdown

Type	Amount	Percent
Payroll Expenses	\$929,260	65%
Non-Payroll Expenses	\$507,166	35%
TOTAL	\$1,436,426	100%

Figure 4: Nursery Expense Breakdown

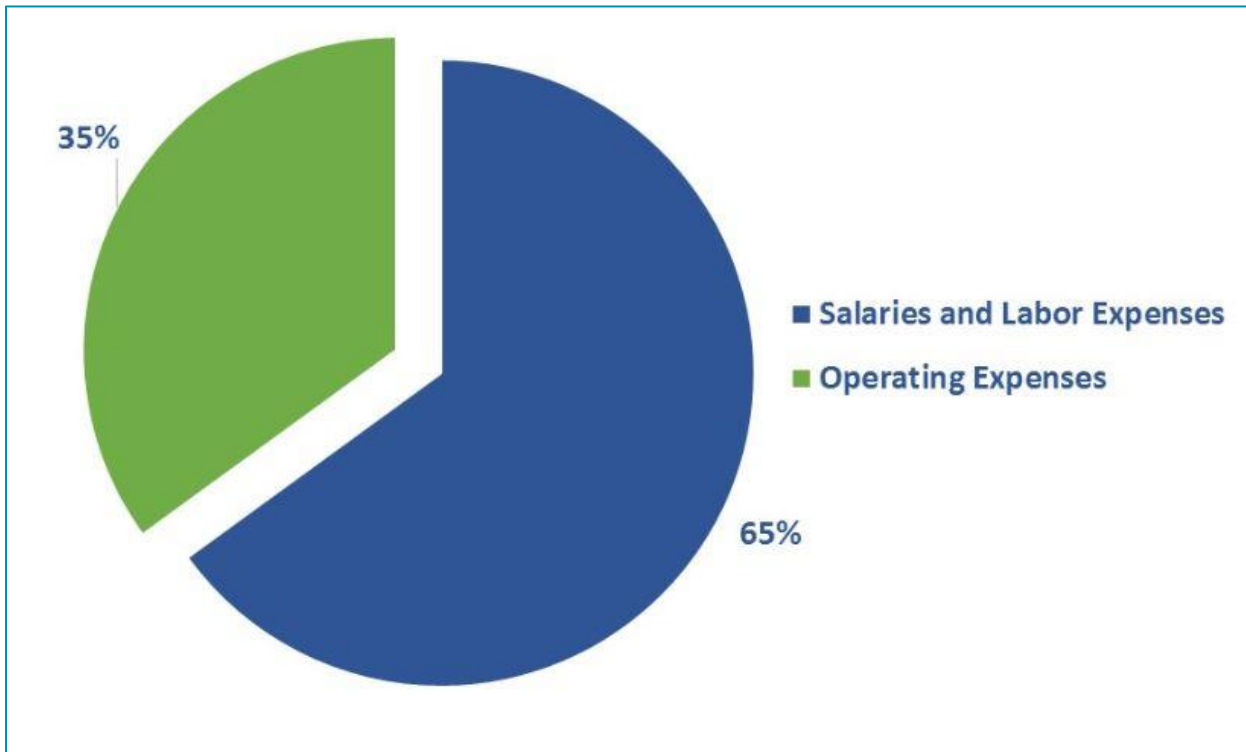


Table 6: Payroll Expenses Breakdown

Type	Amount	Percent
Full Time Salary	\$378,473	41%
Part Time and Seasonal Salary	\$474,039	51%
Other Employee Costs (Includes Unemployment and Worker's Compensation)	\$76,746	8%
TOTAL	\$929,260	100%

