King County
Department of
Natural Resources and Parks
Water and Land Resources Division
Noxious Weed Control Program

BEST MANAGEMENT PRACTICES
Tansy Ragwort—*Senecio jacobaea*
Asteraceae

Class B Noxious Weed

Legal Status in King County: Class B Noxious Weed (non-native species designated for control by State Law RCW 17.10 and by the King County Noxious Weed Control Board). The King County Noxious Weed Control Board requires property owners to control and prevent the spread of tansy ragwort on private and public lands throughout the county. Control is defined by state law as the prevention of all seed production.

BACKGROUND INFORMATION

Impacts and History

- Serious threat to livestock. Contains pyrrolizidine alkaloids that are converted to toxic pyrroles in the liver after ingestion. The damage to the liver is irreversible and cumulative. Continued significant ingestion will usually kill the affected animal.
- The most toxic part is the leaves, which are ingested while the animal forages for grasses and other desirable plants growing near the tansy ragwort.
- Dried leaves maintain their toxicity but not the bitter taste, and when mixed with hay or other silage it is not possible for the animal to detect or avoid the tansy ragwort.
- Cattle and horses are most vulnerable to poisoning but deer, pigs and goats are also at risk.
- Reduces overall pasture productivity and stocking levels in livestock areas.
- First reported in North America in 1913 in British Columbia, reported in Portland, Oregon in 1922 and by the 1950s, had become a serious economic problem west of the Cascades

Description

- Tap-rooted biennial or short-lived perennial with 2 to 4 foot tall erect stems, branched near the top, with dense clusters of bright yellow daisy-like flower heads.
- Each flower head has 10 to 15 ray flowers (petal-like flowers) surrounding yellow disk flowers and the flower clusters grow near the top of the stem.
- First year plants are dense rosettes with dark green ruffled or lobed leaves on purplish stems.

Habitat

- Typically found in full sun or partial shade in pastures, on roadsides and horse trails, in forest clear-cuts and on vacant lands.
- More common in disturbed habitats and overgrazed or poorly managed pastures.
- Also common on cleared forestlands, adjacent roadsides and fields, and in unmaintained areas in new developments.

Reproduction and Spread

- Reproduces by seed. Plants that go to seed die at the end of the season.
- **Plants can flower from June to October** but typically start to **form seeds by mid August**.
- Seeds are borne a short distance by wind and longer distances by animals, in hay and on equipment and vehicles. Large plants may produce as many as 150,000 seeds.
- Seeds can be viable for as long as 15 years. Seeds in the upper 2 cm of soil generally are viable for 4 to 5 years. Below 2 cm, the seeds remain dormant longer. Tilling, grazing or other disturbance will cause these dormant seeds to germinate.

Local Distribution

The heaviest concentrations of tansy ragwort are in livestock grazing areas in south and central King County, especially in the areas surrounding Auburn, Enumclaw, Maple Valley and Covington. There are also significant infestations on Vashon Island, in the Woodinville and Kenmore areas, and other rural areas of the county. Tansy ragwort is also found on vacant properties that were logged or cleared for development and along city, county and state roads.

CONTROL INFORMATION

Integrated Pest Management

- The preferred approach for weed control is Integrated Pest Management (IPM). IPM involves selecting from a range of possible control methods to match the management requirements of each specific site. The goal is to maximize effective control and to minimize negative environmental, economic and social impacts.
- Use a multifaceted and adaptive approach. Select control methods which reflect the available time, funding, and labor of the participants, the land use goals, and the values of the community and landowners. Management will require dedication over a number of years, and should allow for flexibility in method as appropriate.

Planning Considerations

- Survey area for weeds, set priorities and select best control method(s) for the site conditions and regulatory compliance issues **(refer to the King County Noxious Weed Regulatory Guidelines)**.
- Small infestations can be effectively hand-pulled or dug up. Isolated plants should be carefully removed in order to stop them from infesting a larger area.
- For larger infestations, the strategy will depend on the land use of the site. In pastures, good grazing practices and management of grass and forage species will greatly improve control of tansy ragwort. Specific suggestions are given in the Best Management section.
- Generally work first in least infested areas, moving towards more heavily infested areas.
- Minimize disturbance to avoid creating more opportunities for seed germination.

