

Riparian FACTSHEET



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WEED MANAGEMENT IN AGRICULTURAL RIPARIAN AREAS

Weed management in riparian areas is important to ensure more desirable vegetation, such as native species, can out-compete and survive. Control of undesirable vegetation is a critical part of farm management.

- Reduced value of the habitat for fish, wildlife, birds, and domestic animals when weeds replace more desirable native plants.
- Some weeds, weed seeds or sap are potentially toxic to humans, pets, livestock and wildlife.

Why are Weeds a Problem?

The spread of invasive non-native plants, or weeds, can have many negative impacts. Where weeds are found in riparian areas, they can cause particular problems:

- Competition for moisture, nutrients and light from weeds can reduce the growth of more desirable native plants.
- Weeds do not provide the quantity and quality of riparian functions provided by more desirable plants, shrubs and trees. For more information on the functions that riparian vegetation provides, see the **What is Riparian Health?** section of the *Riparian Management Field Workbook*.
- If the riparian area is grazed or produces cultivated crops, weed competition can also reduce crop yield and quality.
- The root-soil matrix that weeds form tends to be shallow rooted and has weaker roots than more desirable riparian plants. This can lead to unstable stream banks as the weed root-soil matrix is more susceptible to damage from stream scour, livestock hoof damage and other factors.
- Some weeds, such as Reed canary grass, can grow in the watercourse at low water, clogging the channel and increasing the risk of flooding. Drainage maintenance works to remove instream vegetation may negatively impact fish habitat.

Weed Management

Riparian areas are critical from environmental and agricultural perspectives. Weed management in these critical areas is both extremely important and can be very difficult. Weed management methods used in less sensitive areas may have to be modified or not used in riparian areas. The environmental integrity of the riparian area and the water resource must be protected from weeds and poor weed management methods by ensuring the riparian areas are functioning properly.



Giant Hogweed sap can cause serious skin rashes

Agricultural areas are highly modified landscapes used for the production of crops and/or livestock. Weeds in these areas must be managed to prevent spread into riparian areas. Conversely, weeds that have become established in riparian areas must be prevented from spreading to upland agricultural areas. Unmanaged riparian zones in agricultural areas can act as pathways for entry of weeds into upland areas. For example, weed seeds can move from one part of a watercourse to another, become established in this new riparian area and then spread into adjacent upland areas.

Weeds Can Perform Some Desirable Riparian Functions

In some situations, weeds can provide some desirable riparian functions, such as erosion control, and are significantly better than bare ground. Weeds that have colonized large portions of riparian areas should not be eliminated without a plan to replace them with more desirable plants.

IMPORTANT NOTE: Be particularly cautious not to leave noxious or highly invasive species in a riparian area due to the risk of spread into upland agricultural areas.

Integrated Weed Management in Riparian Areas

Weed management in riparian areas, as in other agricultural areas, should utilize an **Integrated Weed Management** approach. The publication *Seven Steps to Managing Your Weeds* provides guidance for creating an integrated weed management plan.

An integrated approach should include the following processes for long term success:



- Prevent weeds from invading riparian areas by effective management both in the riparian area and in adjacent areas.
- Learn to identify invasive weed species and recognize the damage they cause so that they may be controlled at the earliest opportunity. Do not allow weed populations to become well established as removal will be much more difficult.
- Map weed populations already established in the riparian areas so that effective management strategies can be developed based on the information provided on the map.
- Make management decisions based on knowledge of potential damage, cost of control methods, and environmental impacts of the weed and the control option. Management strategies should focus on small outlying populations first as these can become well established if allowed to grow. In controlling weeds, always work from areas of least concentration towards the areas of the greatest weed populations.
- Use management strategies that include a diversity of methods to reduce weed population to an

acceptable level. Long-term strategies such as development of a shade producing competitive cover can be used in combination with short term treatments such as direct removal to provide a healthy riparian ecosystem that is resistant to weed invasions.

- Monitor the effectiveness of weed management efforts and adjust management as necessary. An adaptive management approach to weed management has been shown to be most effective. In this system, monitoring is used to inform management designs and thus continual improvements are possible.

To be successful, an integrated weed management plan should incorporate a number of strategies including prevention, physical and cultural strategies and/or herbicide use.

