SAFER WEED & PEST CONTROL:

Low Risk Solutions for Parks, Schools and Homeowners

A Companion Guide for IPM in Blaine County

THE CHALLENGE:
Controlling weeds, and protecting public health

OUR GOAL:
A county wide plan & improved notification

OUR REASON:
Our kids & community

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Pesticide Action Network
of Blaine County
www.pesticideactionnetwork.net

This guide provides current information for parks staff, homeowners, land managers, property management companies and lawn and tree care companies to use in implementing an Integrated Pest Management (IPM) approach when controlling weeds and pests by minimizing or eliminating the use of toxic pesticides and herbicides.

Newly updated for 2012! Success Stories added.

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PESTICIDE ACTION NETWORK OF BLAINE COUNTY: Best, Safe Practices for Weed Control

Weeds, both noxious and lawn species can be controlled without harmful chemicals using some tried and true methods and some newly developed tools.

INTRODUCTION:

Pesticide Action Network of Blaine County (PAN BC), a citizens' coalition, formed to change the way weed and pest control practices are conducted in public spaces where kids and families recreate, such as in city parks, at schools and on bicycle paths. PAN BC sees the use of pesticides as a public health issue, particularly for children, who are especially vulnerable to the health effects of chemical pesticides*. Our members are advocates for an Integrated Pest Management (IPM) approach when it comes to weeds and pests. IPM is a decision-making and pest control process that employs regular monitoring to determine if and when a treatment is needed and advocates the use of physical, mechanical, cultural, biological, and educational methods to keep weeds and pest numbers low enough to prevent unacceptable damage or bother to property owners or users.

In IPM programs, treatments are never made on a predetermined schedule. Instead, managers treat an area only when monitoring has indicated that a pest will cause unacceptable damage. Managers choose and time the treatment methods to be most effective and least-hazardous to non-target organisms and the general environment. **Public health and safety is a top priority when making pest control decisions.** Acceptable methods of control in an IPM program include mechanical control such as mowing and hand pulling weeds, bio-control through the use of insects or microbes, targeted grazing to control weeds, cultural practices such as mulching areas to prevent weed seeds from germinating and the use of least toxic pesticides. The guiding principle behind an IPM program is to evaluate each situation individually, always prioritizing the use of the least harmful method over toxic chemicals. Chemicals are only used when other alternatives are not feasible and in those instances the least-toxic chemical is chosen.

This guide provides current information for parks staff, homeowners, land managers, property management companies and lawn and tree care companies to use in implementing an IPM approach when controlling weeds and pests without the use of toxic chemicals.

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*The term pesticides is a general term that includes pesticides, herbicides fungicides, rodenticides, etc.

Used together, chemical herbicides and synthetic fertilizers harm soil health which results in lawns, flowers, shrubs and trees that have weak root systems and an increased vulnerability to pests.

INTRODUCTION: Continued

This guide provides current information for parks staff, homeowners, land managers, property management companies and lawn and tree care companies to use in implementing an Integrated Pest Management (IPM) approach when controlling weeds and pests by minimizing or eliminating the use of toxic pesticides and herbicides.

PAN BC encourages safe weed and pest control methods that emphasizes the use of natural, non-toxic methods and products, cultivation of healthy soils, and innovative cultural practices. This guide will help you select a range of tools to create healthy landscapes, control weeds and keep your kids and pets healthy!

As a general rule, pesticides kill more than one form of life, including beneficial fungus, bacteria and other living organisms plants benefit from. Herbicides can kill soil organisms that provide plants with the nutrients necessary for healthy growth. Synthetic fertilizers are salt based, which can dehydrate and kill beneficial organisms in the soil. Used together, chemical herbicides and synthetic fertilizers harm soil health which results in lawns, flowers, shrubs and trees that have weak root systems and an increased vulnerability to pests. Weeds also thrive in poor soils and gain a stronger foothold.

To truly beat common turf weeds, homeowners, lawn and tree care companies and land managers need to break the cycle of toxic, chemical weed control and the use of salt-based fertilizers that lead to poor soils and encourage weeds and other pest infestations. Use of natural and organic fertilizers, proper watering and mowing regimes, use of mulches, correctly timed fertilizer applications and other cultural practices will result in healthier soils, stronger turf, trees and gardens and a healthier landscape. Noxious weeds, deemed by the state as a threat to the people and land of Idaho can be controlled with many alternative methods as well.

This guide covers many different alternatives, including the use of insects to control weeds, targeted grazing using goats, mechanical removal and control, and the use of least toxic chemicals, when necessary. We have included some recommendations for least toxic herbicides and pesticides to control noxious weeds and other pests to help landowners, landscaping companies and land managers minimize negative impacts to kids, pets, and water resources and to successfully control pests, including noxious weeds. **A final thought on how to protect your plants and your community: whenever you have a pest or weed problem, consider first how to make your lawn, trees or gardens healthier with natural methods before applying anything to kill the weed or pest.** Often, the problem is solved more effectively and permanently by improving soil and plant health, rather than killing pests.

Blaine County residents enjoy the outdoors, from the mountains of the Sawtooth National Recreation Area, to their backyard gardens. It is our hope that all users of this guide will help residents and property owner to enjoy many happy days in their backyards, gardens and parks in a safe, weed and pest free environment, without the use of harmful chemicals.

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WEEDS: Noxious and Not

A weed is an undesirable plant in the landscape. Some are relatively harmless, some are visually unappealing in a turf landscape, and some are unhealthy and destructive to the natural environment.

Weeds are able to grow in poor soils and thrive in a host of conditions that more desirable plants and turf grasses cannot tolerate. Compacted soils lacking positive bacteria, fungus and nutrients will grow a wonderful crop of weeds; turf, perennials and other landscaping plants won't do as well. When weedy species common to turf and backyard landscapes such as dandelions pop up, these plants are a reflection of the health of the soil.

To eliminate these weeds, the most effective long term-solution is to improve the health of the soil with soil amendments and nutrients that the weeds won't find hospitable as outlined in the Lawn Care section of this guide. Noxious weeds are plants like knapweed, thistle and toadlfax that when left unchecked can harm Idaho's landscape in different ways, such as out-competing native vegetation and reducing habitat and forage for wildlife and livestock or by negatively impacting the health of our stream systems. These invasive plants are commonly (although not exclusively) non-native species. For these reasons, the State of Idaho requires landowners to control noxious weeds. However, no single control method is required. Control methods can vary, including mechanical control, such as pulling the weeds, mowing or solarization, spraying weeds with herbicides and other strategies such as bio-control (the use of insects) and targeted grazing, all of which will be covered in greater detail in further sections of this guide.

Propane weed torch

Handy dandelion digging tool

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Additional safe and healthy chemical-free techniques to control weeds in turf and landscaped areas include:

Use your mower strategically to prevent the weeds from going to seed and increasing the weed population; don't forget to remove the clippings (or use a bagging attachment if possible)!

For heavily infested areas where weeds dominate, go solar. Solarization involves covering the area with heavy gauge rubber sheeting (available at roofing supply stores) to kill all the plants. The heavy material works better than black plastic as it suffocates the plants in addition to robbing them of light. Once the plants are dead (several days to a week), immediately prepare the area with compost to add new life to the soil and replant to avoid further weed growth.

Manual removal can include digging the weeds out by a taproot or fibrous root systems. Good dandelion removal tools (which can be used on many weeds) allow you to gain leverage and get to the root of the plants with taproots. They have a skinny, forked "tail" and won't break with a little pressure. Dig weeds after a rain or thorough soaking of the area to ensure you can get the root.

"Flaming" requires the use of a propane torch to boil the water in the leaves and stems of the plants. Look for a torch with safety features and use only in an area serviced by a sprinkler system or surrounded by pavement or other fire-safe features. It only takes a second to kill the plant by boiling; you don't have to light the plant to kill it and you can damage soils and surrounding plants by over-scorching. This method is effective with one pass on young, annual plants. Older annuals and perennials will require multiple "flamings." Never flame on a dry, windy day.

Mulching is an effective method in perennial beds and garden beds. Using a layer of wood chips (ensure the chips are free of weed seeds!) to suppress seed germination of undesired plants will keep weeds out and also keep soil moist for desirable plants. "Weed cloth" also works to suppress weed seeds.

HERBICIDES: Priorities To Keep The Community Healthy

By definition, all pesticides are toxic to living things.

The Environmental Protection Agency (EPA) categorizes registered pesticides in Toxicity Categories I-IV, with Toxicity Category I as the most hazardous and Category IV the least harmful to humans and the environment. A fifth category, known as Minimum Risk Pesticides, are not required to register because these pesticides contain active and inert ingredients that are deemed by EPA to be demonstrably safe for their intended use. Individual states may still require registration of a pesticide product. **It is important to note that the testing and ratings of Toxicity Categories I-IV are only for immediate illnesses related to pesticide exposure directly attributed to swallowing a pesticide, getting it on your skin or in your eyes, or inhaling a pesticide product. This system of categorization does not take into account long-term human health effects such as cancer, endocrine disruption and neurotoxic effects.**

Due to the negative health effects associated with chemical pesticides and herbicides, the Pesticide Action Network of Blaine County (PAN BC) advocates for non-chemical weed and pest control as the first priority action for weed and pest control. This priority reflects a truly integrated pest management approach for our county. However, in some instances, such as the control of noxious weeds, non-chemical control may not be feasible. In these cases, PAN BC recommends the use of the least toxic alternative that will be effective. The award-winning IPM program in Santa Clara County, CA, for example, sometimes uses an herbicide containing the active ingredient aminopyralid in the product Milestone. A selective broadleaf weed killer, this product is primarily used to control noxious weeds in county rights of way. Turf areas in parks and county properties are treated for common weeds using only cultural practices. Under Santa Clara's program, the urban landscape, from urban turf areas to county rights of way, noxious weeds are controlled with a combination of products made of clove oil, citrus oil or soaps of fatty acids and products such as Milestone. PAN BC advocates for prioritizing the use of Minimum Risk and Category IV pesticides to protect public health. However, there are instances in which specific pesticide products may be rated Category II due to their potential for skin or eye irritation, but the long-term risks are minimal or none. Category I acetic acid herbicides are a good example of this situation, as the Category I is due to the potential for eye irritation. PAN BC recommends the use of these types of products rather than products which are rated Category III but their long term risks are also linked to cancer or other serious health effects.

This guide provides a prioritized list of products that will allow cities and property owners to meet their legal obligations using the least toxic herbicide or pesticide. General information regarding these choices is included below. More detail is provided at the back of this guide in the section on noxious weed and pest management. If you contract out for your property management services, refer your professional to this guide to keep your property safe and healthy for the community.

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Some considerations for herbicide use:

Never broadcast spray. Broadcast spraying uses a boom or other equipment to cover a property from end to end with herbicide. To minimize health effects to people and wildlife, only spot spray herbicide. Spot spraying is done with a backpack sprayer with a wand that allows the applicator to target the specific weed. Many least toxic options are broad spectrum herbicides that will kill grass and other plants and therefore must be spot sprayed only on the target plant.

Weather consideration should be observed. Applicators should understand how the herbicide works to kill the plant and apply it accordingly. The best least toxic options require a warm, sunny day so that the weed takes up the herbicide.

Use in combination with a surfactant. Many herbicides, including all the least toxic options for spraying weeds mentioned in this guide, will be more effective when used in combination with a surfactant (an inert substance that helps the herbicide stick to the plant); be judicious in selecting the surfactant as these substances can also carry risks for human health.

Timing is critical when applying herbicides. Applying herbicide late in the plant's life cycle wastes time, money and chemical product as the plant will likely survive and may have already produced seeds. Get to know what the young weeds look like and spray plants in late spring and early summer to be effective. Least toxic options will be most effective when applied when plants are 6 inches or less. All herbicides should be applied early enough in the weed's life cycle to stop the plant from producing seeds.