Figure 5: Payroll Expenses Breakdown

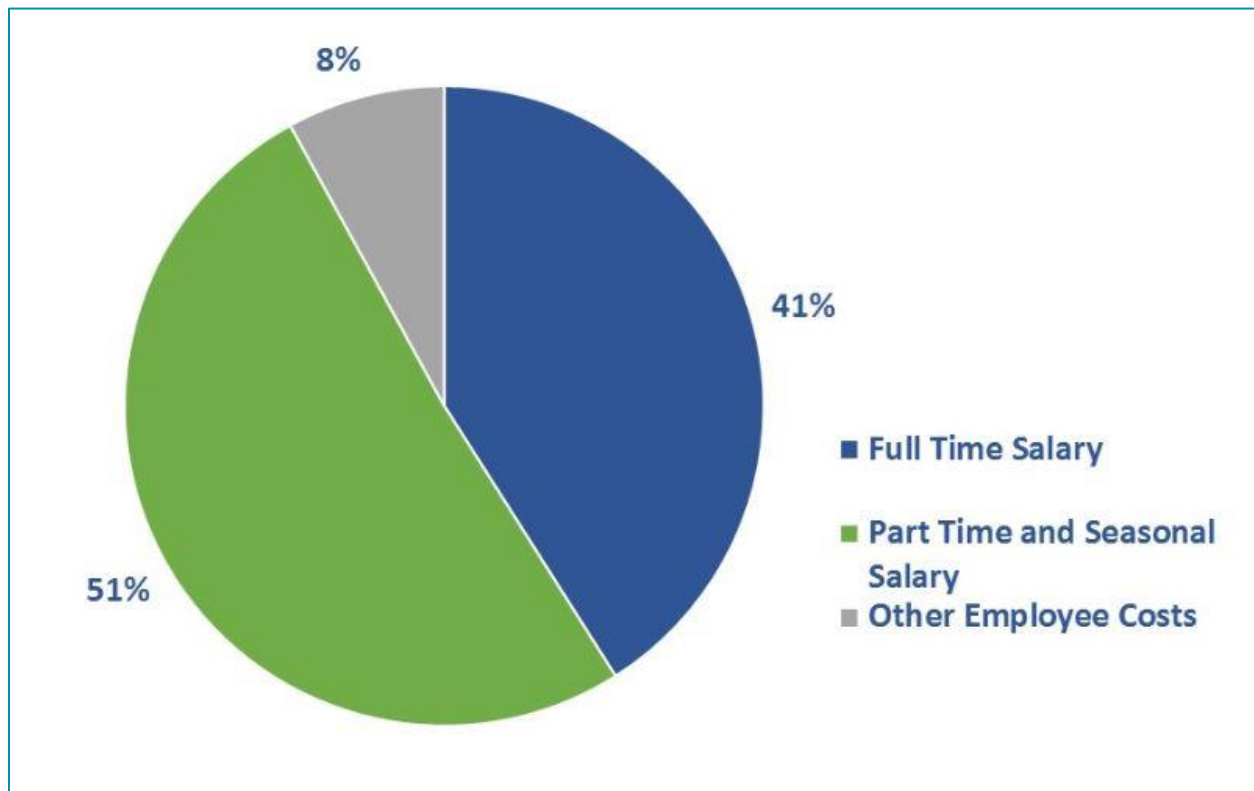
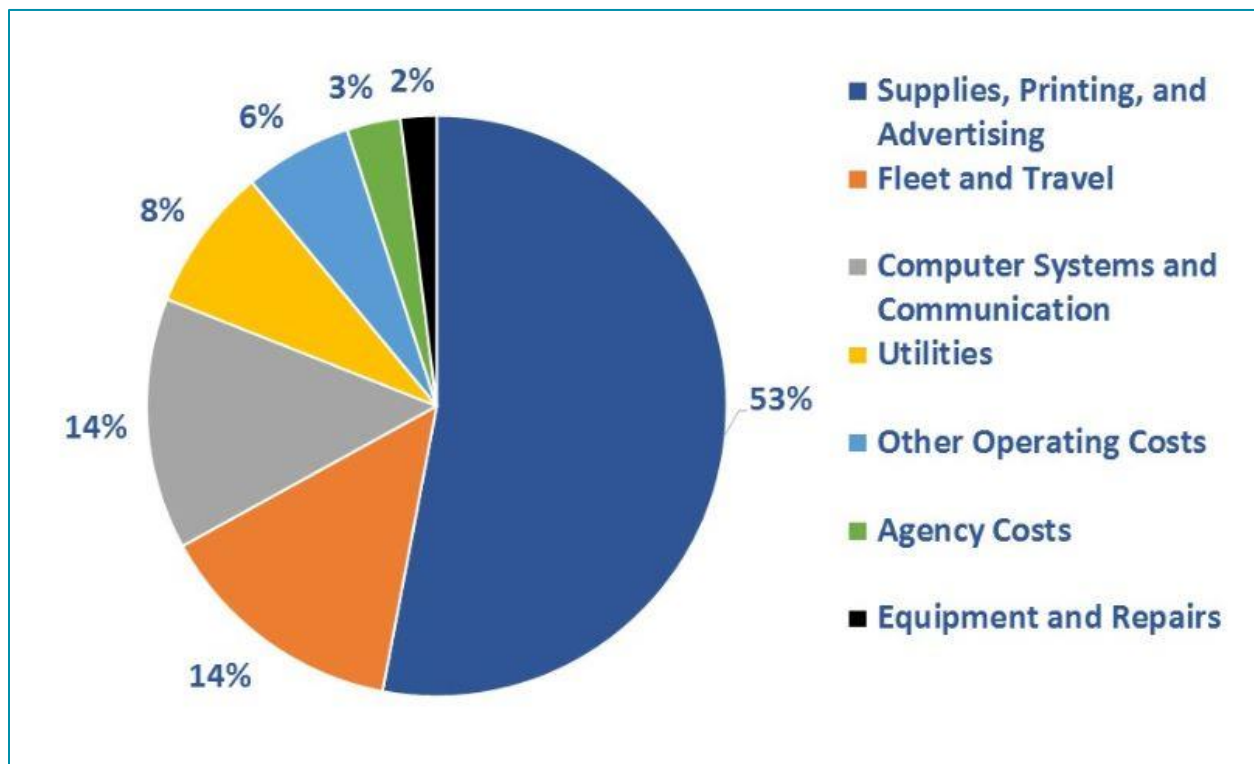


