



University of Idaho

College of Natural Resources

**INLAND
NORTHWEST
REFORESTATION
SURVEY:
2020 RESULTS**

**ANDREW S. NELSON
CENTER FOR FOREST NURSERY &
SEEDLING RESEARCH**

INLAND EMPIRE REFORESTATION COUNCIL

MARCH 1, 2022



OTHER SEEDLING/REFORESTATION SURVEYS

I Annual National Seedling Production Survey

- Focuses on the number of seedlings nurseries produce each year
- Published annually in *Tree Planters' Notes*

Forest Nursery Seedling Production in the United States—Fiscal Year 2020

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Abstract

Forest nursery production for the 2020 planting season was more than 1.27 billion tree seedlings (including about 18.5 million container seedlings imported from Canada). Approximately 73 percent of seedlings were produced as bareroot stock. Only a small portion (3 percent) of seedlings were hardwood species. Seedling production in some States was affected by the coronavirus pandemic which left some nurseries unable to lift and ship their stock. Based on this total number of seedlings and estimated planting densities in each State, more than 2.4 million ac (977,542 ha) were planted. Approximately 84 percent of production and planting occurred in the southern States.

Background

This annual report summarizes forest nursery seedling production in the United States. The number of seedlings reported is used to estimate the number of acres of forest planting per year. Prepared by the U.S. Department of Agriculture, Forest Service, Forest Inventory and Analysis (FIA) and State and Private Forestry, this report includes State-by-State breakdowns, regional totals, and an analysis of data trends. Universities in the Southern, Northeastern, and Western Regions of the United States made an effort to collect data from all the major producers of forest and conservation seedlings in the 50 States. Forest and conservation nursery managers provided

the information presented in this report. Because all data are provided voluntarily by outside sources and some data are estimated, caution must be used in drawing inferences.

Methodology

State and Private Forestry, in collaboration with Auburn University, the University of Idaho, and Purdue University, produced the data for this report. These universities collected forest tree seedling production data directly from the forest and conservation nurseries that grow forest tree seedlings in their region of the United States (Auburn University collected from 13 States in the Southeast, the University of Idaho collected from 17 States in the West, and Purdue University collected from 21 States in the Northeast and Midwest). The estimate of planted acres for each State was calculated using FIA estimates of planting densities. In addition, FIA average annual estimates of tree planting area based on ground-plot data that States collected during 5-, 7-, or 10-year periods is included. FIA estimates of acres of trees planted by State may not correlate with nursery production surveys because nurseries do not report shipments across State lines. Total acres by region, however, provide a reasonable estimate of planted acreage. Data collected are reported for both hardwood and conifer species by bareroot and container seedlings produced (table 1) and by estimated acreage planted of each (table 2).

OTHER SEEDLING/REFORESTATION SURVEYS



I Nursery Capacity & Expansion Survey (Fargione et al. 2021)

- Nursery industry is at capacity, but demand is high and increasing
- Entire pipeline (seed, nursery, workforce, early silviculture) needs to beef up to meet reforestation challenges



Challenges to the Reforestation Pipeline in the United States

Joseph Fargione^{1*}, Diane L. Haase², Owen T. Burney³, Olga A. Kildisheva⁴, Greg Edge⁵, Susan C. Cook-Patton⁶, Teresa Chapman⁷, Austin Rempel⁸, Matthew D. Hurteau⁹, Kimberley T. Davis¹⁰, Solomon Dobrowski¹¹, Scott Enebak¹², Rafael De La Torre¹³, Arvind A. R. Bhuta¹⁴, Frederick Cubbage¹⁵, Brian Kittler⁸, Daowei Zhang¹⁶ and Richard W. Guldin¹⁷

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Large-scale global reforestation goals have been proposed to help mitigate climate change and provide other ecosystem services. To explore reforestation potential in the United States, we used GIS analyses, surveys of nursery managers and foresters, and literature synthesis to assess the opportunities and challenges associated with meeting proposed reforestation goals. We considered a scenario where 26 million hectares (64 million acres) of natural and agricultural lands are reforested by 2040 with 30 billion trees at an estimated cost of \$33 (\$24–\$53) billion USD. Cost per hectare will vary by region, site conditions, and other factors. This scenario would require increasing the number of tree seedlings produced each year by 1.7 billion, a 2.3-fold increase over current nursery production levels. Additional investment (not included in the reforestation cost estimate) will be needed to expand capacity for seed collection, seedling production, workforce development, and improvements in pre- and post-planting practices. Achieving this scenario will require public support for investing in these activities and incentives for landowners.

Keywords: afforestation, tree planting, nurseries, seedlings, land use

INTRODUCTION

To constrain global warming, reductions in fossil fuels emissions are critical. In addition, we must also invest in strategies that remove carbon dioxide from the atmosphere (Masson-Delmotte et al., 2018). Reforestation is a promising opportunity to capture carbon dioxide while providing key ecosystem services including clean air and water (The White House, 2016; Griscom et al., 2017; Fargione et al., 2018; Domke et al., 2020). Enthusiasm for tree planting is gaining momentum, with multiple ambitious goals set forth to restore forest cover for climate mitigation



INLAND NORTHWEST REFORESTATION SURVEY

- I Conducted by the UI Center for Forest Nursery & Seedling Research in spring 2021 to document 2020 activities
- I Results of the survey will help landowners by providing information to:
 - nurseries to help them anticipate the number and type of seedlings to grow
 - landowners so then can understand practices being applied by other landowners to improve reforestation success
 - reforestation contractors so they can anticipate demand for seedling planting, site preparation, and release contracts



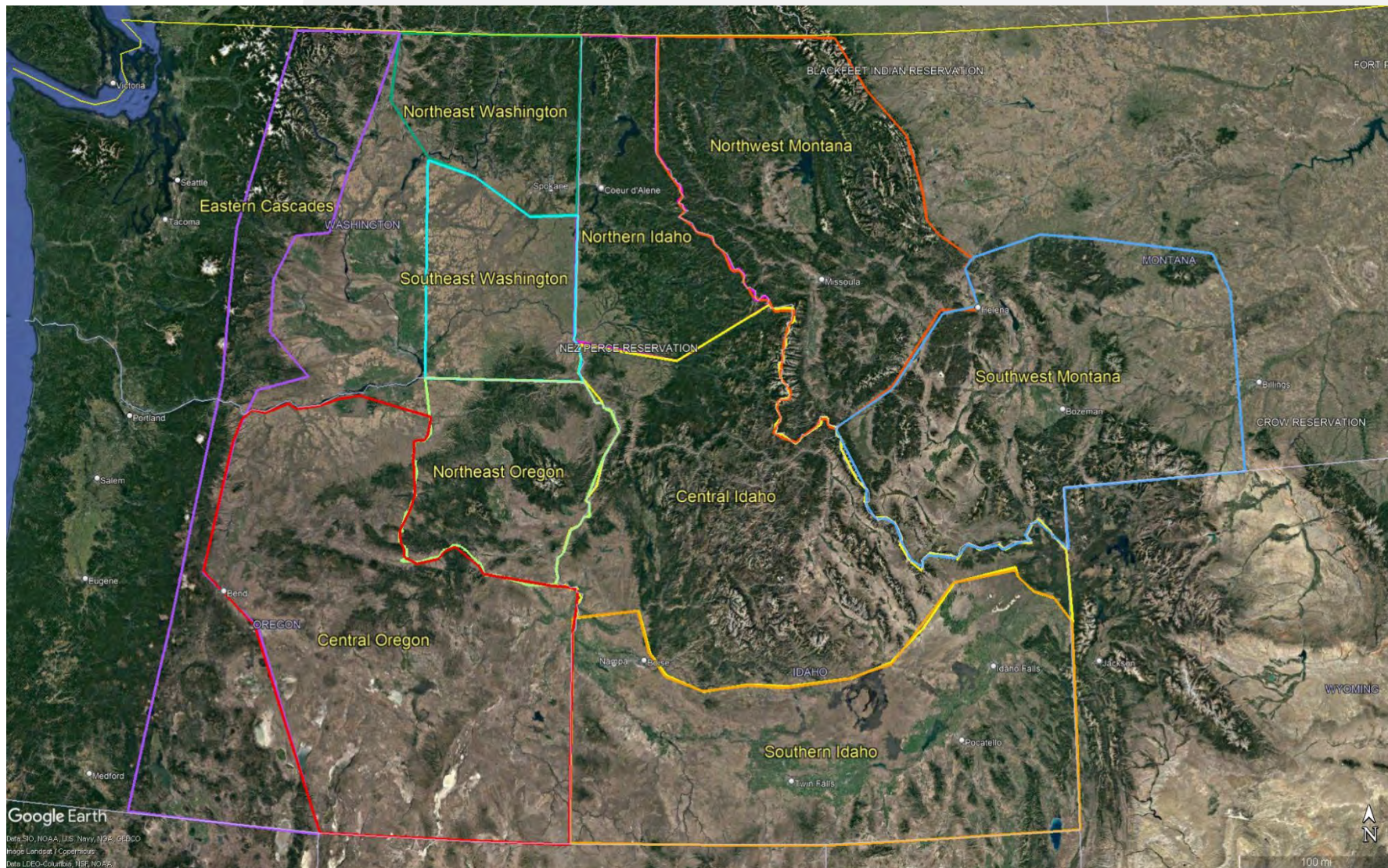
INLAND NORTHWEST REFORESTATION SURVEY

I Widely distributed to seedling customers and forest managers through State Extension programs, National Forests and other Federal lands, Tribes, private landowners, and state agencies