Prevention

- Prevention is the most important weed management strategy, but often the least used one.
- Landowners should do everything in their power to prevent weeds from establishing in riparian areas. This includes preventing disturbances from over-grazing, excavation and any other activity that results in bare ground that provides weeds with an opportunity to become established.

Cultivation

- Cultivation (or tillage) can reduce weed survival by destroying weed roots and depleting seed reserves in the soil.
- In riparian areas, cultivation as a weed control strategy should be used as a last resort. Cultivation disturbs the soil and provides an opportunity for undesirable plants to become established.
- In most cases, desirable riparian vegetation includes a mixture of woody and herbaceous species growing in an irregular pattern. Under these circumstances, cultivation for weed control is difficult without damaging desirable plants.
- Cultivation is suitable for site preparation prior to planting a riparian area or to control a stand of annual weeds. Establishment of desirable vegetation needs to take place as soon as possible after cultivation to prevent reestablishment of weeds and water erosion of bare soil (planting these bare soil areas with seed mixtures that will quickly produce a vegetation mat is called green-up).

Mowing or Cutting

- Mowing is an option for short-term weed control. Although single cuts can rarely eliminate weeds, repeated cutting to deplete underground root reserves can be an effective method of control.
- If there is a mixture of desirable and less desirable plants in the riparian area, mowing or cutting using a weed whip can be used to suppress the less desirable plants giving an advantage to the more desirable plants.
- If shrubs and trees are planted in rows along the length of riparian areas, mowing may be a viable weed control option until they achieve mature size and can shade out the weeds.

Using Herbicides in Riparian Areas

- Prior to using herbicides in riparian areas, ensure that all non-chemical options have been considered.
- Herbicide applications in riparian areas should only take place on a short-term basis to suppress or eliminate serious weeds, and should be coupled with the establishment of more desirable vegetation.
- Application of herbicides in riparian areas should be cut-stump or spot-treatments using directed low pressure spray (hooded if possible) or wick application equipment. Glyphosate is the most common herbicide used in this way in riparian areas.
- Care must be taken to ensure that established trees and shrubs are not accidentally damaged by herbicides.
- Application of herbicides in riparian areas must be done following label recommendations and ensure that aquatic ecosystems are not adversely impacted.
- **A pesticide application permit and authorization will be required for use of any herbicides in riparian areas. Check the pesticide label, and with the Ministry of Environment and Fisheries and Oceans Canada (DFO) for details.**

Steam and Flame Weed Control

- Steam and flame weed control equipment is available and may be more desirable than herbicide application in riparian areas.
- Steam and flame weed control can kill annual plants and above ground parts of perennial plants, however, only with repeated treatments will this method kill established perennial plants.

- Tree and shrubs that have taken years to establish may be accidentally damaged by steam and flame weed control.
- Be extremely careful with flame systems. In dry areas of the province and during the hot dry part of the summer, flame weed control may start a fire that can quickly spread to upland areas.

Mulching

- Mulches can both reduce weed competition and conserve soil moisture. Weed control in the three to four-foot radius around a tree or shrub seedling is the most important.
- A wide range of organic and non-organic mulch materials, including fabric mulch, are available that can smother weeds in riparian areas.
- Mulches vary in their ability to control weeds. Success depends on the type of mulch and characteristics of the weeds being managed. Mulches provide better control of small plants, annuals and new seedlings than well established weeds (e.g. a well established stand of reed canary grass would lift or grow through most mulches).
- Clear plastic sheeting can be used to kill weeds by creating excessive heat during hot sunny weather.
- Organic mulches should be properly composted before use to minimize the ensuing leachate. Leachate from bark mulch or woodwaste materials is toxic to fish and other aquatic organisms.
- Caution should be used when applying mulches or fabrics in areas that flood to prevent materials from being washed downstream.

Special Riparian Weed Notes:

- Reed canary grass is considered to be a serious weed problem in coastal riparian areas, but is a desirable riparian plant in some parts of the Interior.
- Non-native blackberry is a serious weed issue in many coastal areas. This plant has a small root system that provides minimal stream bank protection. Blackberry plants can be difficult to control and they create large amounts of shade that eliminates more desirable riparian plants. Some people have suggested that heavy blackberry cover provides excellent riparian shade. This is a very short-sighted view as blackberries can prevent the improvement of the riparian functions using more desirable species.

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