Follow state guidelines. State protocol forbids herbicide applications when wind speed is over 10 miles per hour (or as otherwise instructed by the label) or it is raining. Please act accordingly or speak with your contractor about this general guideline.

PESTICIDES: Prioritizing Products to Keep the Community Healthy

Like herbicides, pesticides are designed to kill living organisms. In fact, the term pesticide includes all herbicides, insecticides, fungicides and rodenticides.

As such, the federal regulation of pesticides is the same as outlined in the Herbicides section of this guide. Integrated Pest Management calls for monitoring to evaluate if a pest is actually a problem, as well as proper identification so that the right tool is being used to address the problem. The safest and most effective tools and techniques are employed to fight the pest and while eradication may be a goal in some instances, quite often the goal is to control or fight the pest, rather than eliminate it, and improve the chances for maintaining long-term control over time.

Predatory insects include ladybugs

Common insect and animal pests in Blaine County include: ants, aphids, beetles, grasshoppers, scale (a type of insect), white-flies, yellow jackets, moles and voles, rabbits and others. Many alternatives to toxic chemical pesticides exist and can be used successfully to control these pests as part of an IPM approach. Alternatives include physical traps, horticultural or biological controls, such as parasitic organisms and microbial insecticides or predators and least toxic chemical options such as insecticidal soaps or oils or repellants.

Insecticidal soap

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Important guidelines for choosing and using alternative pest control options:

Never broadcast spray. Broadcast spraying uses a boom or other equipment to cover a property from end to end with pesticide. To minimize health effects to people and wildlife, only spot spray pesticide. Spot spraying is done with a backpack sprayer with a wand that allows the applicator to target the specific weed. Many least toxic chemical options require a little knowledge about when to apply the products to prevent killing bees or other desireable insects.

As with weed control, timing is often critical when controlling for other pests such as insects, fungal diseases and animals like rabbits and voles. Managers should become familiar with the life cycle and daily habits of the pests and critters they are going to control.

Physical traps are entirely non-toxic and when effectively employed at the right time of a pest's life cycle can eliminate the problem for the season. Traps for insects can range from sticky adhesives to simple containment traps.

Predatory insects, such as ladybugs or parasitic wasps can control ants, aphids and other common pests.

Microbial insecticides are fungus or bacteria that kill insect pests naturally with fewer long term consequences for you or the environment!

Insecticidal soaps available from organic gardening supply companies such as Peaceful Valley Farm and Garden Supply or Woodstream Corporation can be applied to kill ants, aphids, grasshoppers and other insects.

Pheromone traps can be used to either lure and permanently trap and kill a partciular insect species or pheromone repellents can be used to "trick" the insect to go somewhere else.

HEALTHY LAWNS

A healthy lawn is part of a comfortable backyard where kids and pets can play safely and families can enjoy a barbeque with friends.

You can keep your lawn and trees healthy and also go chemical free by making some key choices and decisions. If you contract with a company to maintain your property, ask your lawn and tree care professionals to follow these guidelines for a healthy and safe backyard. In combination, these methods of lawn care will safeguard your soils and keep things looking good. If you are transitioning from a yard maintained with chemical pesticides and fertilizers, practice a little patience. It is well worth the wait! Reducing or eliminating the use of these potent chemicals eliminates known health hazards for you, your kids, your pets and native wildlife, while protecting our rivers and drinking water. With the short growing season we have in Blaine County, it can take up to 4 seasons to successfully implement these changes.

Get a Soil Test: Have your landscaping company make decisions about what to put on your lawn, trees and gardens based on the results of a soil test, or visit the local University of Idaho Extension Office at 302 1st Ave S in Hailey to pick up a free soil sampler and conduct one yourself. Send your soil sample and your request for a complete analysis for $49 to Stukenholtz Laboratory, PO Box 353 Twin Falls, 83303. A complete analysis allows for 2 sets of recommendations, so you can request a recommendation for lawn and veggie garden, or lawn and landscaping trees or another combination that reflects your backyard. Contact Stukenholtz Lab at (208) 734-3050 for more information.

Feed The Soil First: Your lawn and trees depend on healthy soil. Care for it and your lawn and trees will look great and will be resistant to insects, weeds and other pests. Using natural materials, such as compost and compost tea, will help restore healthy, sustainable soil life in the form of beneficial fungus and bacteria and other microorganisms.

Pick up a free soil sampler

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Healthy Trees

Trees are some of the most valuable and enjoyable features in our backyard landscapes and parks. Many of the same principles discussed in Healthy Lawns apply to trees. Below are some guidelines for fertilizing and fighting pests in our urban canopy. Ask your tree care expert about these options.

Preventions strategies for keeping trees pest free include:

Feeding the soil that your trees depend on. Trees greatly benefit from the annual use of compost products and organic fertilizers.

Regular, **deep watering** to create healthy root systems is important.

Consider the use of **dormant oils** (horticultural oils) over chemical pesticides.

Physical traps, such as **sticky traps or phermone traps**, can be successfully used to trap and/or kill insect pests. Examples include: Douglas Fir beetle or apple maggots.

Microbial insecticides like Beauvaria bassiana will safely kill common pests like aphids.

Neem oil, a botanical insecticide, can be used from many problems, including aphids, whiteflies, mildew and rust. Don't apply to plants when bees are visiting!

When pesticides are necessary, ask your tree care expert to **use a systemic treatment rather than a foliar spray** to kill unwanted pests. Systemic treatments, applied directly to the roots or bark, reduce the chances of people being exposed to harmful chemicals. **Tree injections are another alternative.**

HEALTHY LAWNS Continued

Water Wisely: Water deeply and infrequently, only 2-3 times per week, so the roots of the grass grow down into the soil to get to water. Deep root systems outcompete weeds and keep your lawn healthy.

Know Your Grass' Needs: Kentucky bluegrass needs a great deal of water and fertilizer. Other species such as perennial ryegrass, fescue species like rhizomatous tall fescue (commonly known as RFT), or blended mixes, provide excellent drought-tolerant turf that are much more suited to the arid Wood River Valley and can use half the water. If you have Kentucky bluegrass, you can follow all of these recommendations with great benefit, but consider replacing it over time as water becomes more precious.

Go Natural with Fertilizers: Use fertilizers and soil amendments that are plant or animal based and try minerals like lime or sulfur. These types of products are naturally slow release, they won't burn your plants and they will safeguard the health of your soil. Leaving the grass clippings on the lawn will provide approximately half of your lawn's fertilizer needs for the season.

Compost Is Key: Compost contains the beneficial microorganisms that add life to the soil. These organisms work with natural, organic fertilizers to feed your lawn and keep weeds from taking hold. Compost in liquid form, known as compost tea, should be used in combination with dry compost because the liquid form is available to the soil and grass more quickly. Dry compost needs worms and other organisms in the soil to break it down before it is available to your lawn. If you are transitioning away from a synthetic maintenance program, it is especially important to use compost tea. Add dry compost at least once a year as a top-dressing to your lawn and spray the liquid form three times per year.

Weeds Are Information: Weeds indicate that something is wrong with the soil. Dandelions, for example, can be an indicator of low calcium. Weeds will keep coming back unless the underlying problem in the soil is addressed. The same is true for insects and other pests. Your soil test will help you to decide how to treat the soil and what products to apply to encourage a healthy lawn and discourage weeds from spreading.

Fescue grass

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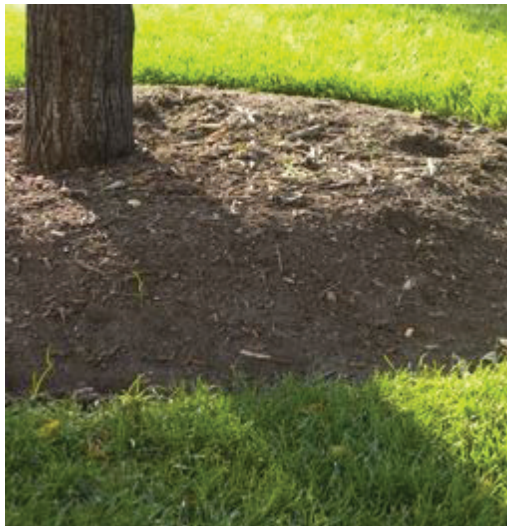
Spread Seed: Lawn systems receive regular mowing, so grass is not allowed to reproduce and over time it can lose some of its vigor. Spreading seeds in spring or fall (this is especially good for our cold climate), adds healthy young plants that will fill in bare areas, breathe new life into a lawn and outcompete weeds. Mow High —Cutting at the proper height helps to shade roots systems and cuts down on water needs. A higher cut also fights weeds by eliminating the light necessary to germinate weed seeds. Keep your mower blades sharp. Set your mower's blade to 3 inches minimum for the cool season turf grasses, including fescues and Kentucky Bluegrass.

Pick Non-Chemical Pesticide Methods and Products: Opt for mechanical removal for small weed infestations and concentrate on addressing your soil health to keep weeds from coming back. **Corn gluten** is a natural fertilizer and weed killer that can be effective when applied in early spring, 2-3 weeks before the germination of your expected weed, but it only addresses the "new" weed seeds. Because it keeps weed seeds from germinating, do not apply it where you are spreading new grass seed. Low toxicity products like citrus or clove oil based weed killers have minimal side-effects to people and the environment. Successful use of these products requires the right timing of application and a sunny day, above 65 degrees. This guide covers details regarding methods and products in the **Recommended Weed & Pest Control Methods** (see p.13) and **Common Blaine County Weeds & Pests** (see p.15).

GOOD TREE CARE

Like your lawn, feeding the soil that your trees depend on is critical to maintaining their health.

Trees are some of the most valuable and enjoyable features in our backyard landscapes and city parks. They shade our favorite picnic spots, purify the air we breathe, provide years of bird watching opportunities and add value to our homes and communities. Many of the same principles discussed in Healthy Lawns apply to trees. Preventing a pest problem and keeping your trees healthy will cost less in the long run than continually addressing pest and other problems that develop without regular inspection and maintenance. Consult a professional tree care expert to ensure you have the right maintenance program in place for your trees and use this guide to ask questions that will help ensure all tree care you contract for is safe for your family and pets.



Invest in annual monitoring to safeguard your trees. A professional inspection evaluates four areas: new leaves or buds, leaf size, twig growth, and the condition of the crown of the tree. Whether you do it yourself or hire a reputable contractor to inspect your trees, get a thorough understanding of the overall health of your trees in order to assess what they will require each year in terms of mulching, fertilizing, pruning. Annual inspection will also identify whether or not pests are present and help you to plan accordingly.

Cultural practices are very important for tree health: correct watering practices, and mulching, fertilizing, pruning, and thinning in the right manner all contribute to keeping trees healthy and disease and pest free naturally. Seasonal timing of cultural practices is key to successfully managing your trees. If you do not have the ability or time to learn how to properly prune a tree, hire a skilled expert. It is an investment that will extend your tree's life.

Like your lawn, feeding the soil that your trees depend on is critical to maintaining their health. Mature trees have specific nutrient requirements and it is a good idea to get a soil

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Mulching For Happy Trees:

For well-drained sites, apply a 2- to 4-inch layer of mulch. If the site does not drain well, use a thinner layer. Place mulch out to the tree's drip line or beyond. Overly deep mulching can cause excess moisture in the root zone, which in turn can create root rot.

Check the depth of existing mulch. Do not add mulch if there is a sufficient layer in place. Rake old mulch to break it up and add a bit more for the new season if it is necessary.

Do not leave mulch piled against a tree trunk. Pull it back several inches so that the base of the trunk and the root crown are exposed to avoid insect and disease problems. Mulch piled up against trunks may also create hiding places for rodents that can girdle the trees.