I **148 total respondents**



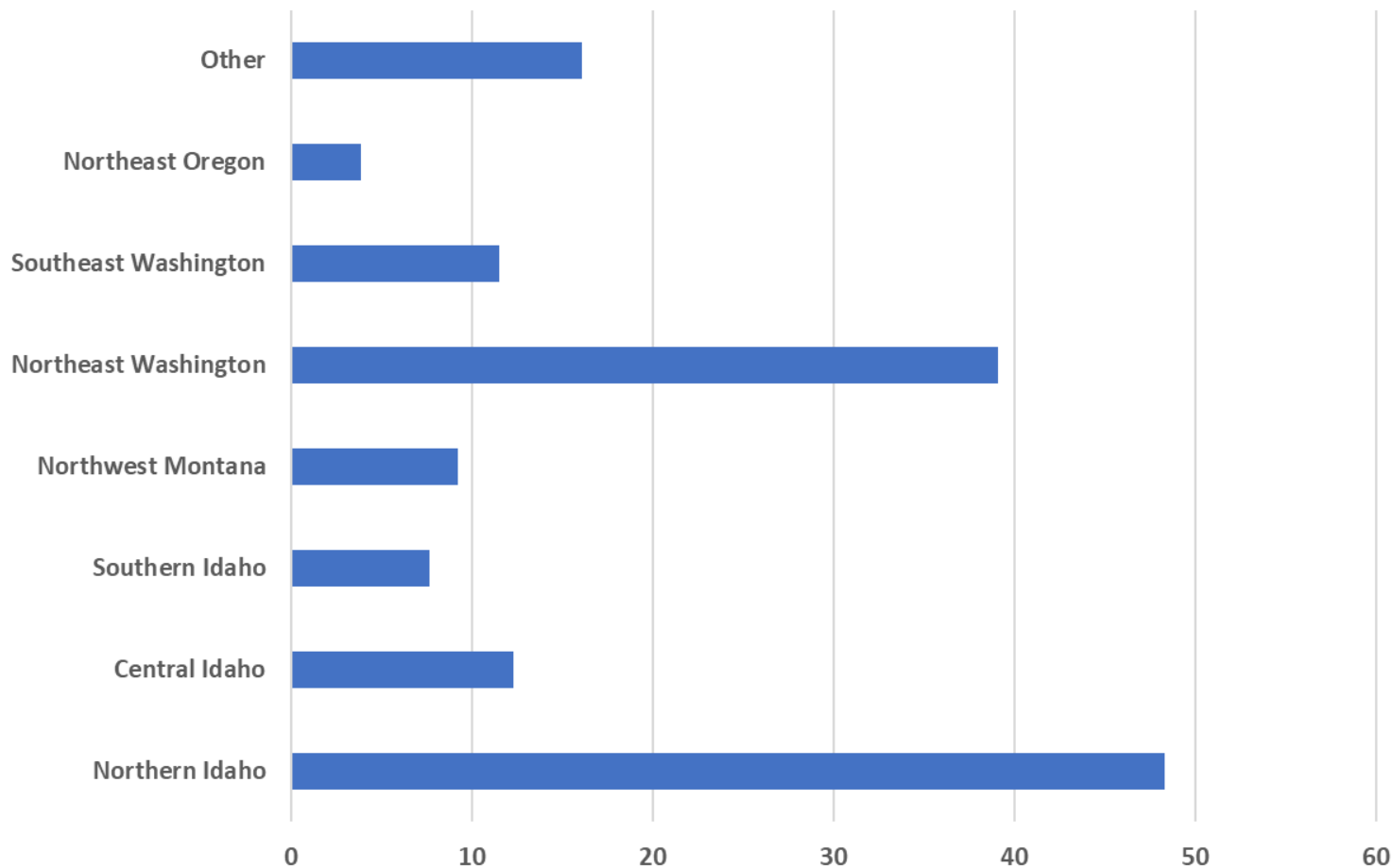
REGION TARGETED – INLAND NORTHWEST





RESPONDENT LOCATION

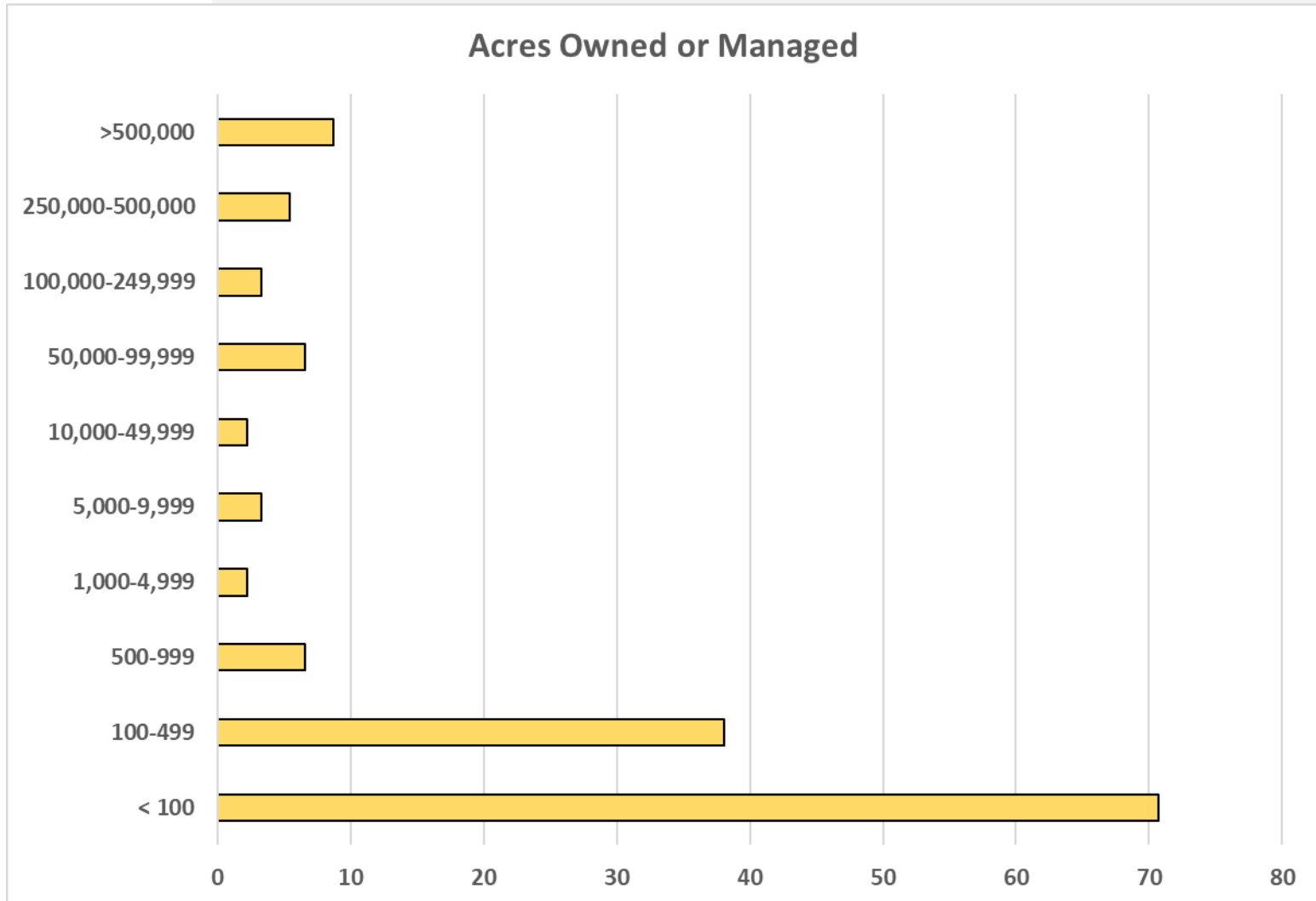
Where is the forestland that you own or manage located?