Early Detection and Prevention

- Tansy ragwort is easy to find once it flowers. Monitor pastures, areas used by livestock, horse trails and roadsides for new populations of tansy ragwort in **June and July**.
- Dig up isolated or small populations. If there are more rosettes than you can remove manually, it may be necessary to treat the area with an appropriate herbicide in the early fall or the following spring.
- Prevent plants from spreading away from existing populations by washing vehicles, boots and animals that have been in infested areas.
- If animals are being moved from an infested pasture to an uninfested pasture, first isolate them for at least five days so that the seeds pass out of the animals' digestive system.

Manual

- **Pull the plants after they bolt but before they flower**. Typically this is from May to June. Because this is a toxic plant, gloves and protective clothing should be worn.
- Plants in flower can form viable seeds even after they are pulled, so carefully bag and dispose of all flowering plants. If the plants are seeding, it is very difficult to bag the seed heads without dispersing the seeds, so bag flowering plants well before seeds mature.
- In areas where mature plants are pulled, there are usually many small rosettes and seeds left in the soil. Carefully search the area for rosettes and dig them up. Roots break off easily and re-sprout with new plants, so use a digging tool. Completely removing plants is easiest when the soil is loose or wet.
- Return to the same location in the following spring and summer to remove plants coming up from seeds already in the soil and continue to monitor the area for several years.
- Hand pulling and the use of hand mechanical tools are allowable in all critical areas in unincorporated King County.

Mechanical

- Mowing will **not** control tansy ragwort effectively. Plants are able to re-sprout and flower again in the same season when mowed. Plants that are regularly mowed can persist as short-lived perennials or can flower below the level of the mower.
- Mowing may increase the amount of toxin ingested by the animals because grazing animals are often unable to avoid eating small tansy ragwort plants growing among pasture grasses.

Chemical

- Herbicides should only be applied at the rates and for the site conditions and/or land usage specified on the label. **Follow all label directions**.
- Herbicides may be used in accordance with Federal and State Law in critical areas and their buffers with certain restrictions. Refer to the **King County Noxious Weed Regulatory Guidelines** for a summary of current restrictions and regulatory compliance issues.

- For control of large infestations on roadsides and other non-pasture areas, herbicide use may be necessary. For tansy ragwort, it is most effective to apply selective broadleaf herbicides in the spring and again in the fall. Infested areas should not be mowed until after the herbicide has had a chance to work.
- For several years following treatment, monitor areas for new plants germinating from the seed bank.

Specific Herbicide Information

Glyphosate: can effectively control tansy ragwort. Treatment with glyphosate needs to be combined with effective re-vegetation of the site to prevent tansy ragwort seedlings from re-infesting the area.

Selective Broadleaf Herbicides (such as triclopyr, 2,4-D and dicamba): most effective when tansy ragwort is growing in a grassy area. Re-treatment the following year is necessary to control late-germinating plants. Continue to monitor for new plants for at least four years after the initial treatment and following any disturbance to the soil such as tilling or construction. **NOTE: Certain additional restrictions apply for products containing 2,4-D and Triclopyr BEE (e. g. Garlon 4, Crossbow)**. **Refer to the King County Noxious Weed Regulatory Guidelines for more details**.

Selective herbicides that are effective on tansy ragwort include 2,4-D (many products), aminopyralid (e.g. Milestone), dicamba (e.g. Vanquish or Banvel), a combination treatment of dicamba and 2,4-D (e.g. Weedmaster) and a combination treatment of triclopyr and 2,4-D (e.g. Crossbow).

Apply selective herbicides in the spring before any flowers appear. The best control is early in the spring after growth begins. A 2,4-D+dicamba formulation can be effective at the early flowering stage as well. Fall applications after rains have initiated seed germination can also be effective. Apply herbicide on warm days when winds are low. Check label for specific information on wind and rain guidelines.

Even selective herbicides may harm certain grasses, alfalfa, clover and other legumes. Check product labels for further information on potential off-target impacts. The addition of a suitable surfactant may improve the control results.