Go with organic mulches due to their soil-enhancing properties. Make sure your mulch is well aerated and, preferably, composted. Avoid stinky mulch.

Composted wood chips can make good mulch, especially when they contain a blend of leaves, bark, and wood.

The roots of most trees extend out a significant distance from the tree trunk. Although the guideline for many maintenance practices is the drip line—the outermost extension of the canopy—the roots can grow far beyond the drip line. A thin layer of mulch can improve the roots access to soil nutrients, oxygen and moisture and moderate the temperature. If your tree could talk, it would tell you to mulch its entire root system (usually well beyond the drip line).

GOOD TREE CARE Continued

Preventing a pest problem and keeping your trees healthy will cost less in the long run than continually addressing pest and other problems that develop without regular inspection and maintenance.

test when deciding on what nutrients to apply to your trees. Trees can greatly benefit from the annual use of compost products, including compost tea and organic fertilizers. Trees do not benefit from shallow watering every day; regular, deep watering to create healthy root systems is important. Mulching is also extremely important for the health of a tree. Mulch can reduce evaporation, helps keeps trees cool in summer, minimizes weeds, and (depending on the type) improves soil structure. However, mulch must be applied properly; improper mulching can actually cause significant harm.

NEVER routinely foliar spray trees for pests. Your monitoring program will help you determine if and when pests are present and if pest control is actually necessary. If a pest is present, determine what the pest is and plan and treat it accordingly, using low-risk, non-toxic methods when they are available. This guide provides basic information on common pests to the Wood River Valley, starting on page 13 in the table called Recommended Weed & Pest Control Methods for Blaine County IPM. **If the infestation or disease cannot be handled by non-toxic methods, ask your tree care expert to use a systemic treatment rather than a foliar spray. Systemic treatments, applied directly to the roots or bark, reduce the chances of people being exposed to harmful chemicals. Tree injections are another alternative.**

As with any living thing, trees have a life cycle, so plan for new trees when it is appropriate. Make your selections according to your soils and the local climate to give trees the best chance for a healthy life and to help prevent pests from becoming an on-going maintenance issue over the life of the tree. Soil testing will play an invaluable role in choosing a new tree and keeping it healthy. The Hailey Tree Committee plans to publish a tree planting guide for the Wood River Valley in 2012. Contact the City of Hailey at (208) 788-4221 to get this valuable publication to help you make the very best selection for your next tree!

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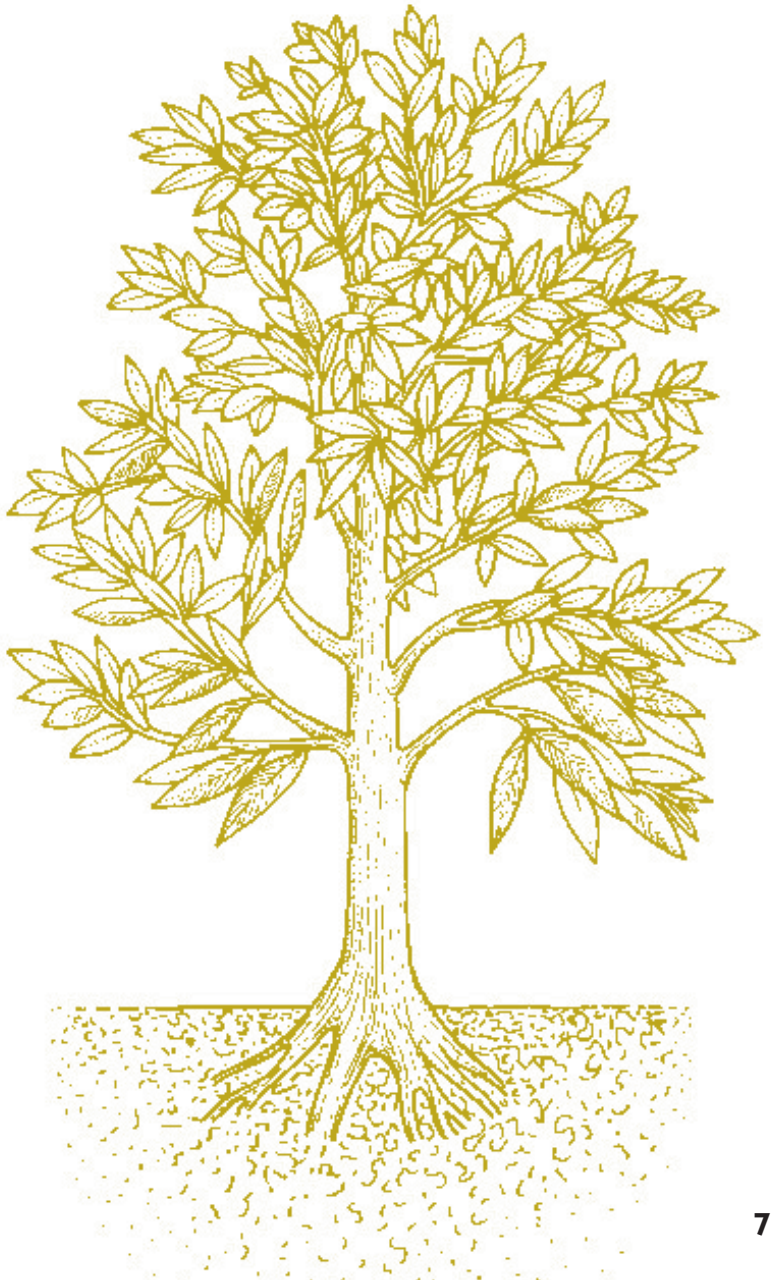

DANDELIONS: How to Control Them and Maybe Even Love *(Just a Few)* in Your Lawn

To rid your lawn of weed like dandelions, soils must contain the right nutrients and beneficial organisms to feed your grass and keep it healthy and strong.

A native of Eurasia, the common dandelion (Taraxacum officinale) was introduced to this continent by European settlers in the 1600's. Cultivated in their gardens for food and medicinal purposes, the plant spread across the continent as a weed. While it is not a noxious weed, this little plant is widely perceived as a weed that should be eradicated from lawns (turf areas) and gardens.

With its long, serrated leaves, the dandelion takes its name from the French phrase "dent de lion," meaning lion's tooth. A member of the aster family, the yellow flower head are actually many little flower heads crowded together. Each female part of the flower head produces a seed on its own, without pollination. Through this process, known as apomixes, the flower produces many, many seeds that are clones of the original plant. Although dandelions do not need to be pollinated to produce seeds, their flowers' nectar is an early season source of food for bees and other insects that play an important—and indispensible—role in pollinating agricultural crops and other plants.

Lawn weeds like dandelions are indicators of soil health underneath your grass. To rid your lawn of weed like dandelions, soils must contain the right nutrients and beneficial organisms to feed your grass and keep it healthy and strong. Healthy lawns will out-compete weeds with a few other "cultural practices" in place.

Consider these tips suggested at right. Combining the tips suggested at right will help keep your lawn healthy and cut out the number of dandelions you see each spring. Keep in mind that a few dandelions are beneficial. They provide food for bees making their way through your neighborhood. When you pull a dandelion taproot out, it leaves behind canals that earthworms love to use, improving the health of your soil. And when you see a few dandelions creep back in, they are sending you a springtime message about what you need to purchase at the local garden center! See the section Healthy Laws on p. 4-5 for more inforomation.

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Dandelions can be indicators of low calcium and too much potassium. Naturally derived soil amendments with calcium can help rid your lawn of an over-abundance of dandelions.

For manual removal, use the long, sturdy digging tools available at local garden centers. Long handles help avoid back ache! Or try new products on the market like "The Dandy," an attachment for your power drill that makes short work of the strong taproot.

Low soil ph (acid soils) allows dandelions to grow well. Regular seasonal applications of compost will help correct the low soil ph. Compost contains the beneficial fungus and bacteria that help feed a lawn and make it strong and resilient.

Mowing the lawn very low allows dandelions (and other weeds) to out-compete turf grasses. A longer lawn will "shade out" weeds and their seeds and keep them from thriving.

Correctly applying water is critical to controlling lawn weeds. Many weeds like dandelions have deep roots, so give your grass a fighting chance by cultivating deep grass roots in the lawn! Only deep and infrequent watering will do this. Daily watering, in many cases even watering every other day, works against the goal of a well-developed root structure. Work with your lawn care professional to determine how much water your lawn needs on a weekly basis.

Regular application of corn gluten and compost will help beat new weeds and improve your soil over time.

Non-toxic weed control includes products that are clove oil or 20% acetic acid for spot spraying those yellow flowers. Household vinegar is too weak to do the job. Look for other new weed-busting products such as chelated iron or microbe-based weed killers that are newly approved by the EPA and ask your garden center to carry these products.

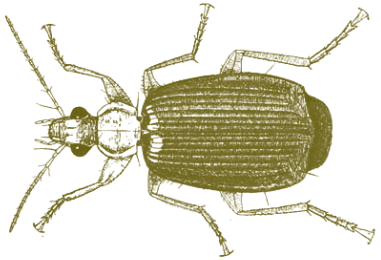
BIO-CONTROL: The Littlest Weed Warriors Have 6 Legs

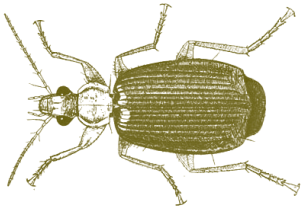
Control of noxious weeds can be accomplished with virtually no impact to the environment using natural enemies such as insects or plant diseases.

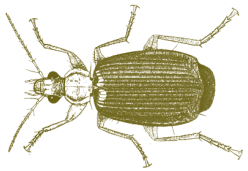
Scientists and researchers select insects from the weed's native range and then these control agents are thoroughly tested and approved for use by federal agencies. The testing and approval process ensures the insects are safe and effective control agents and that there won't be any negative effects to non-targeted, native plants or agricultural crops when the insects are released in our local landscape. Other bio-control methods include the use of **sterile** (very important!) fish species, such as grass carp, to control aquatic weeds in ponds.

Noxious weeds commonly found in Blaine County approved for bio-control include Spotted Knapweed, Diffuse Knapweed, Canada Thistle, Dalmatian Toadflax, Yellow Toadflax, Rush Skeleton Weed, Scotch Thistle and Leafy Spurge. A range of insects can successfully control these weeds, from moths to beetles to weevils. Weevils are most commonly used to control knapweed, toadflax and thistle by boring into the root, stem or seed head where they weaken or kill a plant or stop its ability to produce seeds.

Bio-control requires a commitment to a thorough evaluation of the weed density and size of the infestation prior to releasing the bugs, as well as long-term monitoring to ensure the bugs complete the work and the site can be retired. Because the insects need time to populate, it might take years to see the results of their labor. For example, it can take 4 years to see a Spotted or Diffuse Knapweed population crash from insect predation.







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Considerations for Bio-control of noxious weeds with insects:

Insect bio-control is suited for larger properties, starting with approximately 1 acre.

Because the target weeds are the insects' food source, landowner and managers cannot conduct additional weed control like spraying or mowing when bio-control is underway.

Timing of insect release is important and varies according to the target weed species and the type of control agent used.

Steep areas with tough access, community open spaces with little public access (such as large subdivision common spaces), and other spaces where spraying or mechanical removal might be difficult or expensive are good candidates for bio-control.

Insect bio-control is both cost-effective and safe for use around water sources. Typically, weevils for knapweed control are released in quantities of 100 insects at a time, in at least two areas, per acre.