“Other” included SW and Central MT, Central WA, and Central OR

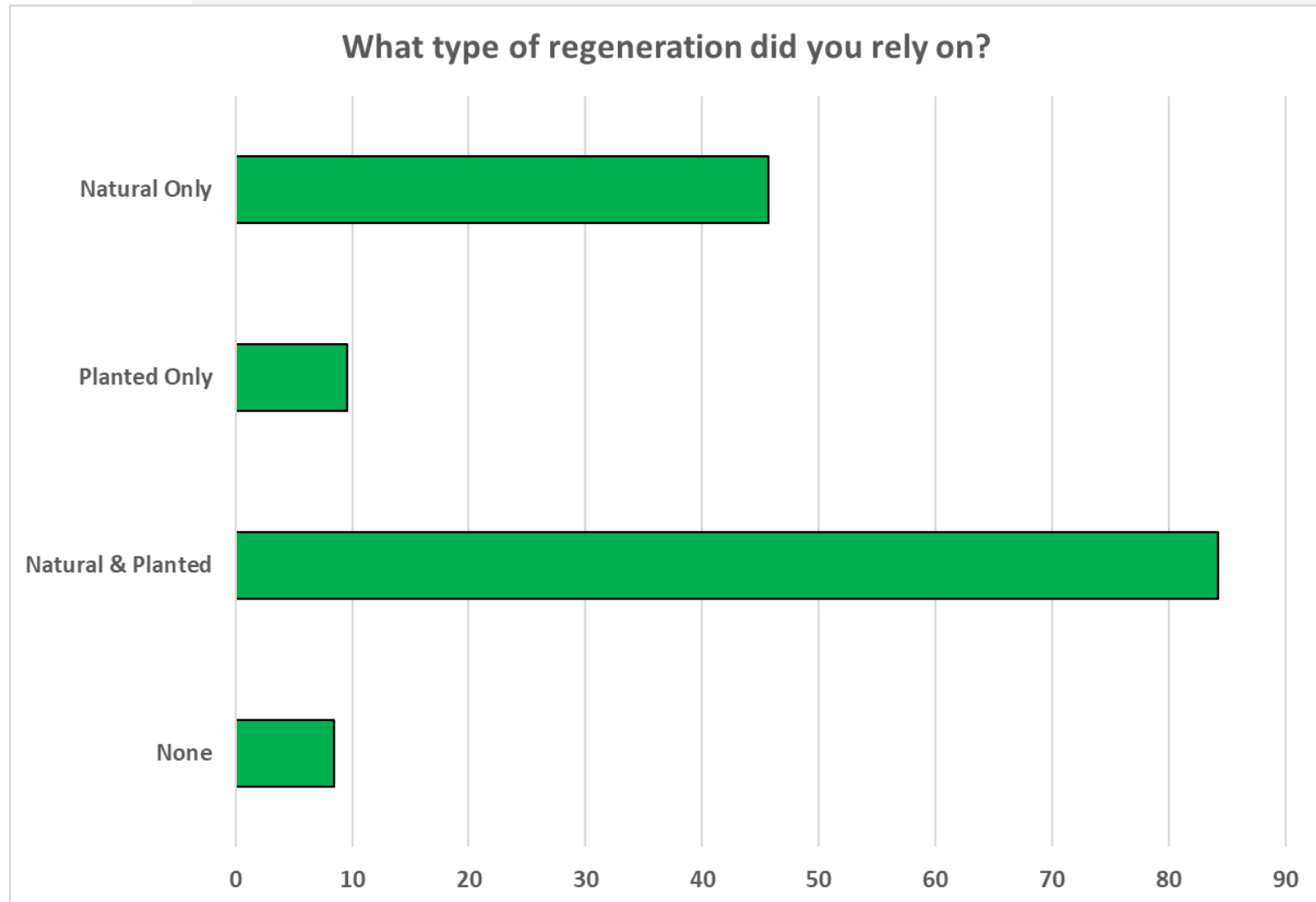


RESPONDENT ACREAGE



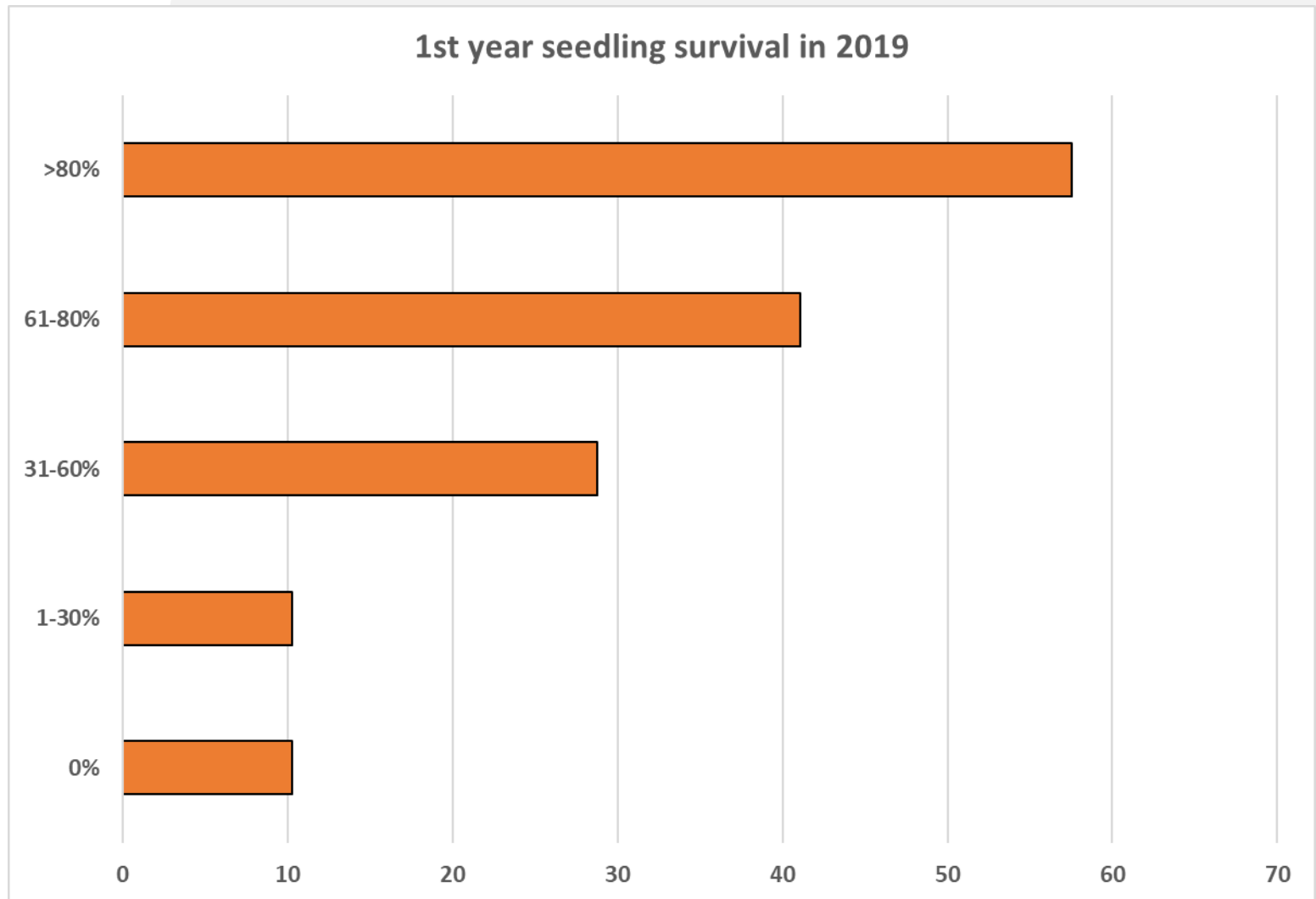


FORM OF REGENERATION USED





