



National Whitebark Pine Restoration Plan

Whitebark Pine Treatment Pricing List

The purpose of this treatment pricing list is to provide cost estimates for whitebark pine restoration treatments as assigned in Data Call 2B of the National Whitebark Pine Restoration Plan. Data Call 2B requests a treatment plan for the whitebark pine core area nominations submitted in response to Data Call 2A. This pricing list, however, should also be a useful resource for any whitebark pine restoration projects proposed by managers in geographic regions where little restoration work was previously conducted. Treatment costs listed in this spreadsheet correspond to treatments listed in the accompanying document *Restoration and Management Treatments for Whitebark Pine Communities*. Information included in this pricing list was solicited from different agencies and tribes across the U.S. Northern Rockies and Pacific Northwest that have implemented whitebark pine restoration treatments or related management actions. Input was received from the U.S. National Park Service Inventory and Monitoring Division, the Confederated Salish & Kootenai Tribes Tribal Forestry division, and multiple U.S. Forest Service national forests, districts, and nurseries. We did not see high levels of variation in treatment costs across agencies or between the Northern Rockies and Pacific Northwest, but cost ranges are included where estimates varied among individual submissions. The numbers provided in this spreadsheet were collected between 2017 and 2021 and reflect the treatment costs during that time-period. Note that costs may change over time or across geographical areas.

Prices included in this price list were submitted directly to our request or obtained from public presentations or printed documents. Thanks to everyone who solicited or submitted price estimates to contribute to this treatment cost list. Contributors included Clay DeMastus, Ellen Jungck, Mary Frances Mahalovich, Bob Keane, Tony Incashola, Jr., James Lozeau, Kari O'Leary, Karl Anderson, Andy Bower, Melissa Jenkins, Liz Davy, Emily Rhoades, and Kristin Legg

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Category	Treatment	Cost Estimate	Cost Range	Units	Additional Info	Caveats
Promote Genetic Resistance						
	Plus Tree identification	\$700.00		per tree	Designate a new plus tree, collect cones, and submit data forms	
	Resistance screening	\$1,200.00		per family	Screening of a seedling family from one tree	
	Scion/Pollen Procurement	\$200.00		per tree		
	Grafting Scion to Rootstock	\$12.90	\$10-\$14	per graft	Includes rootstock, supplies, and grafting	Does not include background costs
Operational Planting/Seeding						
	Collecting cones	\$370.00	\$159-\$1113	per tree	Includes caging, climbing, and cutting	
		\$500.00 \$212.00	\$79-\$559	per bushel per climber/day		
	Seed Cleaning	\$47.00		per bushel	This is done by hand for whitebark pine	
	Storage Fee for Seed	\$23.00		annually per seed lot	It is an additional \$1.20/lb over 75 lbs. Whitebark seed is about 3,000 seeds/lb	

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	Sowing/Growing Seedlings	\$2.09		per seedling	10 cubic inch plug	Note that on average 40 -50% of seeds germinate. Commonly plant 200-300 trees per acre.
	Planting seedlings	\$1.10	\$0.71-\$1.27 \$150-\$500	per seedling per acre		Does not include seedling costs
			\$350-\$900	per 1000 trees		
	Direct Seeding	\$200.00		per acre	Placing stratified seed directly in the soil.	Includes seed extraction, weighing & warm stratification, salary for layout. Does not include seed cost which can be substantial due to low survival rates.
		\$2.24		per tree		
Protecting resistant/plus trees						
	Verbenone patches	\$30.00		per tree		Should be applied to high value trees each year that mountain pine beetle are active.
		\$250.00		per acre		
	Carbaryl spray		\$145-\$160	per tree		

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	Carbaryl spray	\$700.00		per acre		
	SPLAT Verbenone	\$160.00		per acre		
Orchard development						
	Trees					
	Scion/Pollen procurement	\$288.00	\$200-\$288	per collection		Typically 1-2 scion collections needed per tree and multiple (3+) pollen collections are often necessary
	Development/infrastructure	\$32,000.00		per establishment	Note: a lot of variability depending on orchard location. Includes: design, layout, layout supplies, fence construction, irrigation supplies, and planting for 3 acres	
		\$7,242.00		per acre		

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	Maintenance	\$35,000.00		per year	Salary for GS-7 orchard manager and GS-5 Tech for 9 pay periods.	
Restoration Treatment Monitoring						
	Plus Tree/field trial survival		\$130-\$400	per tree or per day	For this section - based on planning rates from a GS-5 seasonal technician to a GS-11 Silviculturist	
	Thinning		\$130-\$400	per day		
	Patch Clearcuts (Nutcracker openings)		\$130-\$400	per day		
	Prescribed fire	\$200.00	\$130-\$400	per day		
	Planting		\$9-\$15	per acre		

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Other Monitoring						
	Blister Rust Monitoring Plots	\$1,200.00		per transect	This includes everything from preparing for the field season, conducting the monitoring (travel to the plot such as driving, hiking; time on the plot, returning home), data management, summaries, and reporting.	
	Setting up new BR Monitoring Plots		\$2000-\$2500	per transect		
	Natural Recovery Surveys	\$315.00		per plot		
	Plantation Survival	\$23.00		per acre		Survey in first, third and fifth year after planting

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Forest Management						
	Stand Level Thinning- light		\$300-\$900	per acre	Removing overstory and understory competitors. Prices in this section based on current fuels IDIQ prices and current force account prices for actual projects.	Best if implemented with Rx Piling/Pile burning (same is true for all the treatments in the 'thinning' category)
	Stand Level Thinning- heavy		\$500-\$1300	per acre		
	Selection Cutting		\$900-\$1300	per acre		
	Tree Level Thinning (Weeding/cleaning/daylighting) Light	\$80.00		per acre	Removing competition in small radii around target trees	
	Tree Level Thinning (Weeding/cleaning/daylighting) Heavy		\$200-\$800	per acre	Removing competition in large radii around target trees	
	Nutcracker openings (Patch clearcut)- small		\$700-\$800	per acre	Areas where all trees except whitebark pine are cut	Depends if stand has commercial value

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	Nutcracker openings (Patch clearcut)- large		\$1000-\$1600	per acre	(Patch/Stand clearcuts with or without reserves)	>20 acres
	Multi Treatment (thinning, hand piling, grapple piling)		\$570-\$840	per acre	Pre-existing heavy fuel loading in mountain pine beetle mortality areas. Remote areas with high movein/moveout costs. Treatments include plantations and natural stands	
	Pruning	\$10.00		per tree	Pruning branches with cankers	Not that effective. Cost of adding this task to existing work
Fire/fire protection						
	Fuel Augmentation	\$85.00		per acre	Cutting small to large trees to augment fine fuel loads	
	Pruning/Raising Canopy Base Height	\$187.00		per acre	All species and diameter to 5' or 60% crown	

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	Fuel removal	\$20.00		per tree	Removing fuel around target trees	
	Prescribed fire - light		\$350-\$1200	per acre	Emulate low severity fire	Easiest to do but least effective
	Prescribed fire - moderate	\$1,200.00		per acre	Emulate mixed severity fire	
	Prescribed fire - heavy	\$2,000.00		per acre	Emulate high severity fire	Difficult to do operationally
	Suppression - Retardant drop	\$17,000.00		per drop		Could kill trees or damage cone production
	Suppression - Fuel manipulation	\$25.00		per tree	Remove burnable matter around resistant trees	