The Blaine County Bug Crew, a crew of students working with adult supervision through the Southern Idaho Bio-Control Program, manages bio-control projects on public and private lands. Contact Becky Frieberg at petrochb@yahoo.com for more information. The Indian Creek Ranch Homeowner's Association has worked with the Blaine County Bug Crew to successfully control Spotted and Diffuse Knapweed using weevils (Larinus minutus, a seed head borer and Cyphocleonus achates, a root borer).

MECHANICAL & MANUAL WEED CONTROL:
People Power with the Right Tools at Hand

Weeds, both noxious and lawn species can be controlled without harmful chemicals using some tried and true methods and some newly developed tools.

Prevention is one key element of good weed management. Proper identification of the target species and plant disposal, timing, and weather conditions can all play a role in how successful mechanical control can be; considering all of these aspects results in an effective weed removal plan.

Preventing new weed infestations is an important part of managing any property. Use weed barriers in newly dug perennial and garden beds to ensure that only desirable plants will thrive. Weed barriers can be mulches, fabrics or living ground covers. When using mulching, take care that you purchase guaranteed weed-free wood chips, or you may suffer later. Weed fabrics should breathe to allow soil to receive air and water. Plant newly disturbed soils immediately to avoid new weed infestations, which will allow weeds to gain a "foothold" on your property. When hand-digging turf or garden bed weeds, remember to keep the soil disturbance to a minimum as well.

When it comes to manual or mechanical control, timing is critical. It is important to prevent the weed from going to seed; the seed bank is part of your problem. If your weeds have seeds or are in flower, you should bag the weeds and dispose of it at the county dump. Flowering plants will often produce seed even after they have been uprooted. Make sure the bags are strong enough to contain the entire plant and sealed well to avoid spreading seeds if they are present.

When hand pulling or conducting manual removal with tools, time your effort for spring or early summer when weeds are small in size and the soil is moist. Pulling or mechanically removing weeds is most effective when the taproot (or other root system) is entirely removed. If you can't get the root, you risk additional plant growth later in the summer and continued seed production. If you are pulling weeds in a turf area, simply soak the ground the night before your assault!

When confronted with a weed problem mid-summer, when weeds are established and the soil is dry, mowing to prevent them from going to seed will be a good option for some lawn weeds and noxious weed populations. Bagging and removal will have to be part of the plan to ensure you are on top of the seed production.

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Options and tools for weed control:

Mulching in rights of way can prevent weed seeds from germinating and replace toxic herbicides. As a by-product of tree removal, local tree care companies may be a source of weed-free mulch for municipal or county use.

Pulling weeds is most appropriate for smaller infestations of noxious weeds or turf care; be sure to wear gloves because some species are skin irritants or toxic when handled for long periods of time.

Use the right tools when pulling to get the most of your time and effort. A tool called The Weed Wrench makes it much easier (and even fun!) to manually remove woody-stemmed plants and tough, fibrous weeds, like burdock and thistles. Contact the Blaine County Weed Department at (208) 788-5516 to see a Weed Wrench or try out one of the different sizes on their test plot.

Mowing may be appropriate for some species and it may not work on others, even stimulating root growth. Know **before** you mow. Contact the Blaine County Weed Department for more information.

Mechanical removal can include additional tools such as "flamers." These are hand-held torches fueled by propane that kill the target weed by boiling the water in the weed's cell walls. It only takes a second to reach the boiling point, so it's quick and easy to use the wand attachment to target each weed individually, avoiding desirable plants and sprinkler heads. • Flamers, like the Weed Dragon or Red Dragon can be safely used in turf applications, garden beds (before your edible plants emerge), sidewalks, walkways and patios. Never flame on a dry, windy day and take appropriate safety precautions when using this type of equipment.

TARGETED GRAZING: Four-Footed Weed Patrol

With good management of the impacts, targeted grazing can effectively manage weed infestations and help solve an important part of the noxious weed problem.

Targeted grazing, also called prescriptive grazing, is a form of weed control that employs livestock to control weeds by eating the weeds or portions of weeds to kill or weaken the plants. The weeds are not the sole source of the animals' food. Herders, dogs, or fencing (often all three methods) control where and for how long the livestock travels throughout the property with the infestation. The use of the animals completely eliminates the need for chemical sprays.

Commonly, goats make good targeted grazers because they will eat a wide variety of forbs (weeds), including noxious weeds such as leafy spurge, knapweed and others. A herd of goats will show up for "work" rain or shine and their digestive tracts kill a high percentage of the weed seed, while only a few seeds that return to the land are actually viable. Close to 98% of the seeds ingested are eliminated from the seedbank. While goats can be very effective, they do require strong management techniques to keep them from eating desirable plants in the targeted area and to move them at the right time to avoid unnecessary negative impacts to native vegetation. With good management of the impacts, targeted grazing can effectively manage weed infestations and help solve an important part of the noxious weed problem by making a dent in the seed bank.

Targeted grazing is appropriate for many different types of properties including organic farms, agricultural ditches, steep areas with difficult access, and developed recreational trails where people and kids could be negatively affected by chemical sprays. Targeted grazing may also be integrated in to a bio-control effort to effectively control noxious weed infestations. The timing and strategy of both the grazing and the bug release must be carefully considered to ensure that grazing compliments and does not negatively effect the bio-control portion of the project.

In 2011, PAN BC teamed up with the Blaine County Recreation District (BCRD) to bring a herd of goats to 18 miles of the community trail system that runs along the old railroad grade. For three seasons, goats will graze along the Wood River Trail, stretching from Bellevue to Ketchum, to control spotted and diffuse knapweed and other noxious weeds. Typically, it takes three full seasons for effective control. BCRD contracts with a third party to manage the goats as they travel south to north on the Wood River Trail twice each season.

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A herd of goats will show up for "work" rain or shine and their digestive tracts kill a high percentage of the weed seed, while only a few seeds that return to the land are actually viable. Close to 98% of the seeds ingested are eliminated from the seedbank.

IMPORTANT SAFETY INFORMATION: Pesticide and herbicide products are formulated to kill living organisms. This table is intended as a general guide and does not contain all of the safety information necessary for product use. **ALWAYS READ THE LABEL** and follow manufacturer's directions. Do not apply pesticides and herbicides near water resources unless you are sure the product is safe for use near water. Always wear personal protective equipment during application.

DISCLAIMER Welcome to the Guide for IPM Weed and Pest Control in Blaine County, Idaho provided by PAN BC (the "Guide"). This Guide is provided for general information purposes only. The information in this guide is solely intended to assist land managers, homeowners and others in making their own choices about how to control weeds and pests using least toxic methods available.

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Weed Controls

The products below are registered with the US EPA for use as a pesticide or exempt from registration because they are demonstrably safe for use. Many of these products are used in other IPM programs in the US. Some are registred for use in Idaho. If you can't find a product on the shelf of your local garden supply store, ask them to order it. If it is not registered for sale and use in Idaho, ask your garden supply company to contact the manufacturer and request registration for Idaho. A simple request can help provide an even greater variety of tools for IPM in our community. These products are not listed in order of priority to use but rather by alphabetical order by the active ingredient.

Note: *the testing and ratings of Toxicity Categories I-IV are only for immediate illnesses related to pesticide exposure directly attributed to swallowing a pesticide, getting it on your skin or in your eyes, or inhaling a pesticide product*. This system of categorization does not take in to account long-term health effects such as cancer, endocrine (hormone) disruption, neurotoxic effects or other chronic illnesses or diseases that may develop years after exposure (no different than exposure to cigarette smoke).

Weed Controls

ACTIVE INGREDIENT/ AGENT	SAMPLE PRODUCTS	USE	EPA CATEGORY & SIGNAL WORD (skin & eye irritation, inhalation, swallowing hazard)	LOCATION	USE DETAILS	NOTES
BIO CONTROL						
Bio-Control insects for Weeds	Weevils, other types of beetles and other insects available from companies like WeedBusters Bio-control (see Controls by Pest Section, next page for species)	Damages or kills plants, prevents seeding or opens plant up to disease	**not applicable**	Larger properties with dense infestations, subdivision open spaces with well heads, other open spaces that are relatively isolated, steep areas with tough access for spraying	Selection of insect species and timing of release is critical	Requires baseline and annual monitoring to identify success and then close out project. Contact Blaine County Bug Crew; no spraying can occur.
HERBICIDES						
Acetic acid (20%)	20% acetic acid based products such as Weed Pharm	Non-selective weed & grass killer	**Category I, Danger (no long term health effects)**	Turf areas, gardens, sidewalks, patios, alleys, street rights of way	Spot spray only	Use only dedicated plastic sprayer; acid will corrode metal. Caustic product. Bradfield Horticultural Vinegar and Nature's Guide also make 20% acetic acid for agricultural and general purposes. Prices vary greatly across companies.
Clove oil	Products such as Matran EC, Matran II, St Gabriel's Burn Out II, Lightning Fast by Bonide	Non-selective weed & grass killer	**Exempt from EPA requirements**	Turf areas, gardens, sidewalks, patios, alleys, street rights of way	Spot spray only	Use when it is sunny and 68 degrees or above. Check label for recommendation on surfactant to add to increase effectiveness.
Corn gluten meal	Products such as Orland's Safe-T-Weed, Down to Earth's Corn Weed Blocker 9-1-0, Bradfield Organics' Luscious Lawn Corn Gluten Meal 9-0-0	Pre-emergent broadleaf weed killer and fertilizer	**Exempt from EPA requirements**	Turf (lawns, parks, etc) areas	Apply in spring 2-3 weeks prior to germination of target weed. Do not use prior to re-seeding.	Pre-emergent; will not kill established plants. Provides some fertilizer (mainly nitrogen) as well.

Read safety information on page 12.

Weed Controls - continued

ACTIVE INGREDIENT/ AGENT	SAMPLE PRODUCTS	USE	EPA CATEGORY & SIGNAL WORD (only for skin & eye irritation, inhalation, swallowing hazard)	LOCATION	USE DETAILS	NOTES
HERBICIDES - continued						
D-limonene (citrus)	Products such as Green Match	Non-selective weed & grass killer	**Category III, Caution**	Turf areas, gardens, sidewalks, patios, alleys, street rights of way	Spot spray only	Use when it is sunny and 68 degrees or above. Use of an added spreader or sticker solution (Nu Film P brand performed best in field trials) with GreenMatch recommended to increase effectiveness.
FeHedta (chelated iron)	Products such as Fiesta	Selective broadleaf weed killer	**Category IV, Caution**	Turf areas		Do not apply to drought stressed grass. Water area well before application. In newly seeded areas, wait until grass has germinated.
Lemongrass oil	Products such as Green Match Ex	Non-selective weed & grass killer	**Category III, Caution**	Turf areas, gardens, sidewalks, patios, alleys, street rights of way	Spot spray only	Apply on young weeds 6 inches or less in size in spring.
Pelargonic acid	Products such as Scythe	Non-selective weed & grass killer	**Category II, Warning**	Turf areas, gardens, sidewalks, patios, alleys, street rights of way	Spot spray only	Apply on young weeds 6 inches or less in size in spring.
Ammoniated soap of fatty acid	Products such as Natria Grass and Weed Killer	Non-selective weed & grass killer	**Category III, Caution**	Gardens, patios, sidewalks	Spot spray only	

Read safety information on page 12.

Implementing Alternatives to Pesticides: Success Stories

Corn Gluten Meal Pre-emergent: *John Balint, Evergreen Landscaping for Sawtooth Botanical Garden*

John has been having great success implementing the use of corn gluten meal as a pre-emergent weed control method on site at the Sawtooth Botanical Garden. He has been applying the product twice a year, in the spring and again in the fall. After the first year of applications, John found that hand weeding labor hours had been reduced by as much as 50%. Corn gluten meal is a by-product of corn milling that poses no health risks to humans and animals. Rather, is commonly found in cattle, poultry, fish and dog feed. It effectively prevents the germination of common weed and grass seeds at the same time as it fertilizes desirable plant species, as it is 10% nitrogen by weight. Extensive moisture will reduce the effectiveness of corn gluten meal so remember to water your landscape consciously! Always time applications well in advance of seeding desirable species.