ESTIMATE OF 2019 PLANTED SEEDLING SURVIVAL



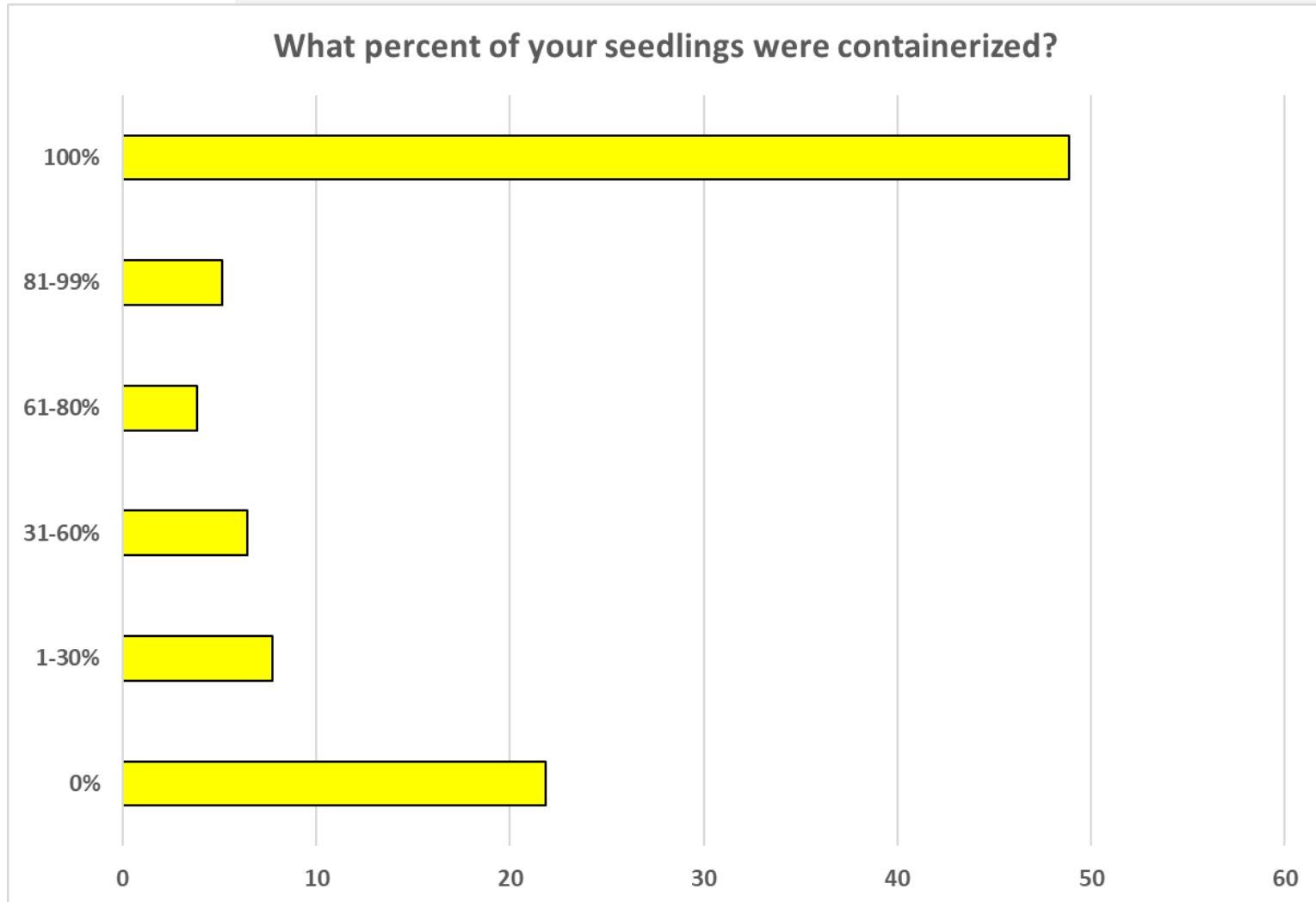


TOTAL REPORTED SEEDLINGS PLANTED IN 2020

19,087,527

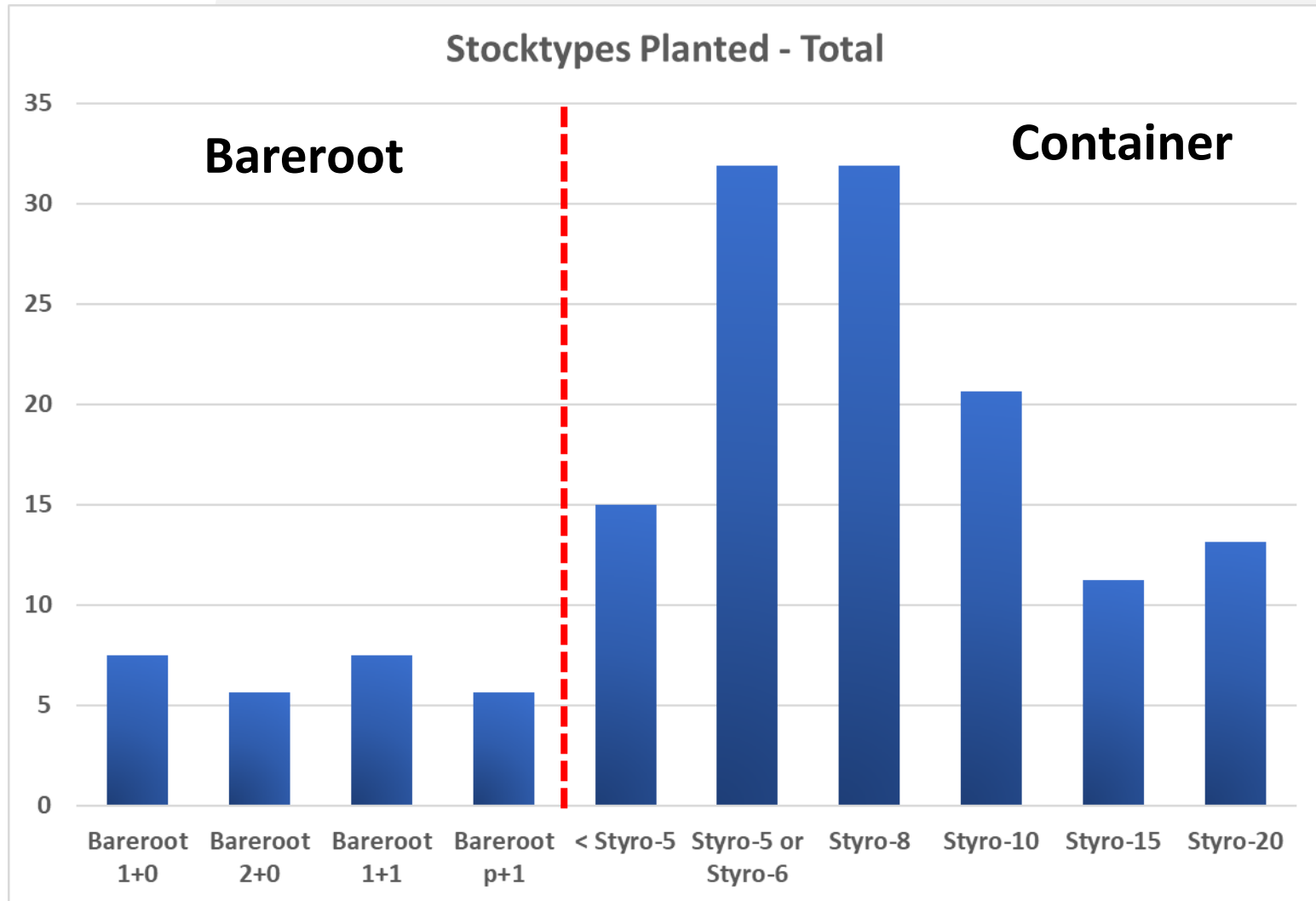