The mention of a specific product brand name in this document is not, and should not be construed as an endorsement or as a recommendation for the use of that product. Chemical control options may differ for private, commercial and government agency users. **For questions about herbicide use, contact the King County Noxious Weed Control Program at 206-477-9333.**

Biological

- Biological control can take up to six years to have a significant impact on the infestation. Population density and the number of flowering plants can be reduced but there will always be some plants remaining when using biological control agents.
- Any biological control plan needs to incorporate another non-chemical control method to be able to prevent all seed production as required by state law.
- Biological control is not recommended or prescribed for small infestations.
- The ragwort flea beetle (*Longitarsus jacobaeae*) larvae mine the roots of the rosettes and kill plants in the spring when they start to bolt. Heavy feeding by adult flea beetles on the leaves can kill rosettes in the fall and winter. Flea beetles are most effective in sunny pastures that do not flood and are below 2400 feet in elevation.
- The cinnabar moth (*Tyria jacobaeae*) does best in sunny, warm areas at elevations less than 3000 feet where the tansy ragwort densities are greater than 4 per 10 sq. ft. ($4/m^2$). It does not do well on the coast and in shady areas under trees or where the plant density is below 1 plant per 20 sq. ft.
- The most effective biological control method is to release the ragwort flea beetle and the cinnabar moth together.

SUMMARY OF BEST MANAGEMENT PRACTICES

Small Infestations in Native and/or Desirable Vegetation

- Pull plants by hand if soil is wet; the plants may need to be dug up in dry compacted soil.
- Replace any divots created when removing the plants to lessen the amount of disturbed soil.
- Apply appropriate herbicide with wick wiper or by spot spray to minimize off target injury.
- Monitor site throughout growing season and remove any new plants.
- If using an herbicide in a grassy area, use a selective herbicide to avoid injury to the grass.

Large Infestations in Grassy Areas

- Mowing is not effective for controlling tansy ragwort. Mowing can be used if the infestation is found later in the year to keep the plants from flowering until an approved control method can be used. Do not mow tansy ragwort that has gone to seed.
- Large infestations can be controlled with selective herbicides. (See the Chemical section of this BMP).
- Suppression of large infestations of tansy ragwort with a selective herbicide will greatly increase grass production, which in turn increases the suppression of the tansy ragwort.
- Promote healthy grassy areas by seeding and fertilizing. Use a mix of grass and clover species to improve resistance to tansy ragwort. Fertilize according to the soil needs.

- If grassy area is used for grazing, the area should be managed to promote grass and clover vigor. Graze uniformly and move animals from area to area in a planned sequence. Avoid grazing when soil is very wet because holes can be opened up to new weed infestations. Some winter grazing by smaller animals can stimulate growth of clover and improve grass health.
- Be sure to monitor for tansy ragwort on edges of pastures and disturbed areas around fences and watering holes. Remove isolated plants before they flower.
- In fields densely infested with tansy ragwort, remove all cattle and horses until the tansy ragwort is reduced to isolated plants.
- If needed, apply a nitrogen fertilizer after the selective herbicide application and then manage grazing so that 4 to 6 inches of grass re-growth remains at the end of the growing season so that grasses can effectively resist re-invasion by the tansy ragwort.
- If utilizing biological control, areas need to be checked to control all flowering tansy not controlled by the biological control agents.

Control in Riparian Areas

- Survey area and document extent of infestation.
- Focus on manual removal for small infestations if possible.
- Mowing will not control tansy ragwort but it can serve in the interim until more effective control measures can be utilized.
- For larger areas where herbicide use is warranted, apply with a wick wiper or spot spray using low pressure and large droplet size.
- When large areas of weeds are removed, the cleared area needs to be replanted with native or non-invasive vegetation and stabilized against erosion.
- If a non-selective herbicide is used in grassy areas, the area should be re-seeded to prevent reinvasion by weeds.
- Infested areas will need to incorporate a management plan lasting for several years to control plants germinating from the seed bank.

Control Along Road Rights-of-Way

- Pull small infestations if possible.
- Spot spray with glyphosate if weeds are in areas with no desirable vegetation.
- If plants are in grassy areas, use a selective broadleaf herbicide; if controlled with a non-selective herbicide, re-seed after control is completed.
- If plants are about to flower, they can be mowed until a more effective control strategy can be used.

References

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