

ID, Biology and Management of Invasive Weeds in Western OR-Part 2 Specific Management Considerations for Selected Riparian Weeds

Reed Canarygrass (*Phalaris arundinacea*)

Biological – No known biological control agents exist.

Mechanical – Frequent mowing for 5-10 years can reduce reed canarygrass populations, however infrequent mowing actually promotes growth. Tillage and flooding are possible control measures, but usually in connection with other treatments. Shade cloth has been effectively used in some locations, although this method is non-selective.

Chemical – Glyphosate, fluazifop, and imazapyr can be applied to actively growing reed canarygrass. Use caution with glyphosate because it will control most vegetation in area and some formulations are labeled for aquatic application (Rodeo, Aquamaster), while others are not labeled for aquatic applications (RoundUp). Wick applicators allow for selective glyphosate applications. Fluazifop requires a surfactant (either COC or NIS) and should not be applied to stressed plants or when rain is expected within 1 hour of treatment. Habitat (imazapyr) is labeled for aquatic sites while Arsenal (imazapyr) is labeled for rangeland, pastures and noncropland only. Both imazapyr products require a surfactant for maximum activity.

Multi-year management requires revegetating the site to compete with established reed canarygrass. Choose native, competitive trees, shrubs, grasses, forbs, sedges and rushes after reducing the RC population.

Purple Loosestrife (*Lythrum salicaria*)

Biological – 4 agents are approved for release in Oregon – 2 leaf beetles, a root weevil, and a seed weevil. The leaf beetles (*Galerucella spp.*) and seed weevil (*Nanophyes marmoratus*) are becoming widespread in the state while the root weevil (*Hylobius transversovittatus*) is limited to release in areas prone to sustained flooding. Contact ODA for release information. <http://oregon.gov/ODA/PLANT/WEEDS/biocontrolprogram.shtml>
503-986-4621

Mechanical – Manage PLS in early summer until August and before seed set. Hand pulling is only possible for young (1-2 year old plants) and plants must be bagged. Mowing can result in spreading plant parts that regenerate. Prolonged flooding (1-2 months) following mowing can suppress the population, but purple loosestrife can survive short duration floods.

Chemical - Glyphosate, triclopyr, imazapyr, and metsulfuron can be applied to actively growing PLS. Use caution with glyphosate because it will control most vegetation in area and some formulations are labeled for aquatic application (Rodeo, Aquamaster), while others are not labeled for aquatic applications (RoundUp). Wick applicators allow for selective glyphosate applications. Triclopyr (Garlon formulations) is labeled for use in nonirrigation ditch banks and seasonally dry wetlands. Imazapyr (Habitat) should be applied after mid-bloom and care should be taken to observe crop rotation restrictions. Metsulfuron (Escort or Cimarron) requires a nonionic or silicone surfactant and both have site restrictions.

Garlic Mustard (*Alliaria petiolata*)

Biological – Weevils (*Ceutorynchous* spp.) are currently being evaluated for release. Oregon is likely to be a site of initial release and monitoring. Stay tuned for more developments in this area in the next few years.

Mechanical – Cutting close to ground level can be an effective approach to GM control. Once the plant begins to seed, place cut stems into plastic bags because seeds continue to develop after the stem is severed. GM often regrows after cutting and will require multiple cuttings during a season. Hand pulling can be effective, but creates a soil disturbance which GM seedlings readily colonize. Repeated, prescribed burns may provide control, but also provide excellent habitat for GM or other invasive weed species.

Chemical – Glyphosate and bentazon applications provide some control of GM, but need to be timed correctly. Early spring and fall glyphosate application will likely have the least impact on other vegetation. Bentazon (Basagran T/O) will not harm grass species and is labeled for broadleaf control on roadsides. Basagran T/O may affect rhododendron and applications should avoid contact with Rhododendron roots and not be applied to open water. Early spring application of triclopyr (Garlon, Pathfinder) can control rosettes when applied in the spring, but will not prevent emergence of new plants. Imazapic (Plateau) is labeled for early spring application to GM in noncrop areas in OR.

Japanese Knotweed (*Polygonum cuspidatum*)

Biological – No current biological control agents are available for release on Japanese knotweed. There are agents being tested for host specificity, but releases will not happen for years, if at all.

Mechanical – Mowing or cutting are not efficient at controlling knotweed. If repeated frequently (more than once a month), control can be achieved on a small scale (individual plants in a landscape for example). If cutting the plant, you must bag all parts of the plant because it readily regrows from plant fragments. Hand pulling can provide some small scale control, but plant parts must be disposed of, not composted. Goats may provide some non-selective control but will need to return frequently, similar to mowing. Cutting, mowing, and grazing can induce lateral root growth. Landscape fabric, asphalt, and solarization are not effective barriers to knotweed growth.