PERCENT CONTAINERIZED SEEDLINGS



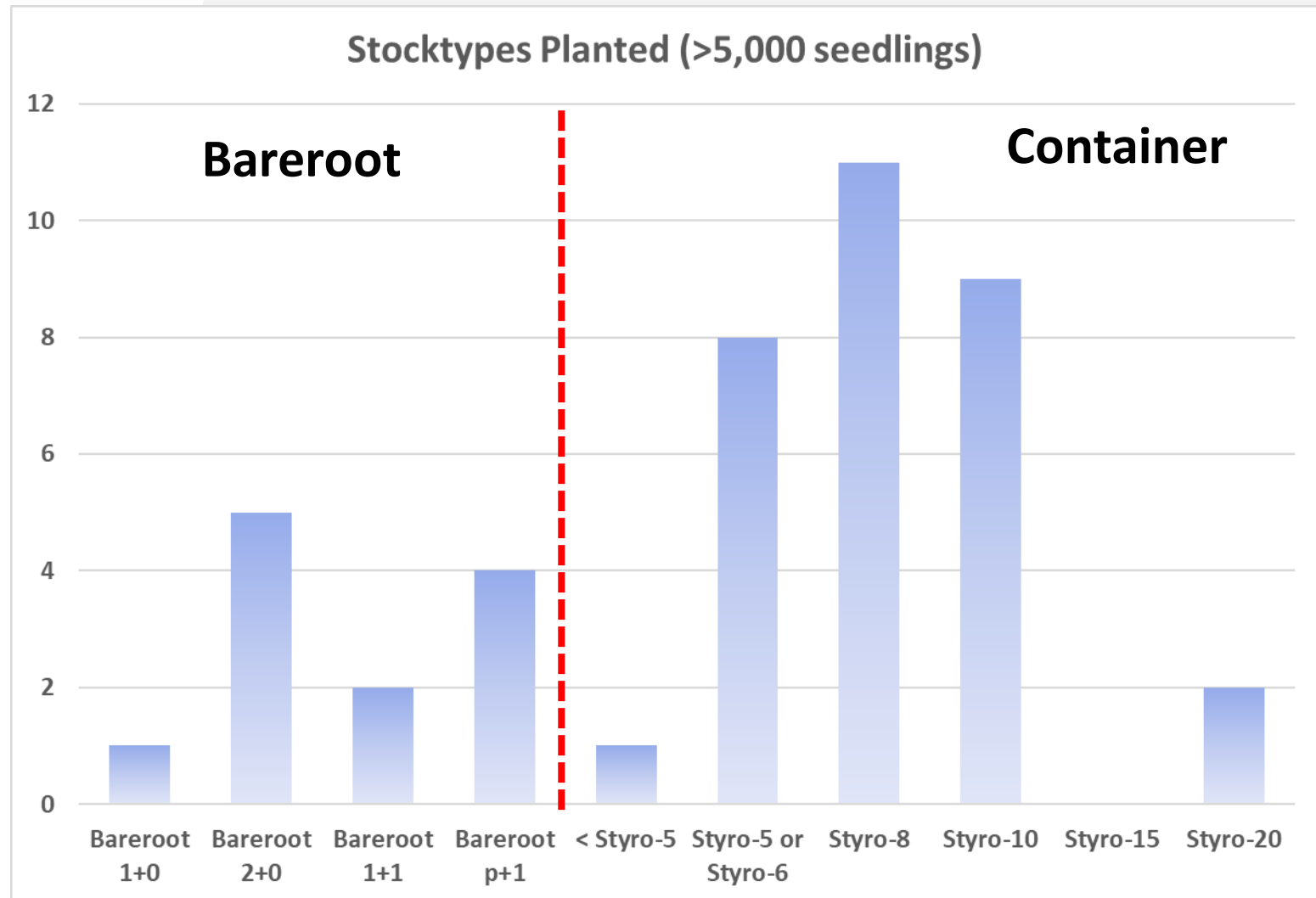


STOCKTYPES PLANTED



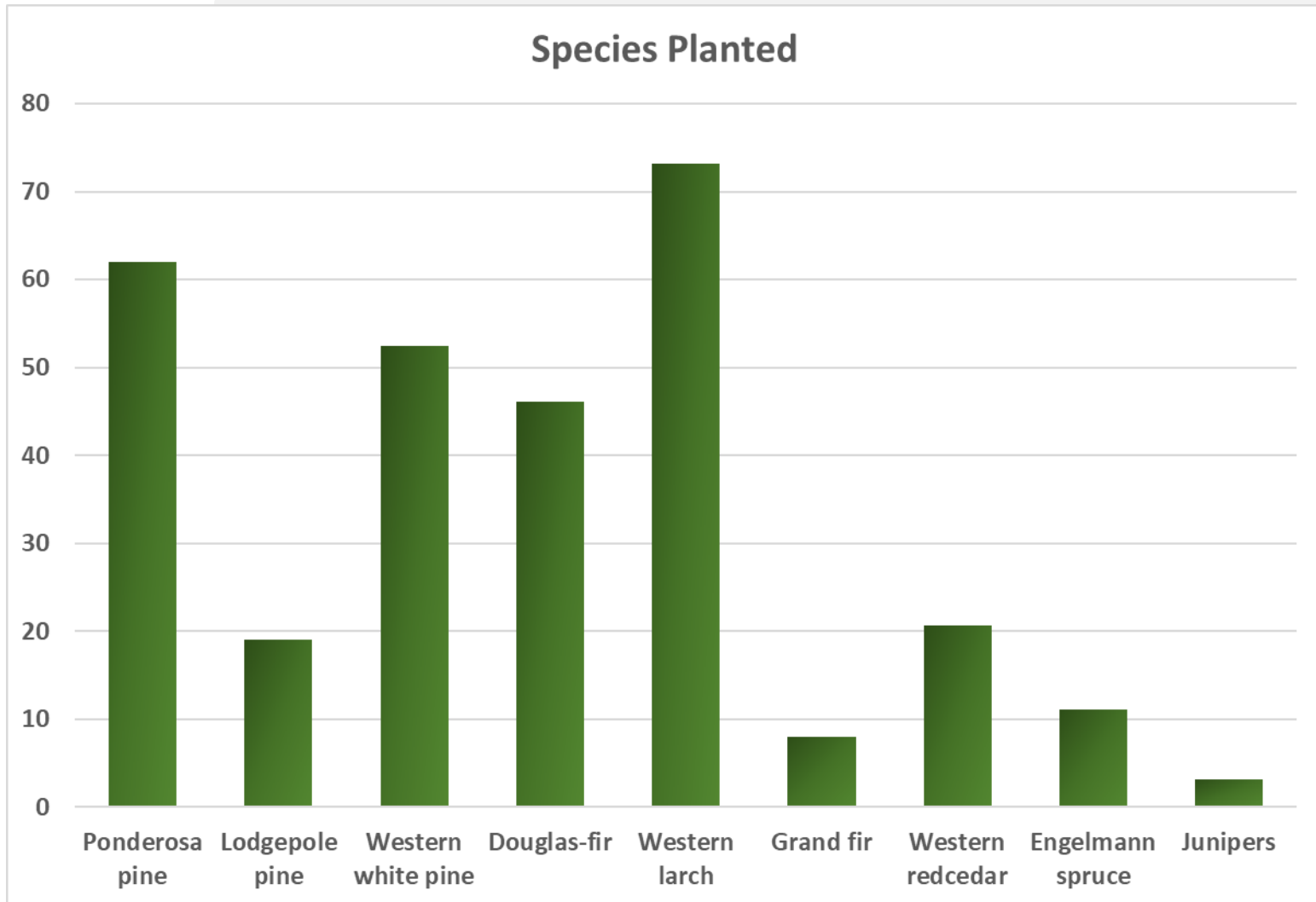


STOCKTYPES (> 5,000 SEEDLINGS PLANTED)