Pest Controls

ACTIVE INGREDIENT/ AGENT	SAMPLE PRODUCTS	USE	EPA CATEGORY & SIGNAL WORD (only for skin & eye irritation, inhalation, swallowing hazard)	LOCATION	USE DETAILS	NOTES
TRAPS AND BARRIERS						
Sticky traps	Products such as Yellow Sticky Traps or Sticky Tape, Tanglefoot Red Sphere Traps	Adhesive traps (physical traps)	**not applicable**	Trees, shrubs		Use for various crawling insects, some flying insects.
Insect barriers	Products such as Tree Tanglefoot Insect Barrier	Paint on barrier for fruit and other trees	**not applicable**	Trees, shrubs		Use for various crawling insects, some flying insects.
BIO-CONTROL INSECTS						
Lady beetles/Ladybugs (Hippodamia convergens)	Available live from retail garden centers and online retailers		**not applicable**	Trees, shrubs, gardens	Use for aphids, mites, and a variety of insects and eggs	They will fly away if not enough food is present, so supplementing with a commercial food source is a good idea. Ants protect aphids, if using ladybugs for aphid, address ants prior to release of ladybugs.
Lacewings (Chrysoperla rufilabris)	Available as eggs or larvae from retail garden centers and online retailers	Predatory on softbod-ied insects	**not applicable**	Trees, shrubs, gardens	Use for aphids, mites, other soft bodied insects. Voracious eaters, more likely to stay in your yard than ladybugs.	Voracious eaters, known to work better than ladybugs on aphids. A second release may be necessary.
Aphid parasites (Aphidus colemani)	Available from retail garden centers and online retailers	These tiny wasps parasitize aphids, eventually killing them	**not applicable**	Trees, shrubs, gardens	Use for aphids. Most effective at start of aphid infestation.	Parasitic wasps that lay eggs inside aphids, causing them to mummify and die. Don't be scared: these are tiny wasps that aren't able to sting you!
Beneficial nematodes (various species)	Available from retail garden centers and online retailers		**not applicable**	Trees, shrubs, gardens	Use when soil is above 32 degees	Microscopic partasites that eat pests

Read safety information on page 12.

Pest Controls

ACTIVE INGREDIENT/ AGENT	SAMPLE PRODUCTS	USE	EPA CATEGORY & SIGNAL WORD (only for skin & eye irritation, inhalation, swallowing hazard)	LOCATION	USE DETAILS	NOTES
PHEROMONES						
Verbenone (packet)	Available through local tree care companies and online retailers such as BeetleBlock or Contech-inc.com	Staple packets to trees; sends "no vacancy" signal to beetles	**not applicable**	Trees	Use for mountain pine beetle. Safe for use near water (riparian zone). Post packets anytime in spring before the beetles fly as the packets are temperature triggered to release at the right time.	Benign; safest alternative for people, wildlife and the environment.
MCH (packet)	Available through local tree care companies and online retailers such as BeetleBlock or Contech-inc.com	Staple packets to trees; sends "no vacancy" signal to beetles	**not applicable**	Trees	Use for douglas fir beetle. Safe for use near water (riparian zone). Post packets anytime in spring before the beetles fly as the packets are temperature triggered to release at the right time.	Benign; safest alternative for people, wildlife and the environment.
MICROBIAL INSECTICIDES						
Bacillus thuringiensis (bacteria)	Products such as Safer Caterpillar Killer	Insecticide	**Category III, Caution**	Trees, shrubs, gardens	Use for tent caterpillars, tomato hornworms, cabbage worms, beetle larvae	
Bauvaria bassiana (fungus)	Products such as Mycotrol O	Insecticide	**Category III, Caution**	Trees, shrubs, gardens	Use for aphids, thrips, and other soft-bodied insects, beetles, weevils	Potentially pathogenic to honey bees. Avoid applying to areas where honey bees are foraging or around hives. May be toxic to fish.
Cydia pomonelle granulovirus(baculovirus)	Products such as CYD-X	Insecticide	**Category IV, Caution**	Fruit trees (stone fruits)	Use for codling moths	Safe for people, pets, insects and wildlife

Read safety information on page 12.

Pest Controls

ACTIVE INGREDIENT/ AGENT	SAMPLE PRODUCTS	USE	EPA CATEGORY & SIGNAL WORD (only for skin & eye irritation, inhalation, swallowing hazard)	LOCATION	USE DETAILS	NOTES
MICROBIAL INSECTICIDES - continued						
Saccharopolyspora spinosa (fermented from bacteria)	Products such as Monterey Garden Insect Spray	Insecticide	**Category III, Caution**	Trees, shrubs, gardens	Use on vegetable and fruit gardens, turf, ornamentals for leafminers,beetles, borers, caterpillars, thrips, fire ants, and more	Toxic to bees for 3 hours following treatment; do not apply to blooming, pollen-shedding or nectar-producing parts of plants if bees may forage on the plants within 3 hours. Toxic to aquatic invertebrates.
INSECTICIDAL SOAPS						
Potassium salts of fatty acids, sulfur	Products such as Safer 3 in 1 Concentrate	Insecticide, fungicide, miticide	**Category III, Caution**	Trees, shrubs, gardens	Use on adelgids, aphids, black scale, black spot, mites, powdery mildew, rust, scale insects, scale, spider mites	
HORTICULTURAL OILS						
Canola oil	Products such as Natria Multi Insect Control, Vegol Year Round Pesticidal Oil	Insecticide, fungicide	**Category III, Caution**	Trees, shrubs, gardens	Use on aphids, scales, mites, and powdery mildew	
Sesame and fish oils	Products such as Organocide	Inseciticide, fungicide, miticide	**Exempt from EPA requirements**	Trees, shrubs, gardens	Use on aphids, armored and soft scales, spider mites, black spot and more	
INSECTICIDAL OILS						
Neem oil	Products such as Neemix 4.5	Insecticde	**Category II, Warning**	Trees, shrubs, gardens	Use on aphids, beetles, billbugs, leafminers, grasshoppers, whiteflies insect growth regulator	Toxic to aquatic insects; use caution and do not contaminate streams.
D-limonene (citrus)	Prodcuts such as Orange Guard	Insecticide, miticide	**Category III, Caution**	Trees, shrubs, gardens	Use on adelgids, aphids, spider mites, scale insects and more	Toxic to aquatic insects; use caution and do not contaminate streams.

Read safety information on page 12.

Common Blaine County Weeds and Pests: IPM Tools By Weed/Pests

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Common Lawn & Turf Weeds & Pests

Control methods are listed in approximate order of least toxic to most toxic, where applicable.

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
LAWN / TURF WEEDS					
Black Medic 	Hand pulling	Use a sturdy tool to get the root; pull before the plant goes to seed	Turf areas (lawns), garden beds, paths	Best when soil is moist; springtime or after a good soak (rain or sprinklers)	Bag flowering plants and sprinkle seed in disturbed area.
	Corn gluten meal	To increase effect, pair with compost and other soil amendments	Turf areas (lawns), playing fields, parks, schools	Spread corn gluten approx 2-3 weeks before seeds germinate	Pre-emergent; won't kill established pernnials, just seeds and newly developing plants. Time beneficial seeding at least 6 weeks after applying corn gluten.
	Acetic acid (20%) products such as Weed Pharm	Spot spray only	Turf areas (lawns), playing fields, parks, schools, rights of way	Anytime	Non-selective weed and grass killer. Use only dedicated plastic sprayer; acid will corrode metal. Bradfield Horticultural Vinegar and Nature's Guide also make 20% acetic acid. Prices vary greatly across companies.
	Chelated iron; products such as Fiesta	Can be broadcast	Turf areas (lawns), playing fields, parks, schools, rights of way	Anytime but best in spring when soil moisture is high	Broadleaf weed killer; may stain grass temporarily.
	Clove oil based herbicide; products such as Matran, Burn Out II	Spot spray only	turf areas (lawns), playing fields, parks, schools, recreational areas, trails, rights of way	Apply when sunny and 68 degrees minimum	Non-selective weed and grass killer.
	Pelargonic acid based herbicide; products such as Scythe	Spot spray only	Turf areas (lawns), playing fields, parks, schools, recreational areas, trails, rights of way	Apply when sunny and 68 degrees minimum	Non-selective weed and grass killer.
Canada Thistle 	Acetic acid (20%) products such as Weed Pharm	Spot spray only	Turf areas (lawns), playing fields, parks, schools, rights of way	Fall; spring will only knock back seed set and stimulate root growth	Non-selective weed and grass killer. Use only dedicated plastic sprayer; acid will corrode metal. Bradfield Horticultural Vinegar and Nature's Guide also make 20% acetic acid. Prices vary greatly across companies.
	Chelated iron; products such as Fiesta	Can be broadcast	Turf areas (lawns), playing fields, parks, schools, rights of way	Anytime but spring is best when soil moisture is high	Re-seed treated area with perennial grass seed compatible with lawn species.
	Lemongrass oil based herbicide; products such as Green Match EX	Spot spray only	Turf areas (lawns), playing fields, parks, schools, rights of way	Apply when sunny and 68 degrees minimum	Non-selective weed & grass killer. Re-seed treated area with perennial grass seed compatible with lawn species.
	Clove oil based herbicide; products such as Matran, Burn Out II	Spot spray only	Turf areas (lawns), playing fields, parks, schools, recreational areas, trails, rights of way	Apply when sunny and 68 degrees minimum	Non-selective weed & grass killer. Re-seed treated area with perennial grass seed compatible with lawn species.

Read safety information on page 12.

Common Blaine County Weeds and Pests: IPM Tools By Weed/Pests

PAN BC
Pesticide Action Network of Blaine County

Common Lawn & Turf Weeds & Pests

Control methods are listed in approximate order of least toxic to most toxic, where applicable.

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
LAWN / TURF WEEDS - continued					
Clover 	Hand pulling	Use a sturdy tool to get the root; pull before the plant goes to seed	Turf areas (lawns), garden beds, paths	Best when soil is moist; springtime or after a good soak (rain or sprinklers)	Bag flowering plants and sprinkle seed in disturbed area.
	Mowing		Turf areas (lawns)	Prior to seed set	
	Acetic acid (20%) products such as Weed Pharm	Spot spray only	Turf areas (lawns), playing fields, parks, schools, rights of way	Anytime	Non-selective weed and grass killer. Use only dedicated plastic sprayer; acid will corrode metal. Bradfield Horticultural Vinegar and Nature's Guide also make 20% acetic acid. Prices vary greatly across companies.
	Chelated iron; products such as Fiesta	Can be broadcast	Turf areas (lawns), playing fields, parks, schools, rights of way	Anytime but best in spring when soil moisture is high	Broadleaf weed killer; may stain grass temporarily.
	Clove oil based herbicide; products such as Matran, Burn Out II	Spot spray only	Turf areas (lawns), playing fields, parks, schools, recreational areas, trails, rights of way	Apply when sunny and 68 degrees minimum	Non-selective weed and grass killer.
	Pelargonic acid based herbicide; products such as Scythe	Spot spray only	Turf areas (lawns), playing fields, parks, schools, recreational areas, trails, rights of way	Apply when sunny and 68 degrees minimum	Non-selective weed and grass killer.
Common Mallow 	Hand pulling	Use a sturdy tool to get the root; pull before the plant goes to seed	Turf areas (lawns), garden beds, paths	Best when soil is moist; springtime or after a good soak (rain or sprinklers)	Bag flowering plants and sprinkle seed in disturbed area.
	Mowing		Turf areas	Prior to seed set	
	Acetic acid (20%) products such as Weed Pharm	Spot spray only	Turf areas (lawns), playing fields, parks, schools, rights of way	Anytime	Non-selective weed and grass killer. Use only dedicated plastic sprayer; acid will corrode metal. Bradfield Horticultural Vinegar and Nature's Guide also make 20% acetic acid. Prices vary greatly across companies.
	Clove oil based herbicide; products such as Matran, Burn Out II	Spot spray only	Turf areas (lawns), playing fields, parks, schools, recreational areas, trails, rights of way	Apply when sunny and 68 degrees minimum	Non-selective weed and grass killer.
	Pelargonic acid based herbicide; products such as Scythe	Spot spray only	Turf areas (lawns), playing fields, parks, schools, recreational areas, trails, rights of way	Apply when sunny and 68 degrees minimum	Non-selective weed and grass killer.

