Overview of Invasive Plant Treatment Methods Potentially Available Under the Alternatives

Department of the Interior policy states, "[b]ureaus will accomplish pest management through cost-effective means that pose the least risk to humans, natural and cultural resources, and environment."

Table 1. Non-Herbicide Treatment Methods

Method	Treatment Considerations	Example Restrictions on Use	Where Currently Approved for Use
Manual *Hand pulling, digging, grubbing*	• Target specific and can minimize damage to surrounding area. • Labor and time intensive; appropriate for small infestations or where a large pool of labor is available. • Must be conducted several times annually to be effective. • Some invasive plant species (e.g. Japanese, Giant and Bohemian knotweeds) can't be controlled through manual methods.	• Minimize soil disturbance, which may encourage new weeds to develop. • Time treatments to avoid intense rainstorms. • Minimize dust drift, especially near recreational or other public use areas. • Minimize treatments during nesting and other important periods for birds and other wildlife.	District-wide
Mechanical *Weed whackers, mowers, propane burners*	• Potential for damage to non-target vegetation. • Must be conducted several times annually to be effective. • Some invasive plant species can't be controlled through mechanical methods.	• Keep equipment in good operating condition. • Use equipment that minimizes soil disturbance and compaction. • Refuel and service equipment at least 100 feet from water bodies to reduce the potential for sediments and other pollutants to enter the water body.	District-wide
Targeted grazing *Sheep and goats*	• Used at a determined season, duration and intensity to give desired plants a competitive advantage over target plant. • Useful in areas with limited access or steep slopes. • Can reduce abundance, but will not eradicate an infestation. • Requires full-time, skilled herder.	• Manage the intensity and duration of containment of domestic animals to minimize overutilization of desirable plant species. • Minimize the use of livestock grazing where and / or when it could impact nesting and / or other important periods for birds and other wildlife.	Cascades, Tillamook, and Marys Peak Field Offices, West Eugene Wetlands
Prescribed burning	• Effective just before flower or seed set or at young seedling/sapling stage. • Used during the spring or fall when remnant native grasses are less likely to be harmed. • Only useful on larger infestations. • Needs to occur in conjunction with herbicides or seeding to be effective.	• Prepare fire management plan. • Use trained personnel with adequate equipment. • Avoid burning herbicide-treated vegetation for at least 6 months. • Manage smoke to prevent air quality violations and minimize impacts to smoke-sensitive areas. • Burn under favorable moisture conditions.	
Seeding or planting	• Provides a desirable vegetative component to compete with invasive plants in treatments areas. Native plants would be used. • Some sites have limited ecological site potential or are in such a degraded state that attempting to reintroduce exclusively native plants immediately would be unsuccessful.	• Following treatment, reseed or replant with native vegetation if the native plant community cannot recover and occupy the site sufficiently. • Use plant stock or seed from the same seed zone and from sites of similar elevation.	
Solarization *Black plastic or shade cloth*	• Uses solar energy to heat the soil in order to kill pathogens and weeds. • Appropriate for small infestations. • Time consuming – may take one or more growing seasons to kill target invasive plant population. • Beneficial organisms will be harmed as well as invasive plants.	• Do not apply shade cloth or solarization closer than 6 feet to listed plant species. • Compost or other inoculants may be needed to repopulate the soil after treatment.	

Biological Control Agents Insects, nematodes, mites, or pathogens	• Would be used on large infestations and invasive plant species that are widely distributed.	• Must be tested and approved by Federal Animal and Plant Health Inspection Service (APHIS) and Oregon Department of Agriculture (ODA) before release is allowed. ODA's Noxious Weed Control Program coordinates releases and monitors populations.	

Table 2. Herbicides

Herbicide Active Ingredient *Example Trade Names*	**Common Target Vegetation**	**Additional Information**	**Where Currently Approved for Use**
Herbicides currently approved for use on the District			
2, 4-D *(Amine, Hardball, Unison)*	Broadleaf species	Aquatic formulation available	Cascades Field Office (rarely used)
Aminopyralid *(Milestone)*	Broadleaf species, especially thistles and clovers		West Eugene Wetlands
Clopyralid *(Transline, Stinger, Spur)*	Broadleaf species, especially thistles and clovers		West Eugene Wetlands
Dicamba *(Vanquish, Banvel, Diablo)*	Broadleaf species		Cascades Field Office (rarely used)
Fluazifop-P-butyl (*Flusilade DX)*	Annual and perennial grasses	For research and demonstration (limited to 15 acres per field office).	West Eugene Wetlands
Glyphosate *(Rodeo, Mirage, Roundup Pro)*	Non-selective	Aquatic formulation available	Cascades, Tillamook, and Marys Peak Field Offices, West Eugene Wetlands
Picloram *(Triumph, OutPost, and Tordon)*	Broadleaf species	Restricted use herbicide	Cascades Field Office (not currently used)
Triclopyr *(Garlon, Renovate, Element)*	Woody species	Aquatic formulation available	West Eugene Wetlands
Additional herbicides considered for use under the Proposed Action or Alternative 3			
Chlorsulfuron *(Telar)*	Perennial mustards		NA
Diflufenzopyr + dicamba *(Distinct and Overdrive)*	Broadleaf species		NA
Fluridone *(Avast!, Sonar)*	Aquatic species	Aquatic formulation. (Herbicide only used in water)	NA
Fluroxypyr *(Comet, Vista)*	Kochia		NA
Hexazinone *(Velpar)*	Non-selective		NA
Imazapic *(Plateau, Panoramic)*	Annual grasses		NA
Imazapyr *(Arsenal, Stalker, Habitat, Polaris)*	Non-selective		NA
Metsulfuron methyl *(Escort, Patriot, PureStand)*	Perennial mustards and biennial thistles		NA
Rimsulfuron (*Matrix*	Annual grasses		NA
Sethoxydim *(Torpedo, Ultima, and Vantage)*	Annual and perennial grasses	For research and demonstration (limited to 15 acres per field office).	NA
Sulfometuron methyl (*Oust and Spyder)*	Annual grasses		NA