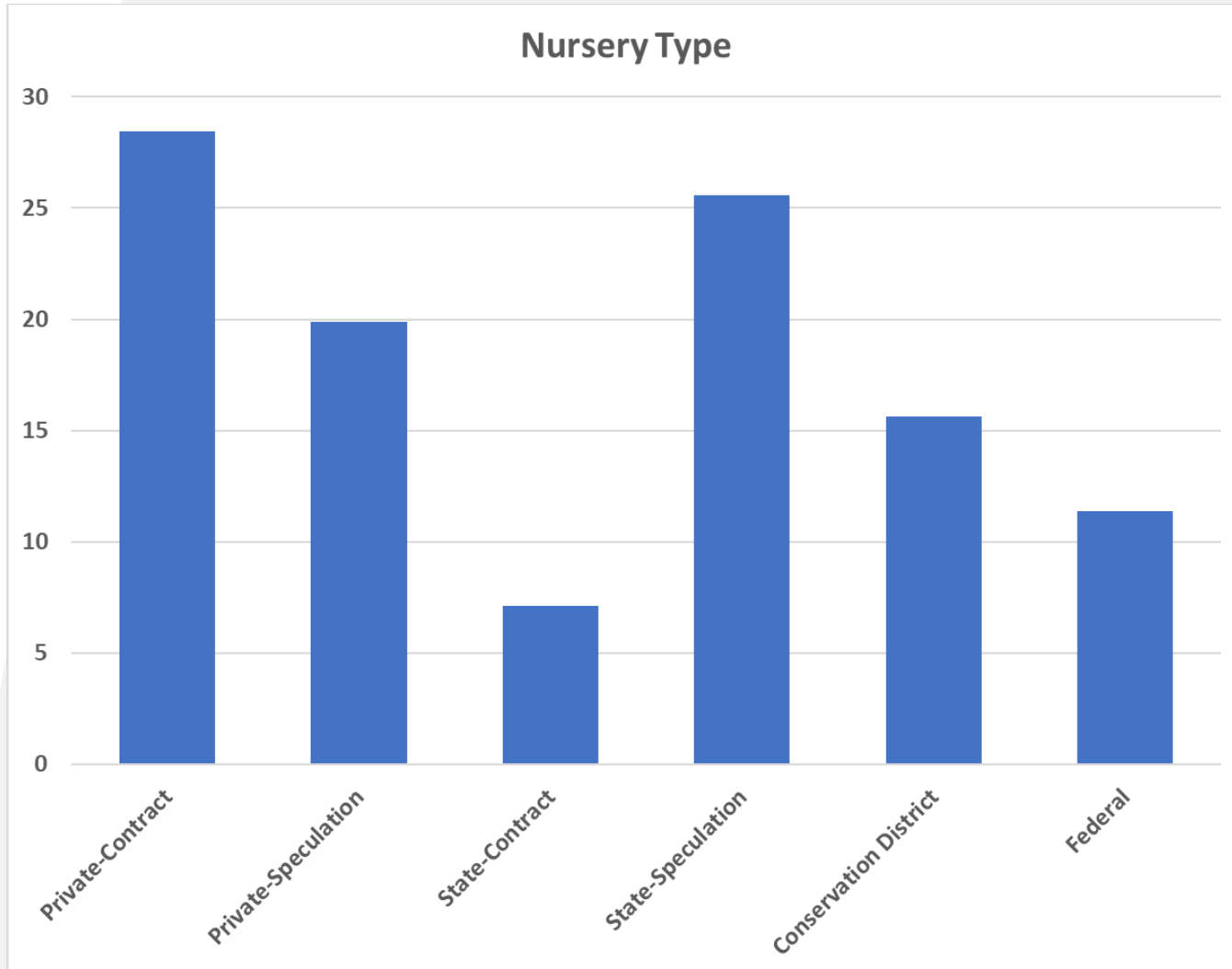


SPECIES PLANTED



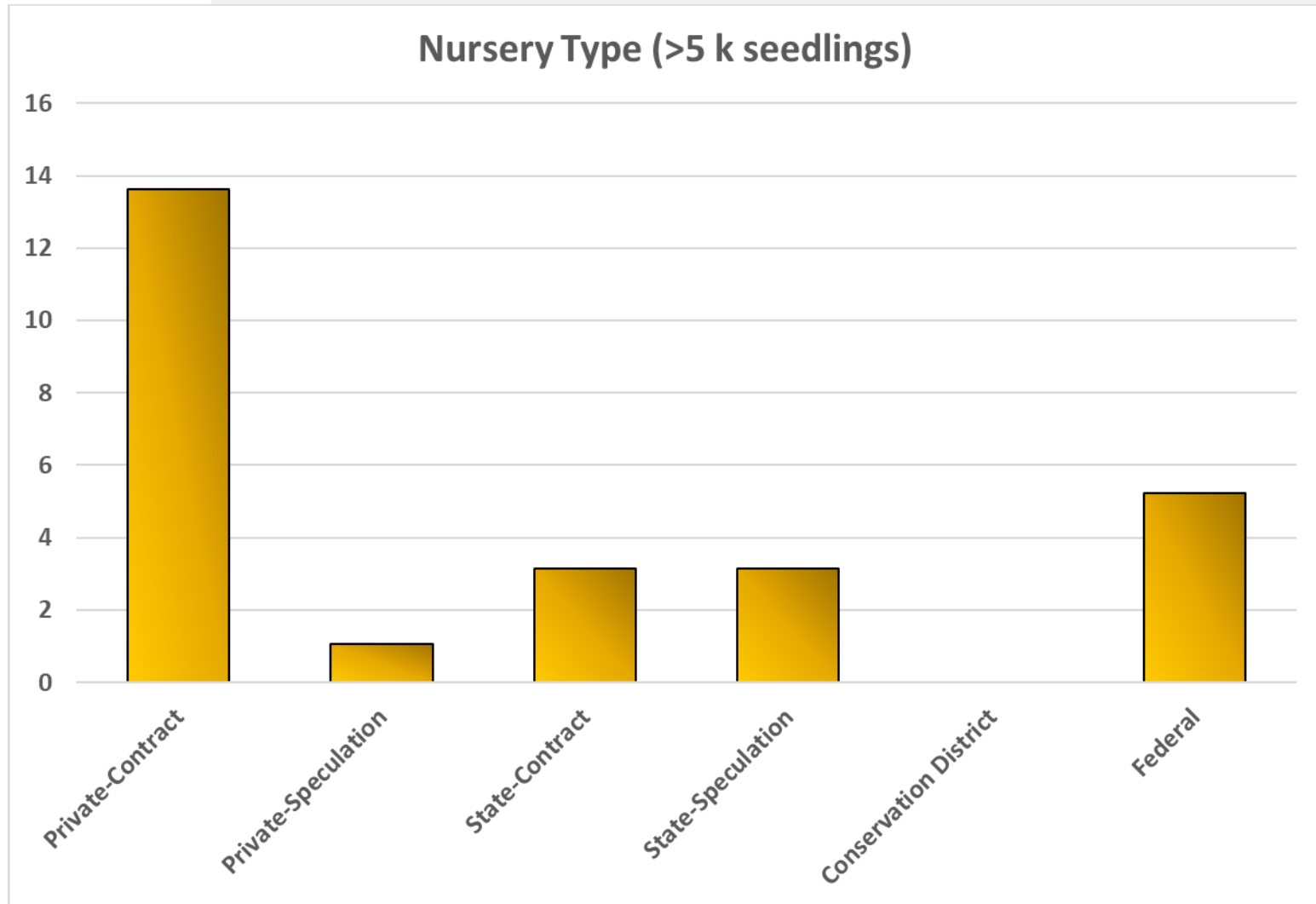


WHERE DID YOU OBTAIN YOUR SEEDLINGS?





WHERE DID YOU OBTAIN YOUR SEEDLINGS (> 5 K SEEDLINGS)?