Read safety information on page 12.

Common Blaine County Weeds and Pests: IPM Tools By Weed/Pests

Common Lawn & Turf Weeds & Pests

Control methods are listed in approximate order of least toxic to most toxic, where applicable.

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
LAWN / TURF WEEDS - continued					
Dandelions	Hand pulling	Use a sturdy tool to get the root; pull before the plant goes to seed	Turf areas (lawns), garden beds, paths	Pull before seed set; best when soil is moist in spring-time or after a good soak (rain or sprinklers)	Bag flowering plants and sprinkle seed in disturbed areas.
	Mowing		Turf areas (lawns)	Prior to seed set	
	Corn gluten meal	To increase effect, pair with compost and other soil amendments	Turf areas (lawns), playing fields, parks, schools	Spread corn gluten approx 2-3 weeks before seeds germinate	Pre-emergent; won't kill established plants, just seeds and newly developing plants. Time beneficial seeding at least 6 weeks after apply-ing corn gluten.
	Acetic acid (20%) products such as Weed Pharm	Spot spray only	Turf areas (lawns), playing fields, parks, schools, rights of way	Anytime	Non-selective weed and grass killer. Use only dedicated plastic sprayer; acid will corrode metal. Bradfield Horticultural Vinegar and Na-ture's Guide also make 20% acetic acid. Prices vary greatly across companies.
	Chelated iron; products such as Fiesta	Can be broadcast	Turf areas (lawns), playing fields, parks, schools, rights of way	Anytime but best in spring when soil moisture is high	Broadleaf weed killer; may stain grass temporarily.
	Clove oil based herbicide; products such as Matran, Burn Out II	Spot spray only	Turf areas (lawns), playing fields, parks, schools, recreational areas, trails, rights of way	Apply when sunny and 68 degrees minimum	Non-selective weed and grass killer.
	Pelargonic acid based herbi-cide; products such as Scythe	Spot spray only	Turf areas (lawns), playing fields, parks, schools, recreational areas, trails, rights of way	Apply when sunny and 68 degrees minimum	Non-selective weed and grass killer.

Read safety information on page 12.

Implementing Alternatives to Pesticides: Success Stories

Compost Tea: *Bill Josey, ArborCare Resources, Inc., Hailey, ID*

Brewing is on in Hailey for ArborCare Resources owner Bill Josey and his team. They are busy producing one of the hottest new sustainable landscaping products on the market. Compost tea is a soil conditioner made from organic compost that contains many nutrients and living organisms that aid in building the health of trees, shrubs, lawns and other plants. Compost tea also acts as a natural weed and pest preventative by creating healthy soil and competitive conditions for desirable plant species. During his first year of brewing and applying compost tea on landscapes throughout the valley, Josey reports very good results. Most notably, he has seen lawns and turf with increased plant growth and visibly greener landscapes.

Common Lawn & Turf Weeds & Pests

Control methods are listed in approximate order of least toxic to most toxic, where applicable.

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
LAWN / TURF WEEDS - continued					
Plantain (broadleaf) 	Hand pulling	Use a sturdy tool to get the root; pull before the plant goes to seed	Turf areas (lawns), garden beds, paths	Best when soil is moist; springtime or after a good soak (rain or sprinklers)	Soil is very compacted; requires aeration.
	Mowing		Turf areas (lawns)	Prior to seed set	
	Acetic acid (20%) products such as Weed Pharm	Spot spray only	Turf areas (lawns), playing fields, parks, schools, rights of way	Anytime	Non-selective weed and grass killer. Use only dedicated plastic sprayer; acid will corrode metal. Bradfield Horticultural Vinegar and Nature's Guide also make 20% acetic acid. Prices vary greatly across companies.
	Chelated iron; products such as Fiesta	Can be broadcast	Turf areas (lawns), playing fields, parks, schools, rights of way	Anytime but best in spring when soil moisture is high	Broadleaf weed killer; may stain grass temporarily.
	Clove oil based herbicide; products such as Matran, Burn Out II	Spot spray only	Turf areas (lawns), playing fields, parks, schools, recreational areas, trails, rights of way	Apply when sunny and 68 degrees minimum	Non-selective weed and grass killer.
	Pelargonic acid based herbicide; products such as Scythe	Spot spray only	Turf areas (lawns), playing fields, parks, schools, recreational areas, trails, rights of way	Apply when sunny and 68 degrees minimum	Non-selective weed and grass killer.

Read safety information on page 12.

Implementing Alternatives to Pesticides: Success Stories

Biological Control of Knapweed: *Becky Freiberg, Southern Idaho Bio-Control Program, U of I Extension Service; Eric McHan, Bug Crew Supervisor*

The community in the Indian Creek neighborhood has been pulling together and joining forces with the Blaine Bug Crew to fight knapweed, one of the most noxious weeds in the Wood River Valley. They are helping to protect the headwaters of the water supply for the City of Hailey by committing to be chemical-free in all common areas. Over the last several years, they have released thousands of insects at selected sites in Indian Creek. The bug releases use at least two different species of insects. One species of insect feeds on the seed heads of knapweed while the other species feeds on the roots. Together, they have been knocking out what used to be acres of infested land. Landowners were recently reminded of just how rampant the noxious weed used to be at a Homeowner's meeting where they were shown comparative photos. Today, the Indian Creek neighborhood not only has dramatically less knapweed but you can also find residents lending a hand by pulling weeds around the area to ensure the health of their families and community.

Common Blaine County Weeds and Pests: IPM Tools By Weed/Pests

PAN BC
Pesticide Action Network of Blaine County

Trees are valuable landscaping features that provide many years of enjoyment. When it comes to alternative pest control in trees, consult a professional arborist to find the best option that will be safe for you and effective.

Insects & Fungus

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
TREES & SHRUBS					
Aphids	Prevent infestations by using slow release fertilizers and by controlling ants with products like Tanglefoot Insect Barrier		Aspen, other deciduous trees and shrubs		High levels of nitrogen attract aphids; use compost and other products that won't cause a quick nitrogen burst. Use sticky barriers around deciduous trees and shrubs to prevent ants.
	Spray with water with hose or products like Bug Blaster		Aspen, other deciduous trees and shrubs		Can remove or kill larvae and adults; repeat every 3-5 days for 2 weeks.
	Clip leaves and remove from site		Aspen, other deciduous trees and shrubs		
	Bio-control: lacewings, lady bugs	Available through online retailers	Aspen, other deciduous trees and shrubs		Lacewings are more likely to remain on sit, ladybugs will fly away; provide a commercial food source to keep them.
	Bio-control: aphid parasitic wasps	Available through online retailers	Aspen, other deciduous trees and shrubs		Best when used at start of infestation; don't be scared: these are tiny wasps that aren't able to sting you!
	Insecticial soap; products such as Safer 3 in 1 Concenrate		Aspen, other deciduous trees and shrubs		
	Horticultural oils: active ingredient; products such as Organocide		Aspen, other deciduous trees and shrubs		
	Microbial insecticide: active ingredient Beauveria bassiana; products such as Mycotrol O		Aspen, other deciduous trees and shrubs		Pathogenic to bees, do not apply to plants when bees are visiting. May be toxic to fish, do not apply to water.
Black Leaf Spot	Clip leaves and remove from site. Gather leaves around base of trees as well to stop spread of disease		Aspen		Plant needs nutrients and water regularly to fight the disease.
	Horticultural oils: products such as Organocide; active ingredients sesame and fish oils		Aspen		

Read safety information on page 12.

Insects & Fungus

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
TREES & SHRUBS - continued					
	Planting selection		Apple, pear and plum trees		Select varieties that mature early
	Sanitation	Thin and throw out infested fruit to remove larvae. Also remove fruit that drops to the ground.	Apple, pear and plum trees	Look for holes in fruit with red-brown droppings left by larvae	Very important to implement sanitation early in the season and don't compost infested fruit. A key part of any control program; use in combination with other non-chemical methods when populations are low
	Bagging fruit	Bag all fruit or just what you eat; unbagged fruit may host larvae so use sanitation methods	Apple, pear and plum trees	Four to six weeks after bloom when fruit is small, about 1/2 to 1 inch in diameter	Can be very effective even in high population infestations. Prevents full color on ripe fruit so open bags prior to harvest
	Pheromone traps	Hang high in canopy. Can be used to trap moths to control of simply to monitor flight.	Apple, pear and plum trees	Early in season to monitor for flight of moths	Most effective when used for control of small populations; also useful to time application of a microbial insecticide
	Bio-control: beneficial nematodes	Available through online retailers	Apple, pear and plum trees	Apply to tree trunks when soil is above 32 degrees	Microscopic parasites that eat pests
	Horticultural oils: active ingredient canola oil; products such as Vegol Year Round Pesticidal Oil		Apple, pear and plum trees	Can be used in growing or dormant season	Scrape bark to remove last season's cocoons prior to application in spring
	Microbial insecticide; active ingredient Cydia pomonelle granulovirus; products such as CYD-X Insecticidal Virus	Monitor fruit for first "stings" 2x/week. Stings are small holes beneath droppings from larvae	Apple, pear and plum trees	Must be applied just as eggs are hatching, approximately 3-4 weeks after bloom; apply weekly when eggs are hatching	Add 1% oil to application to increase effectiveness. Remove all fruit with stings before spraying. Products will not kill larvae inside fruit. Virus is safe for humans, pets, insects and wildlife.
	Microbial insecticide: active ingredient Saccharopolyspora spinosa; products such as Monterey Garden Insect Spray	Monitor fruit for first "stings" 2x/week. Stings are small holes beneath droppings from larvae	Apple, pear and plum trees	Must be applied just as eggs are hatching, approximately 3-4 weeks after bloom; apply weekly when eggs are hatching	Toxic to bees; do not apply to plants within 3 hours of bees visiting; apply early morning or evening to avoid bees; do not apply to water

Read safety information on page 12.

