



# *Milk Thistle* (*Silybum marianum*)

**Description:** Milk thistle is a biennial or winter annual thistle, growing up to 6 feet tall. It is sparsely branched with slightly cobwebby stems. The leaves are long and broad, with deep lobes, pointed tips and bases that clasp the stem. The upper surface of the leaves are shiny and dark green with conspicuous white marbling. In Thurston County, the purple flowers grow up to 4 inches in diameter and bloom from April to August.

**Impacts:** Once established, Milk Thistle forms dense clumps which exclude livestock and crowd out more desirable forage species. It has the potential to invade extensive acres of pasture land. Individual plants are so large that forage displacement is high. Milk thistle is a nitrate accumulator. Ingestion by grazing animals may cause nitrate poisoning, which can be lethal to cattle and sheep. The seed is capable of remaining dormant in the soil for many years. It infests roadsides, waste and disturbed areas, pastures and farmland.



Milk thistle seed is valued as an herbal medicine, and plants are sometimes cultivated intentionally for this purpose. Plants are also grown as a garden curiosity due to their large size, interesting foliage and flowers. However, seeds commonly escape, creating a nuisance weed even in gardens and landscaping. Milk Thistle is a Class A Noxious Weed in Washington State due to its limited distribution and serious detrimental effects.



**Control Options:** Thurston County's Integrated Pest Management emphasizes cultural, biological, and manual control methods to keep pests and vegetation problems low enough to prevent damage. The goal of Thurston County's pesticide use policy is to minimize the use of pesticides by utilizing and providing information about the most effective control options that are available and practical.

► **Cultural / Habitat**

Do not plant Milk Thistle intentionally. While Milk Thistle does have beneficial medicinal properties, the extract is difficult to process. It takes 70 pounds of seeds to produce one pound of extract purified to 70-80% silymarin (of which 60% is silybin, the most active and beneficial constituent). In this form, it is

still difficult for the body to utilize, requiring large quantities which are not feasible for home production.

Revegetating areas with desirable plants where control work has been done can help reduce the amount of Milk Thistle in subsequent years and also prevent other weeds from taking advantage of the disturbed soil.

► **Manual / Mechanical**

Hand pulling or digging can be effective for isolated plants or small patches, especially if done in the seedling stage. Seedlings are recognizable even when very young, as the white marbling is evident on the first set of true leaves. Larger patches or plants at or near the blooming stage can be difficult to control manually because of the numerous thorns on the leaves and stems, and long sharp bracts on the flower heads. Mowing is usually not effective as it simply delays the blooming process.

► **Biological**

While bio-control agents are used on Milk Thistle with variable success in other areas of the country, none are particularly suited to Western Washington. Also, because bio-control agents are dependent on large, undisturbed infestations of host plants, it is not an appropriate control method for Class A Noxious Weeds which must be eradicated entirely, whenever they are found.



► **Chemical**

Spot spraying with **glyphosate** (example: Roundup Pro®, Glyphos®, etc.) is effective in controlling Milk Thistle. Glyphosate products can be used to treat individual plants or small patches. Currently, products containing the active ingredient glyphosate are the only herbicides for the control of Milk Thistle considered “low in hazard” by Thurston County’s pesticide review process for the potential for chemical mobility and persistence.



Thurston County has observed that most ready-to-use, pre-mixed products do not contain sufficient active ingredients to be as effective as concentrated products that are then mixed with water to create a specific finished concentration. The following instructions are for products containing 41% glyphosate which will be mixed down to a specified dilution rate. Be sure to read your label carefully, and make adjustments to rates accordingly.

**Foliar applications of glyphosate (ROUNDUP PRO™):**

- Spot applications with glyphosate products are effective. Spot application means the herbicide is applied only to the plants and not on the surrounding plants or soil. Spray each plant thoroughly on the stems and leaves enough to be wet but not dripping.
- Glyphosate is non-selective, and will injure any plants that it comes in contact with, including grass.
- Keep people and pets off treated areas until spray solution has dried.
- Remove livestock before application; wait 14 days after spot application before grazing livestock or harvesting.
- Do not enter or allow worker entry into treated areas during the restricted entry interval of 12 hours. Keep people and pets off treated areas until spray solution has dried.

**Foliar applications of aminopyralid (Milestone®)**

For selective control of Milk Thistle in agricultural settings (pastures, hayfields, etc.): an herbicide containing the active ingredient aminopyralid (example: Milestone™, Milestone VM™, etc.) may be a preferred choice. Aminopyralid products will not harm grass and can be used around livestock (provided all label precautions are followed).

**Do not use plant material or hay from treated areas for mulch. Likewise, do not use manure from animals that have grazed or eaten hay from treated areas.** Aminopyralid is currently sold in agricultural herbicides that are to be used only in areas listed on the label, and are available in farm supply stores. Aminopyralid is considered moderate in hazard by Thurston County’s review process for the potential for chemical mobility and persistence.

**Timing:** Applications should be made in the spring, when plants are actively growing, up to when the flowering

Herbicide & Method	Product Rates	Mix
RoundUp Pro™ Spot/Foliar	2%	To 1 gallon of water add 2.66 oz. RoundUp Pro™, apply to foliage at or beyond bud stage.
Milestone™ Spot/Foliar	1 tsp per 1000 ft <sup>2</sup>	<b>To treat a 1,000 sq. ft. area:</b> Using a 2 to 4 gallon backpack or tank sprayer, add half of the water needed to cover all plants with one teaspoon Milestone™, agitate, then add water to reach desired amount (0.5 - 2.5 gallons total volume, depending on quantity and size of plants). Lightly spray all thistle plants in 1,000 sq. ft. area, then continue lightly spraying the thistle until the tank is empty and all plants have been thoroughly covered. The addition of a non-ionic surfactant (at least 80% active ingredient) is recommended to enhance herbicide activity.

stem elongates. Plants sprayed after buds develop are harder to kill and have a high likelihood of producing viable seeds, despite damage to the plant. Applications of aminopyralid are also effective in the fall before a killing frost.

**READ AND FOLLOW ALL LABEL DIRECTIONS AND RESTRICTIONS.** Obey all label precautions and safety measures. Always use personal protective equipment that includes coveralls, waterproof gloves, shoes plus socks, and protective eyewear. Use of brand names does not connote endorsement and is for reference only; other formulations of the same herbicides may be available under other names. Information provided is current as of the date of the fact sheet. Pesticide product registration is renewed annually and product names and formulations may vary from year to year

**References:**

- Written Findings of the Washington State Noxious Weed Control Board Problem Thistles of Oregon, OR Dept. of Agriculture, EC Bulletin 1288
- Saskatchewan Ministry of Agriculture: <http://www.agriculture.gov.sk.ca/Default.aspx?DN=9f9ebf1f-6e30-451f-a1ea-d711a59f5d21>
- The Nature Conservancy Element Stewardship Abstract for Silybum marianum (Blessed Milk Thistle), Caitlin Bean
- Oregon Department of Agriculture: [http://www.oregon.gov/ODA/PLANT/WEEDS/profile\\_milkthistle.shtml](http://www.oregon.gov/ODA/PLANT/WEEDS/profile_milkthistle.shtml)



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