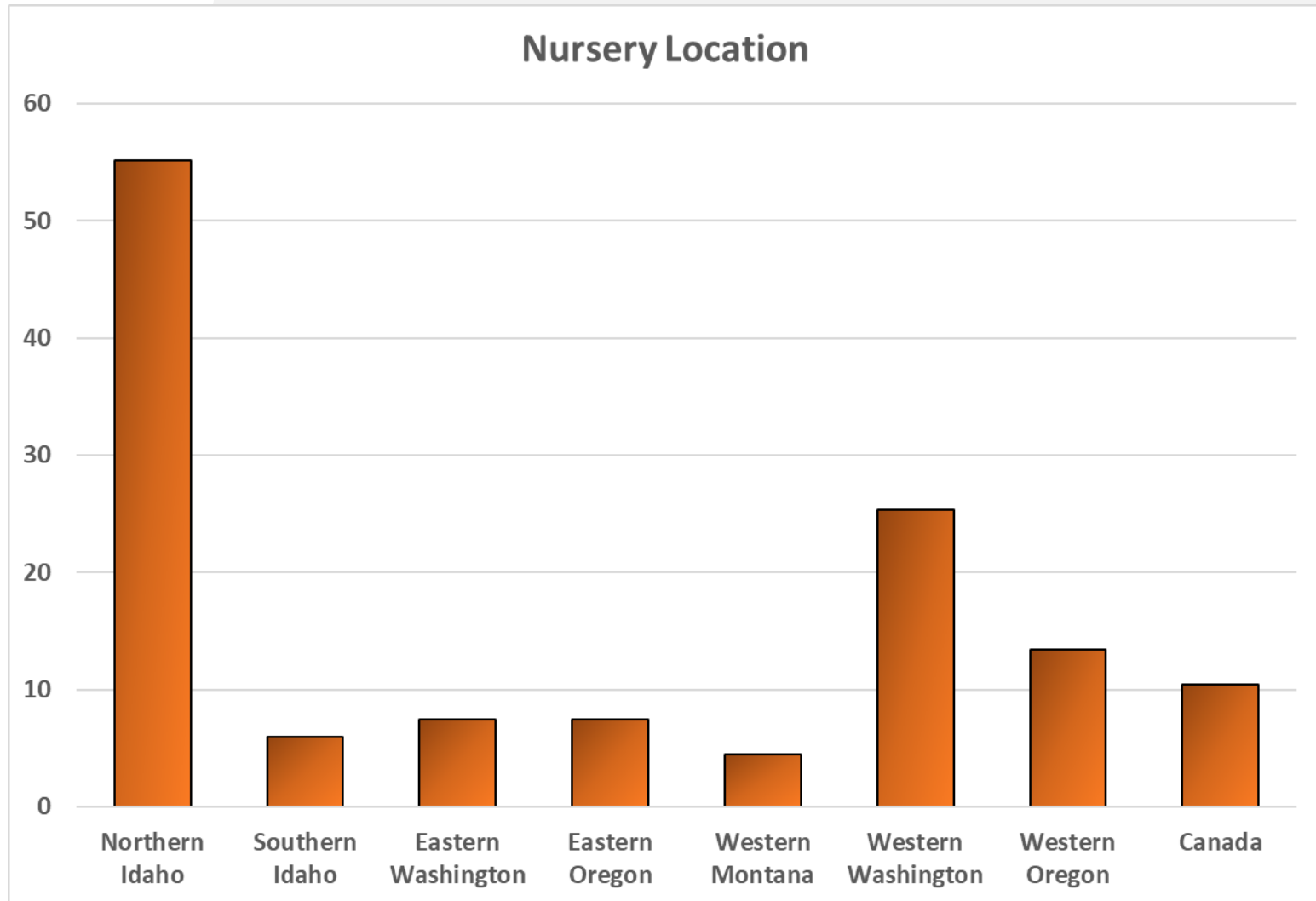




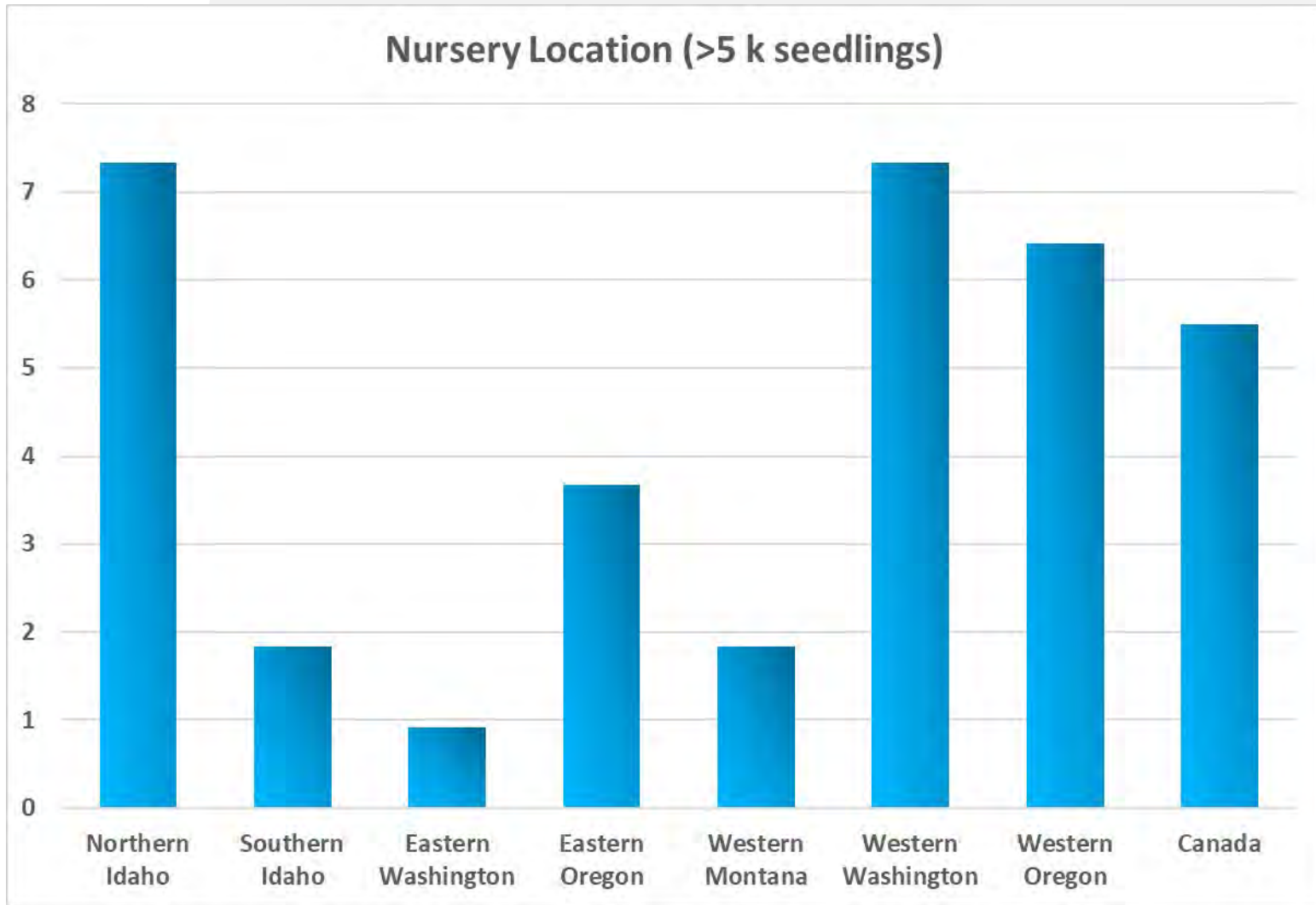
SEEDLINGS PURCHASED BY NURSERY TYPE

Nursery Type	Seedlings Purchased	Percent of Total
Private-Contract	14,895,666	78.04%
Private-Speculation	12,655	0.07%
State-Contract	110,080	0.58%
State-Speculation	5,755	0.03%
Conservation District	2,925	0.02%
Federal	4,060,446	21.27%
TOTAL	19,087,527	

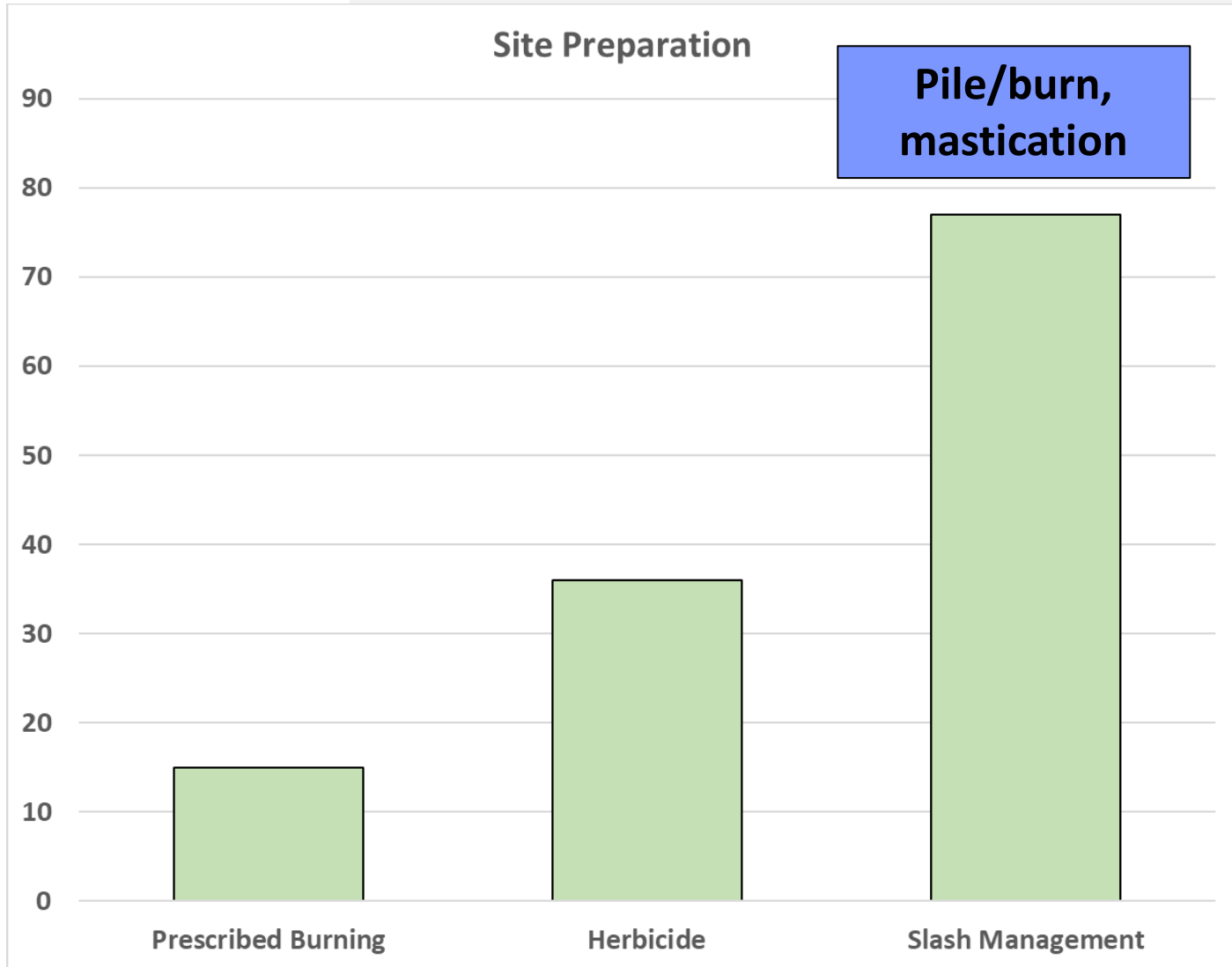
WHERE WAS THE LOCATION OF THE NURSERY WHERE YOU OBTAINED SEEDLINGS?



WHERE WAS THE LOCATION OF THE NURSERY WHERE YOU OBTAINED SEEDLINGS (>5 K SEEDLINGS)?