Insects & Fungus

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
TREES & SHRUBS - continued					
Cooley Spruce Gall Adelgid	Microbial insecticide: active ingredient Beauveria bassiana; products such as Mycotrol O		Spruce, pines		Pathogenic to bees; do not apply to plants when bees are visiting. May be toxic to fish; do not apply to water.
	Insecticide, fungicide; products such as Orange Guard, active ingredient d-limonene	Available thorugh local tree care companies and online retailers such as contech-inc.com and BeetleBlock.com	Spruce, pines		Apply morning or evening to avoid bees.
Douglas Fir Beetle	MCH (pheromone packets)		Douglas fir	Post packets anytime in spring before the beetles fly as the packets are temperature triggered to release at the right time	Staple packets to trees. Pheromone sends a "no vacancy" signal to the beetle. Safe for use near water (riparian zone). Deep watering and compost tea will help the tree produce more pitch to fight the beetles. Beetles look for distressed trees, such as in the Castle Rock fire area.
Engelmann Spruce Weevil (type of beetle)	Microbial insecticide: active ingredient Beauveria bassiana; products such as Mycotrol O		Spruce		Pathogenic to bees; do not apply to plants when bees are visiting. May be toxic to fish; do not apply to water.
	Microbial insecticide: active ingredient Saccharopolyspora spinosa; products such as Monterey Garden Insect Spray	Available thorugh local tree care companies and online retailers such as contech-inc.com and BeetleBlock.com	Spruce		Toxic to bees; do not apply to plants within 3 hours of bees visiting. Apply early morning and evening to avoid bees. Do not apply to water.
Mountain Pine Beetle	Verbenone (pheromone packets)		Pine trees	Post packets anytime in spring before the beetles fly as the packets are temperature triggered to release at the right time	Staple packets to trees. Pheromone sends a "no vacancy" signal to the beetle. Safe for use near water (riparian zone). Very important for Mountain Pine Beetle infestation to provide deep watering and compost tea to increase pitch production to fight the beetle.

Read safety information on page 12.

Common Blaine County Weeds and Pests: IPM Tools By Weed/Pests

Insects & Fungus

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
TREES & SHRUBS - continued					
Poplar borer (type of beetle)	Microbial insecticide: active ingredient Saccharopolyspora spinosa; products such as Monterey Garden Insect Spray	~~Available through online~~ retailers	Aspen		Toxic to bees; do not apply to plants within 3 hours of bees visiting. Apply early morning and evening to avoid bees. Do not apply to water.
	Active ingredient Neem oil; products such as Neemix 4.5		Aspen		Insect growth regulator. Toxic to bees. Do not apply when they are visiting plants.
Spider Mites	Bio-control: Lacewings		Aspen, spruce, other deciduous trees and shrubs		
	Horticultural oils: active ingredient; prodcuts such as Organocide		Aspen, spruce, other deciduous trees and shrubs		
	Microbial insecticide; active ingredient Bauveria bassiana; products such as Mycotrol O		Aspen, spruce, other deciduous trees and shrubs		Pathogenic to bees; do not apply to plants when bees are visiting. May be toxic to fish, do not apply to water.
	Active ingredient potassium soaps of fatty acid; products such as Safer 3 in 1 Concentrate		Aspen, spruce, other deciduous trees and shrubs		May be toxic to aquatic invertebrates. Do not apply to water or contaminate water.
	Insecticide, fungicide; products such as Orange Guard, active ingredient d-limonene		Aspen, spruce, other deciduous trees and shrubs		Apply morning or evening to avoid bees.
	Active ingredient Neem oil; products such as Neemix 4.5		Aspen, spruce, other deciduous trees and shrubs		Insect growth regulator. Toxic to bees. Do not apply when they are visiting plants.
Western Gall Rust	Active ingredient potassium soaps of fatty acid; products such as Safer 3 in 1 Concentrate		Pine		May be toxic to aquatic invertebrates. Do not apply to water or contaminate water.

Read safety information on page 12.

Insects & Fungus

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
TREES & SHRUBS - continued					
White Pine Needle Scale	Horticultural oils: active ingredient; prodcuts such as Organocide		Pine, spruce		
	Pesticide: active ingredient potassium soaps of fatty acid; products such as Safer 3 in 1 Concentrate		Pine, spruce		May be toxic to aquatic invertebrates. Do not apply to water or contaminate water
	Insecticide, fungicide; products such as Orange Guard, active ingredient d-limonene		Pine, spruce		Apply morning or evening to avoid bees.
CRITTERS					
Meadow Voles	Repellent; active ingredients include castor oil and cin-namon oil; products such as Repellex				Apply to soil and repeat after 7 days. Water soil after application.

Read safety information on page 12.

Implementing Alternatives to Pesticides: Success Stories

Goats: Controlling weeds by grazing animals: *Eric Rector, Blaine County Recreation District*

Some weeds call for alternative thinking, such as the very noxious knapweed, which has anchored and established itself all over the Wood River Valley. The folks att he Blaine County Recreation District have launched a three-year pilot program to test an alternative to applying pesticides. During the summer of 2011, you may have come across a small herd of goats feeding on weeds while you were walking or riding on the multi-use trail that runs throughout the Wood River Valley. They may have seemed complacent, but they were actually hard at work munching on the weeds that have plagued the Wood River Trail for years. According to Eric, the goats really went after the knapweed and other weeds. Another huge success in this project was the attention it drew from the community. Everybody wanted to know what the goats were doing on the bike path. The first year of the project was a great educational tool in improving public awareness the public about noxious weeds. So far, so good for this unique program!

Common Blaine County Weeds and Pests: IPM Tools By Weed/Pests

PAN BC
Pesticide Action Network of Blaine County

Noxious Weeds

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
KNAPWEED SPECIES					
Diffuse knapweed	Hand pulling	Small sites over a period of years	Easiest in moist areas	Spring is best	Plant must be bagged when flowering;. Always wear gloves as this weed can be toxic.
	Bio-Control	Approved species for use in Idaho: Larinus minutus & Larinus obtusus (flower weevils), Cyphocleonus (root weevil), Bangasternus fausti (seedhead weevil), Shenoptera jugoslavica (root borer), and Agapeta zoegana (sulphur moth)	Larger properties with dense infestations, subdivision open spaces with well heads, other open spaces that are relatively isolated, steep areas with tough access for spraying	Selection of insect species and timing of release is critical	Requires baseline and annual monitoring to identify success and then close out project. Contact Blaine County Bug Crew. No spraying can occur.
	Targeted Grazing (use of live-stock to eat the weeds)	Demonstrated positive results in many areas around the west	Larger properties with dense infestations, community bike trails along railroad rights of way, empty residential lots, weedy areas with well heads, city or county owned natural areas	Dependent on growth cycle of plants that year; need to graze plants 2x/season	Timing is critical to ensure maximum benefit and consumption/prevention of seeding.
	Reseeding	Can be effective with use of correct species			Can be effective as a follow up treatment with other control methods. Site specific. Contact University of Idaho Extention office for seed recomendations at (208) 788-5585 or consult local native seed companies.
	Burning	possibly effective		Spring only when flames can be managed	Get local or state permits as necessary. **Proceed with Caution!**
	Herbicide, spot spray from backpack	Matran or Burn Out II, active ingredient clove oil	Park areas, landscaped areas, recreational areas, trails	Apply when at least 68 degrees and sunny	Non-selective herbicide.
		Scythe, active ingredient pelargonic acid	Park areas, landscaped areas, recreational areas, trails	Apply when at least 68 degrees and sunny	Non-selective herbicide. Use a surfactant to increase effectiveness.

Read safety information on page 12.

Common Blaine County Weeds and Pests: IPM Tools By Weed/Pests

Noxious Weeds

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
KNAPWEED SPECIES - continued					
Spotted knapweed	Hand pulling	New or small infestations	Moist areas		Plant must be bagged when flowering. Always wear gloves as this weed can be toxic.
	Mowing	Some control possible			Mow prior to flowering or plant must be bagged/removed when flowering.
	Bio-Control	Approved species for use in Idaho: Larinus minutus & Larinus obtusus (flower weevils), Cyphocleonus (root weevil), Bangasternus fausti (seedhead weevil), Shenoptera jugoslavica (root borer), Agapeta zoegana (sulphur moth) perennial grasses are competitive	Larger properties with dense infestations, subdivision open spaces with well heads, other open spaces that are relatively isolated, steep areas with tough access for spraying	Selection of insect species and timing of release is critical	Requires baseline and annual monitoring to identify success and then close out project. Contact Blaine County Bug Crew. No spraying can occur.
	Reseeding				Can be effective as a follow up treatment with other control methods. Site specific. Contact University of Idaho Extention office for seed recomendations at (208) 788-5585 or consult local native seed companies.
	Targeted grazing	Demonstrated positive results in many areas around the west	Larger properties with dense infestations, community bike trails along railroad rights of way, empty residential lots, weedy areas with well heads, city or county owned natural areas	Dependent on growth cycle of plants that year. Need to graze plants 2x/season.	Timing is critical to ensure max benefit and consumption/prevention of seeding.
	Herbicide, spot spray from backpack	Matran or Burn Out II, active ingredient clove oil	Park areas, landscaped areas, recreational areas, trails	Apply when at least 68 degrees and sunny	Non-selective herbicide.
		Scythe, active ingredient pelargonic acid	Park areas, landscaped areas, recreational areas, trails	Apply when at least 68 degrees and sunny	Non-selective herbicide. Use a surfactant to increase effectiveness.

Read safety information on page 12.

Noxious Weeds

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
KNAPWEED SPECIES - continued					
Russian knapweed 	Hand pulling	New or small infestations	Moist areas	Spring is best	Plant must be bagged when flowering. Always wear gloves as this weed can be toxic.
	Targeted grazing	For larger areas	Rights of way, steep areas	Dependent on growth cycle of plants that year; need to graze 2x/season	
	Herbicide, spot spray from backpack	Matran, active ingredient clove oil	Park areas, landscaped areas, recreational areas, trails	Apply when at least 68 degrees and sunny	Non-selective herbicide.
		Scythe, active ingredient pelargonic acid	Park areas, landscaped areas, recreational areas, trails	Apply when at least 68 degrees and sunny	Non-selective herbicide. Use a surfactant to increase effectiveness.

Read safety information on page 12.

Implementing Alternatives to Pesticides: Success Stories

Greenmatch: a lemon based non-selective herbicide: *Juerg Stauffacher, City of Ketchum Parks Department*

The City of Ketchum is the leader in the state when it comes to finding and implementing alternatives to pesticides. For the past 7 years, the city is proud to say that they have not used pesticides in the park system. The city uses compost and fish waste fertilizers on park grounds. When there is a need in the parks, they are using a lemon based, non-selective herbicide called GreenMatch, which removes the waxy cuticle from the leaves causing the leaves to wilt. The city's tolerance level for weeds has also gone up, an impact that becomes obvious when you look at the number of phone calls. The community calls in far less when they see a few dandelions, as opposed to seeing a warning sign in rights-of-way (road side areas) that have just been sprayed with pesticides!

Common Blaine County Weeds and Pests: IPM Tools By Weed/Pests

PAN BC
Pesticide Action Network of Blaine County

Noxious Weeds

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
THISTLE SPECIES					
Canada Thistle 	Bio-Control	Approved species for use in Idaho: Ceutorhynchus litura (Canada thistle stem weevil), Urophora cardui, (Canada thistle gall fly)	Larger properties with dense infestations, subdivision open spaces with well heads, other open spaces that are relatively isolated, steep areas with tough access for spraying		Requires baseline and annual monitoring to identify success and then close out project. Contact Blaine County Bug Crew. No spraying can occur.
	Reseeding				Can be effective as a follow up treatment with other control methods. Site specific. Contact University of Idaho Extention office for seed recomendations at (208) 788-5585 or consult local native seed companies.
	Herbicide, spot spray from backpack	Green Match EX, active ingredient lemongrass oil	Park areas, landscaped areas, recreational areas, trails	Fall; spring will only knock back seed set and stimulate root growth. Spot spray only; apply when at least 68 degrees and sunny	Non-selective weed and grass killer. Use of a surfactant (Nu Film P brand performed best in field trials) with GreenMatch recommended to increase effectiveness.
Scotch thistle 	Hand pulling	use a shovel to chop it off at the base or use clippers			Plant must be bagged when flowering.
	Mowing				Mow prior to flowering or plant must be bagged/removed when flowering.
	Reseeding				Cam be effective as a follow up treatment with other control methods. Site specific. Contact University of Idaho Extention office for seed recomendations at (208) 788-5585 or consult local native seed companies.

Read safety information on page 12.