Table 7: Non-payroll Expenses Breakdown

Type	Amount	Percent
Supplies, Printing, and Advertising	\$267,900	53%
Fleet and Travel	\$73,160	14%
Computer Systems and Communication	\$72,145	14%
Utilities	\$40,920	8%
Other Operating Costs	\$28,032	6%
Agency Costs	\$15,824	3%
Equipment and Repairs	\$9,185	2%
TOTAL	\$507,166	100%

Figure 6: Non-payroll Expenses Breakdown



Current and Future Challenges

This section will outline a number of current and future challenges facing the Nursery, including factors related to weather, disease, climate change, limitations on the ability to produce containerized stock, and labor shortages.

The Nursery continues to face challenges to providing adequate stock of certain species. Bad weather events and disease outbreaks have impacted certain species with greater frequency in recent years, affecting availability. From year to year this leads to increased need for trading or purchasing seedlings from other state, federal, and private nurseries to meet demands. Annual growing challenges will continue to increase as climate change progresses.

While there will continue to be a need for both bareroot and containerized seedlings into the future, the preference by large land managers for containerized conifers over bareroot seedling stock is likely to continue. Hardwood species, however, are far more economically grown as bareroot seedlings.

To obtain containerized seedlings for state reforestation efforts, the DNR currently must extract Minnesota-specific seed at the Nursery (so it is ecotype appropriate), then provide it to the one available commercial producer of conservation-grade containerized stock for that company to plant and grow into seedlings the DNR can purchase. Developing the ability to produce containerized seedlings at the Nursery would reduce Minnesota's current dependence on the business practices of an out-of-state commercial grower. This would thereby help ensure the state has the capacity to produce ecotype appropriate seedling stock for future reforestation efforts. Conservation grade containerized seedlings are grown indoors under controlled conditions, so a shift to include some containers would also help mitigate the impacts from bad weather events and climate change.

Labor shortages are also a challenge. Seasonal workers supporting the Nursery's spring seedling harvest and shipping season are retiring, and younger workers are not replacing them. Low unemployment rates in recent years have increased recruitment, hiring, and retention difficulties. Approximately 90 temporary workers are needed to complete the 6-week spring harvest and shipping season. The inability to find local labor has led to the need for contract labor to help support the spring harvesting and shipping activities.

The FY20 COVID-19 disruption will have significant impacts on Nursery operations in the coming years. To meet social distancing requirements and allow for safe operations, the 2020 spring lifting season was significantly reduced. This work is time sensitive and must be done before seedlings come out of dormancy. It cannot be completed later in the year. Only 446,000 of 2.8 million seedlings on order will be distributed; those that can be distributed are from seedling stock that was harvested in the fall of 2019 and stored over the winter. Social distancing requirements will also limit the ability to perform other nursery activities in the traditional manner going forward. This includes activities during which staff typically work in close proximity, such as planting, seeding, and weeding. A reduction in the number of seedlings planted in 2020 will result in reduced availability for sale in FY2021 and FY2022. The impact to revenues will last for at least three years. As operations continue into the summer and fall of 2020, future impacts of the COVID-19 disruption to nursery expenses, revenues, and operations will become better understood. As noted previously, aging facilities and equipment at the Nursery also present a challenge. Investments proposed in the Governor's 2020 bonding request include funding to

modernize the seed extraction facility, seed and seedling storage capacity, and the energy and water efficiency of the State Forest Nursery. Benefits of these proposals include:

- Modernized and energy efficient seed extraction facility.
 - Seed cone acquisition and seed extraction is a critical aspect of the nursery's operations to ensure Minnesota climate appropriate seed is available. Seed is used for both planting and aerial seeding. Newer techniques controlling heat and humidity will reduce space needs, provide energy efficiency, reduce water use and decrease seed extraction time. The current seed extraction machine was built in the 1980s, is costly to run, energy inefficient, and difficult to repair.
- Improved seed and seedling storage.
 - In the event of a prolonged breakdown or power outage, tens of thousands of dollars of processed seed and seedlings would be at risk of loss because of the lack of sufficient backup systems. Temperature regulation is needed to improve seedling quality and energy efficiency. This also includes adding backup power systems and temperature regulation.
- Increased seedling storage capacity.
 - Climate change continues to impact nursery operations and seedling demands. Climate change will result in a greater need for hardwood reforestation. Additional storage capacity will allow for dormant seedlings lifted in the fall to be stored over winter. This will increase the availability of hardwood seedlings for spring shipping to southern regions of Minnesota. With spring seedling lift, it is difficult to meet the planting window in southern Minnesota by the time snow has melted at the Nursery and seedlings can be harvested.

These investments will allow the Nursery to improve current seed and bareroot seedling production capabilities to meet anticipated seed source, seed extraction, seedling, and seed storage capacity needs into the future. These upgrades would also facilitate the development of containerized seedling production capacity, if that is deemed beneficial and economically feasible. There will be demand and need for both bareroot and containerized stock in the future.

Appendices

Appendix 1: Statement of Revenues and Costs, State Forest Nursery Account, FY2019

Description	Amount
Revenues	
Total Sales FY2019	1,332,231
Adjustments*	(21,127)
Investment Income	28,882.00
Total Revenues	1,339,985
Costs	
Salary and Other Compensation	929,260
Supplies and Expenses	507,166
Total Costs	1,436,427
Revenues Minus Costs	(96,441)

*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: Cash Receipts and Expenditures, State Forest Nursery, FY2019

Description	Amount
Balance Forward – In Prior Year	1,523,367
Adjusted Balance*	46,311
Adjusted Balance Forward – In	1,569,678
Cash Receipts	
Cash From Accounts Receivable Collections and Refunds	865,008
Cash Sales	467,221
Investment Income	28,882
Refunds	(21,127)
Fiscal Year 2019 Total Receipts	1,339,984
Fiscal Year 2019 Expenditures	-(1,436,427)
Fiscal Year 2019 Encumbrance Yet to Be Paid	(30)
Balance Forward – Out	1,473,206

*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: Accounts Receivable Reconciliation, State Forest Nursery Account, FY2019