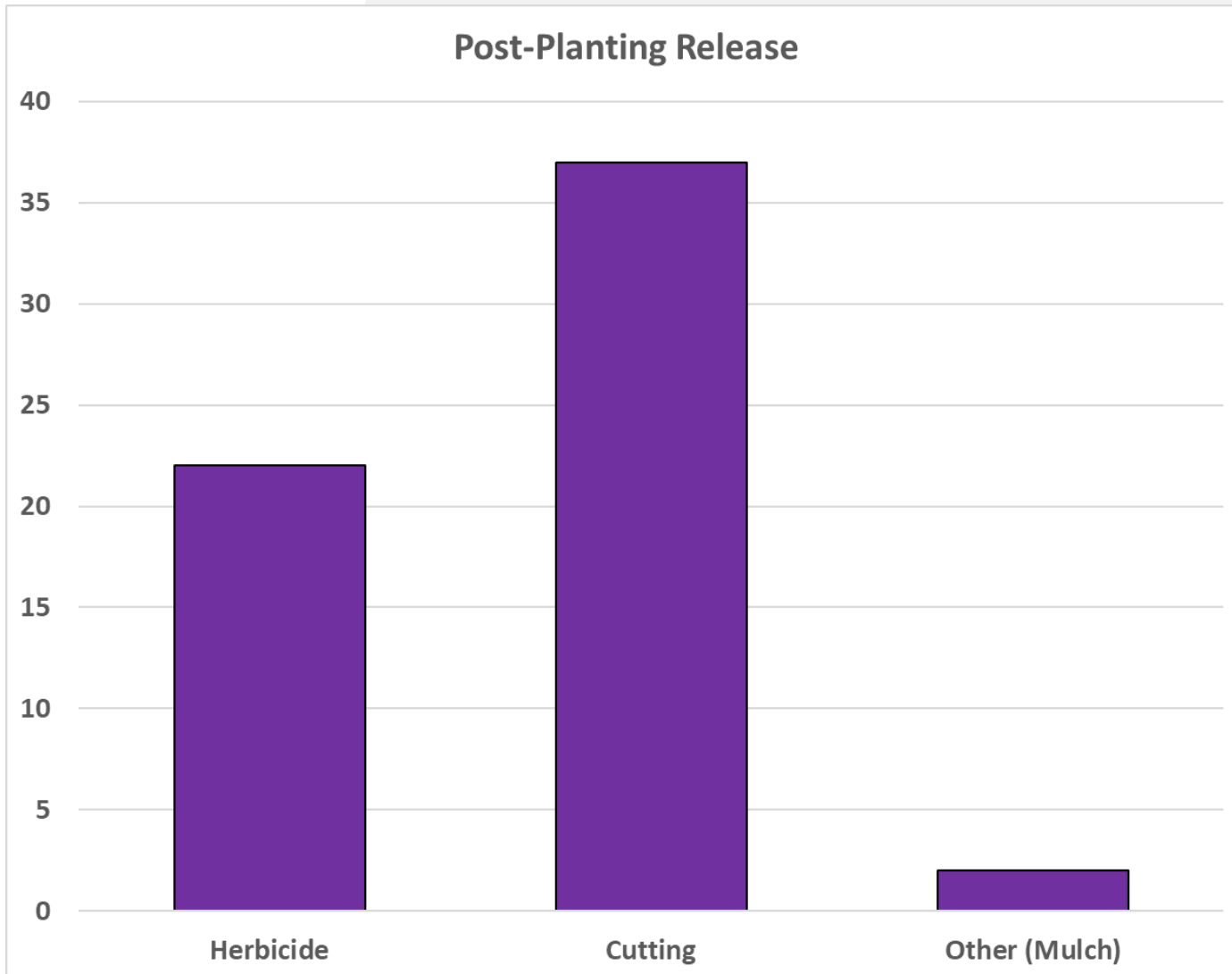
WHAT TYPE OF SITE PREPARATION WAS PERFORMED?



**Acres
Treated:
52,058**

*Not asked
acreage by
type of
treatment*

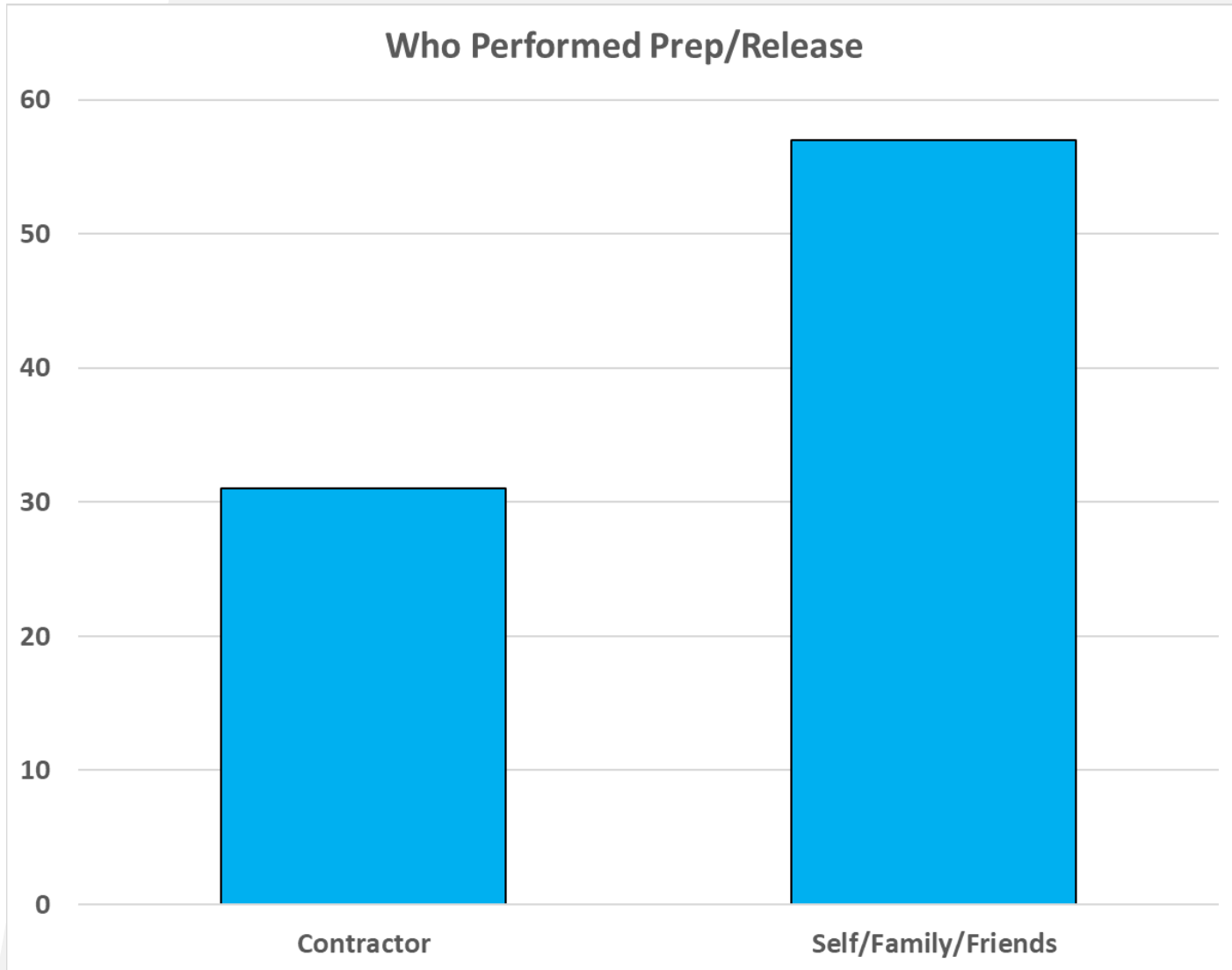
WHAT TYPE OF POST-PLANTING RELEASE WAS PERFORMED?



Acres
Treated:
12,506

*Not asked
acreage by
type of
treatment*

WHO PERFORMED YOUR PREP AND RELEASE?





WHO PERFORMED YOUR PREP AND RELEASE (ACRES TREATED)?

Contractor (Acres)	Self (Acres)	Both (Acres)
51,144	3,902	9,498

TOTAL: 64,544

NEXT STEPS

I Survey will be conducted annually

I Find ways to increase participation

- Targeted solicitations, start earlier, reminders

I Use annual data to understand trends in:

- Seedling demand by stocktype and species
- Types of nursery where seedlings are purchased
- Early silviculture practices

I Find ways to distribute results back to participants and other interested parties



2021 SURVEY STILL OPEN!

[HTTPS://TINYURL.COM/INWREFOR](https://tinyurl.com/inwrefor)

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