Chemical – Glyphosate (Rodeo, Aquamaster, RoundUp, others), triclopyr (Garlon formulations), 2,4-D, picloram (Tordon), aminopyralid (Milestone) and imazapyr (Habitat, Arsenal), have been shown to have an effect on knotweed. Research studies are underway to determine the most effective herbicide treatments. Since knotweed can occur near open waterways, review individual herbicide labels to determine if the product use is appropriate. Herbicide application should be done when plants are 1-2 meters high and ideally, after flowering stage to maximize the movement of herbicides to the knotweed root system. Application should be done before the first killing frost. Spring applications provide poor knotweed control. Arsenal is labeled for rangeland, pastures and noncropland only.

English Ivy (*Hedera helix*)

Biological – No current biological control agents are available for release on English ivy.

Mechanical – Cutting English ivy can control plants if repeated frequently. Hand weeding and removing the roots is more effective. Place exposed roots in an exposed area to desiccate, since they can re-root if left on the ground. Covering the infestation with mulch or cardboard can lend some control, but needs to be augmented for several growing seasons and coupled with other mechanical or chemical control methods.

Chemical – Glyphosate (Rodeo, Aquamaster, RoundUp, others), triclopyr (Garlon formulations), and 2,4-D provide a measure of control of English ivy. Glyphosate can be applied year round and may provide good control in fall when photosynthate is being moved to the roots. One study recommended glyphosate application in the early spring when plants had 2-4 newly expanded leaves and a repeat application 6 weeks later. Either glyphosate program will need to be implemented for multiple years to attain control. Triclopyr

has been shown to be as effective as glyphosate on some weedy vine species. Garlon 4 is highly volatile and toxic to fish and aquatic invertebrates. It should not be applied near water sources.

Himalayan Blackberry (*Rubus discolor, procerus, or aremeniacus*)

Biological – There has been a recent accidental introduction of the blackberry rust (*Phragmidium violaceum*), but no other agents are available for release in Oregon. The rust will defoliate blackberry in the winter and has not spread to native *Rubus* or cultivated varieties. Where the rust has been effective in controlling blackberry, replant with competitive species to prevent blackberry re-invasion of the site.

Mechanical – Hand-pulling, mowing, and burning have all been successfully used to help manage blackberry, but generally require repeated efforts. Hand-pulling is only an option for small plants and single canes. Mowing will need to be repeated for multiple years to fully starve the root system and the seed bank. Prescribed burns can eliminate standing vegetation, but mowing or hand-cutting will be required on the re-growth. If possible, plant species that provide shade since blackberry is shade in-tolerant. Goats and chickens have been used successfully to remove standing vegetation and seeds, respectively, but these animals need access to actively growing canes to be most effective.

Chemical – Glyphosate, metsulfuron (Ally, Escort, Cimarron), and triclopyr can provide good control of blackberry. Glyphosate applications are best in the fall and only a few (Rodeo, Aquamaster) are approved for application near open water sources with appropriate surfactants. Triclopyr and metsulfuron are best applied in spring to mid-summer. Picloram (Tordon) can prevent regrowth, but also can induce adventitious shoots. Glyphosate can be applied directly to cut stems and provided control when done in the late spring.

Yellowflag iris (*Iris psedacorus*)

Biological – No current biological control agents are available for release on Yellowflag iris.

Mechanical – Hand pulling can be used for small populations, but care should be taken to avoid skin contact with leaf and rhizome resins which can cause irritation. If removing mature plants, rhizomes must be removed also to prevent regrowth and they should be disposed of, not composted. Repeated mowing may eventually kill the iris, but it will require a number of years. Tillage should not be used as it will spread the rhizomes. Coverage with landscape fabric can control iris, but is only possible for small patches that can be completely covered.

Chemical – Glyphosate with an aquatic application label (Rodeo and Aquamaster) can be applied in spring or fall, with better control in fall applications. Imazapyr (Habitat) has been used to attain control similar to glyphosate. When used in combination, glyphosate and imazapyr, provide better control than either alone, with fall applications slightly better than spring applications.

For more information on management of specific weeds, biological control and herbicide use check out the online version of the Pacific Northwest Weed Management Handbook. This valuable resource is updated annually and contains a wealth of information on managing weeds in many different environments and scenarios. The OSU Extension Publications Catalog also has an easy to use search engine that can provide access to online versions of invasive weed-related Extension publications.

<http://pnwpest.org/pnw/weeds>

<http://extension.oregonstate.edu/catalog/index.php>