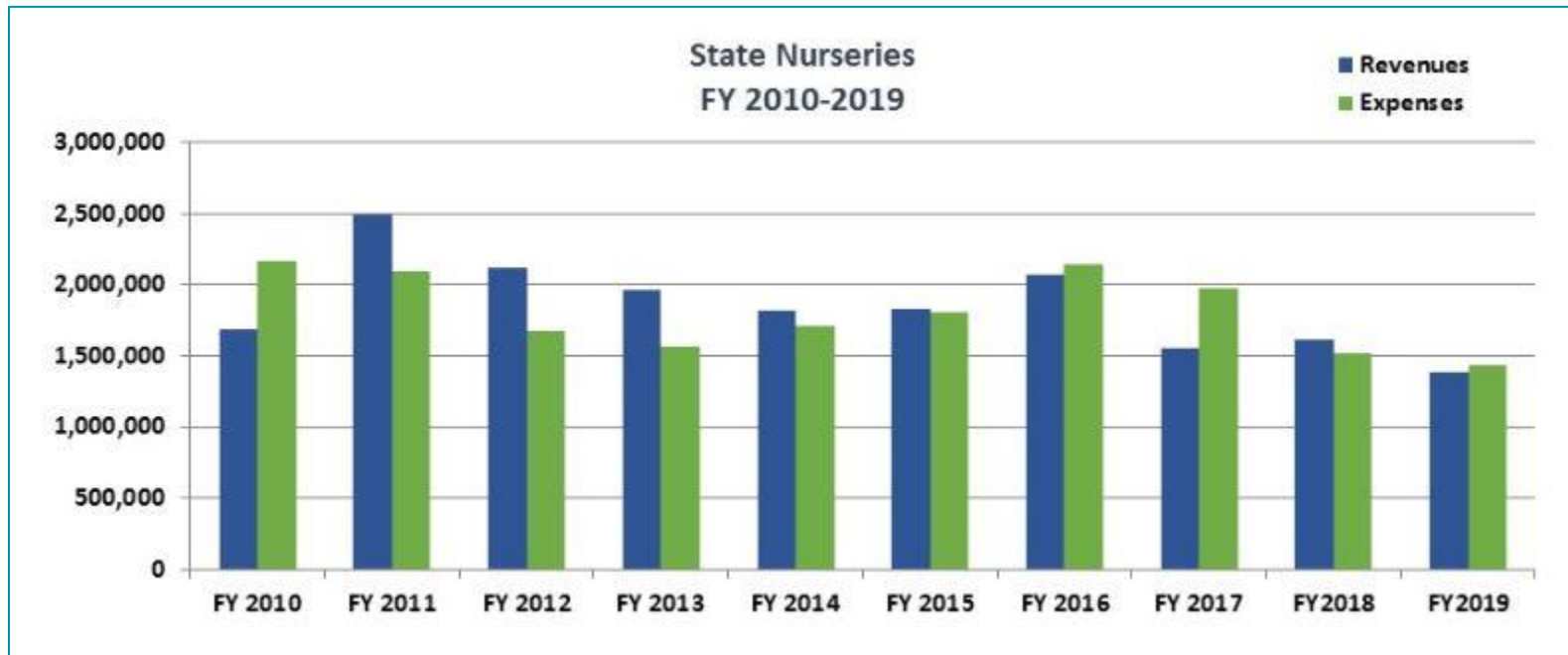
Description	Amount
Accounts Receivable 6/30/18	\$3,506.55
Total Sales on Accounts Receivable FY2019	\$891,925.80
Adjustments*	(\$29,609.15)
Total	\$865,823.20
FY2019 Accounts Receivable Collections**	\$865,009.47
Total	\$865,009.47
Accounts Receivable 6/30/19	\$831.73

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

**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 4: Ten-Year Summary Analysis of Cash Flow FY2010-2019

Description	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY2018	FY2019	3 Yr Avg	5 Yr Avg	10 Yr Avg
Beg Balance	1,094,636	619,090	1,103,761	1,460,394	1,855,103	1,964,070	1,987,431	1,918,310	1,507,991	1,523,366	1,649,889	1,780,234	1,503,415
Revenues	1,689,130	2,491,715	2,121,624	1,962,297	1,821,325	1,831,018	2,067,997	1,558,477	1,615,121	1,386,267	1,519,955	1,691,776	1,854,497
Expenses	2,164,676	2,097,044	1,674,691	1,567,588	1,712,358	1,807,657	2,137,118	1,968,796	1,522,104	1,436,427	1,642,442	1,774,420	1,808,846
End Balance	619,090	1,103,761	1,460,694	1,855,103	1,964,070	1,987,431	1,918,310	1,507,991	1,523,366	1,473,206	1,501,461	1,682,025	1,541,284



Appendix 5: State Forest Nursery Account Allotments within Appropriation Report, FY2020

Description	Amount
Receipts:	
Original Estimated Receipts:	2,012,000
Current Estimated Receipts:	1,937,000
Actual Receipts:	1,339,985
Balance Forward:	
In	1,569,678
Out	1,473,206
Budget Authority	2,033,471
Spending Authority	1,436,457
Allotted	1,436,457
Not Allotted	597,015
Cash Balance	0
Total Expended	1,436,427
Total Obligated	30
Allotted Available	0

Allotment Summary Balance Information

Department ID R2933739	Payroll	Non-Payroll
Budget	929,260	507,196
Encumbered	0	30
Expended	929,260	507,166
Available	0	0
Allotment		1,436,457