Common Blaine County Weeds and Pests: IPM Tools By Weed/Pests

Noxious Weeds

SPECIES	METHOD	HOW / WHAT	LOCATION(S)	WHEN	NOTES
TOADFLAX SPECIES					
Dalmatian toadflax 	Hand pulling	Small sites over several years		Easiest in spring	Plant must be bagged when flowering
	Bio-Control	Approved species for use in Idaho: Mecinus janthinus (toadflax stem weevil)	Larger properties with dense infestations, subdivision open spaces with well heads, other open spaces that are relatively isolated, steep areas with tough access for spraying	Timing of release is critical	Requires baseline and annual monitoring to identify success and then close out project. Contact Blaine County Bug Crew. No spraying can occur.
	Reseeding				Can be effective as a follow up treatment with other control methods. Site specific. Contact University of Idaho Extention office for seed recomendations at (208) 788-5585 or consult local native seed companies.
	Herbicide, spot spray from backpack	Matran or Burn Out II, active ingredient clove oil	Park areas, landscaped areas, recreational areas, trails	Apply when at least 68 degrees and sunny	Non-selective herbicide. Waxy leaf requires use of surfactant to help herbicide product to stick and increase effectiveness.
		Scythe, active ingredient pelargonic acid	Park areas, landscaped areas, recreational areas, trails	Apply when at least 68 degrees and sunny	Non-selective herbicide. Waxy leaf requires use of surfactant to help herbicide product to stick and increase effectiveness.

Read safety information on page 12.

Commonly Used Herbicides & Pesticides in Blaine County

PAN BC
Pesticide Action Network
of Blaine County

Long-Term Health Effects identified by government agencies

Not available and n/a do not imply that there are no negative health effects related to the specified chemical; either the chemical has yet to be researched or the information is not available at this time.

ND = No Data, n/a = not applicable

ACTIVE INGREDIENT	TRADE NAMES	USE	LOCATION	EPA 2011 CANCER LIST (1)	IRIS CANCER (2)	NTP CANCER (3)	IARC CANCER (4)	OSHA (5)	EPA ENDOCRINE (6)	EU COM. ENDOCRINE (7)	CARBAMATE/ ORGANOPHOSPHATE (8)	PROP 65 (9)
2-4,D (2-4, Di-chlorophenoxya-cetic acid)	Products such as Ortho Weed B Gone, Triplet, Triplex and many other weed and feed products, Trimec (combined with Di-camba and Mecoprop)	Herbicide	Used on lawns, rights of way, open pastures, others	Not classifiable as to human carcinogenicity	Not undergone a complete evaluation for carcinogenicity for lifetime exposure	ND	ND	Possibly carcino-genic to humans-2B	ND	Evidence of potential to cause endocrine disruption-2	n/a	ND
Atrazine		Herbicide	Primarily used for corn and related crops	Not likely to be carcinogenic to humans	Not available	ND	Possibly carcino-genic to humans-2B	ND	ND	Evidence for endocrine disruption in living or-ganisms-1	n/a	ND
Carbaryl	Products such as Sevin	Insecticide used for Mountain Pine Beetle control	Forests, yards and others	Likely to be carcinogenic to humans	Not undergone a complete evaluation for carcinogenicity for lifetime exposure	ND	ND	ND	ND	ND	N-methyl carbamate	Toxicity: develop-mental male-8/7/2009; cancer -2/5/2010
Dicamba	Products such as Banvel, Banvel GST, Trimec (combined with 2,4-D and Mecoprop)	Herbicide	Lawns, rights of way, others	Group D--Not Classifiable as to Human Carcino-genicity	Not available	ND	ND	ND	ND	ND	n/a	ND
Glyphosate	Products such as Round Up, Round Up Pro, and many others	Herbicide	lawns, rights of way, others	Evidence of non-carcino-genicity for humans	Not classifiable as to human carcinogenicity	ND	ND	ND	ND	ND	n/a	ND

Read safety information on page 12.

1) available via email at www.epa.gov/pesticides/carlist/ and on PAN BC's website at: www.pesticideactionnetwork.net
2) http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showSubstanceList
3) available at http://ntp.niehs.nih.gov/?objectid=72016262-BDB7-CEBA-FA60E922B18C2540
4) available at: http://monographs.iarc.fr/ENG/Monographs/vol53/index.php
5) available at: www.epa.gov/tri/trichemicals/OSHA/oshacarc.htm
6) pending information is tracked at: http://www.epa.gov/endo/pubs/prioritysetting/finallist.html
7) available at: http://ec.europa.eu/environment/endocrine/strategy/substances_en.htm
8) see: www.epa.gov/pesticides/reregistration/status_carbamates.htm and www.epa.gov/pesticides/reregistration/status_carbamates.htm
9) available at: http://oehha.ca.gov/prop65/prop65_list/Newlist.html

Commonly Used Herbicides & Pesticides in Blaine County

Long-Term Health Effects identified by government agencies

Not available and n/a do not imply that there are no negative health effects related to the specified chemical; either the chemical has yet to be researched or the information is not available at this time.

ND = No Data, n/a = not applicable

ACTIVE INGREDIENT	TRADE NAMES	USE	LOCATION	EPA 2011 CANCER LIST (1)	IRIS CANCER (2)	NTP CANCER (3)	IARC CANCER (4)	OSHA (5)	EPA ENDOCRINE (6)	EU COM. ENDOCRINE (7)	CARBAMATE/ ORGANOPHOSPHATE (8)	PROP 65 (9)
Malathion		Insecticide		Suggestive evidence of carcinogenicity but not sufficient to assess human carcinogenic potential	Not available	ND	ND	ND	ND	Evidence of potential to cause endocrine disruption-2	Organophosphate	ND
Mecoprop (MCPP)	Weed and feed products in combination with 2,4-D and others, in products such as Trimec (combined with 2,4-D and Dicamba)	Herbicide	Lawns	Suggestive evidence of carcinogenicity but not sufficient to assess human carcinogenic potential	Not undergone a complete evaluation for carcinogenicity for lifetime exposure	ND	Possibly carcinogenic to humans-2B	ND	ND	ND	n/a	ND
Picloram	Products such as Tordon, Grazon		Rights of way, others	Evidence of non-carcinogenicity for humans	Not available	ND	Not classifiable as to its carcinogenicity to humans-3	ND	ND	ND	n/a	ND
Trichlorphon				Multiple: likely to be carcinogenic to humans at high doses, not likely to be carcinogenic to humans in at low doses	ND	ND	ND	ND	ND	ND	Organophosphate	ND
Triclopyr	Products such as Garlon 3A, Garlon 4	Herbicide	Rights of way, others	Not classifiable as to human carcinogenicity	ND	ND	ND	ND	ND	ND	n/a	ND
Aminopyralid	Products such as Milestone, Milestone VM	Herbicide	Rights of way, others		Not classifiable as to human carcinogenicity	ND	ND	ND	ND	ND	n/a	ND

Read safety information on page 12.

ONLINE RESOURCES

Weeds: Noxious and Not

For more information on invasive plants (includes both noxious and other weeds), go to:

- **www.invasiveplantatlas.org**
- **www.idahoweedawareness.org/**

Idaho's law regarding noxious weed law can be found on the Idaho State Department of Agricultures Noxious Weed Program web site at:

- **www.agri.state.id.us/Categories/PlantsInsects/NoxiousWeeds/weedlaws.php**

The entire list of Idaho's 64 noxious weeds are listed in the University of Idaho Extension publication, Idaho's Noxious Weeds, 5th edition, available through the Blaine County Weed Department or online at:

- **www.idahoag.us/Categories/PlantsInsects/NoxiousWeeds/watchlist.php**

Herbicides: Priorities to Keep The Community Healthy

For more information on the toxic effects of chemical pesticides and herbicides and alternatives to chemical herbicides, go to:

- **www.pesticide.org**
- **www.beyondpesticides.org**
- **www.vanishingbees.com**

For information on the documented health effects associated with specific chemical pesticides, go to:

www.epa.gov/pesticides/reregistration/status_op.htm
www.epa.gov/pesticides/reregistration/status_carbamates.htm
www.epa.gov/pesticides/carlist
http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showSubstanceList
http://ntp.niehs.nih.gov/?objectid=72016262-BDB7-CEBA-FA60E922B18C2540
http://monographs.iarc.fr/ENG/Classification/index.php
www.epa.gov/tri/trichemicals/OSHA/oshacarc.htm
www.epa.gov/endo
www.ec.europa.eu/environment/endocrine/strategy/substances_en.htm
www.oehha.ca.gov/prop65/prop65_list/Newlist.html

For more information on Idaho regulations and policies regarding herbicide use, go to:

- **www.agri.idaho.gov/Categories/Pesticides/indexPesticides.php**

Pesticides: Prioritizing Products to Keep the Community Healthy

For more information on alternatives to toxic chemical pesticides, go to:

- **www.birc.org**
- **www.ipminstitute.org**
- **www.npic.orst.edu**

For more information on alternative control products for pine and Douglas Fir beetles, go to:

- **www.beetleblock.com/html/products.html**
- **www.contech-inc.com/products/forestry**

Healthy Lawns

For more information on safer lawn care, visit the PAN BC website at:

- **www.pesticideactionnetwork.net**

Additional information can be found at:

- **www.safelawns.org**
- **www.refusetousechemlawn.org/alternatives_to_pesticides**

Good Tree Care

For more information on good tree care, visit:

- **www.treesaregood.com/treecare/treecareinfo.aspx**
- **www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7412.html**

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ONLINE RESOURCES - Continued

Dandelions: How to Control Them and Maybe Even Love *(Just a Few)* in Your Lawn

For more information on dandelions and lawn weeds, consult:
Kershaw, Linda, Cotterill, Patsy and Wilkinson, Sarah. Getting to Know the Common Dandelion. 2002. Alberta Native Plant Council. Accessed online at

- **www.anpc.ab.ca/content/resources.php**

The Organic Lawn Care Manual by Paul Tukey

Lindsay Schramm, public presentation, Hailey, Idaho, April 15, 2011. See complete video of the presentation; accessed online at:

- **www.pesticideactionnetwork.net/videos_&_media.php**

Information on The Dandy:

- **www.thedandy.ca/index.htm**

Bio-Control: The Littlest Weed Warriors Have 6 Legs

For more information on bio-control and approved insects for use in Idaho & Blaine County:
Idaho Department of Agriculture and Bureau of Land Management's Bio-Control program:

- **www.agri.idaho.gov/Categories/PlantsInsects/NoxiousWeeds/Bio_Control.php**

University of Idaho Extension's Southern Idaho Bio-Control Program:

- **www.bugcrew.org**

Another source for ipm bugs::

- **www.greenmethods.com**

Biological Control for Knapweed:

- **www.kcweeds.com/accounts/kc_weeds/data_documents/11/files/biological%20control%20insects%20for%20knapweed.pdf**
- **www.weedbustersbiocontrol.com/knapweedinsects.html**

Mechanical & Manual Weed Control: People Power with the Right Tools at Hand

For more information on tools to make manual weed removal easier, go to:

- **www.weedwrench.com**
- **www.groworganic.com/weed-pest-control/organic-weed-control/weed-torch.html**
- **www.planetnatural.com/site/xdpy/sgc/Organic%20Lawn%20Care/Weed%20Control**

Targeted Grazing: Four-Footed Weed Patrol

For more information on the use of goats or other livestock to control weeds, go to:

- **www.cnr.uidaho.edu/rx-grazing/Handbook.htm**
- **www.sheepgoatmarketing.info/PageLoad.cfm?page=directory/SG_Farmview.cfm&Current=1484**
- **www.weedgoats.com/prescriptive_grazing.html**
- **www.sheepindustrynews.org/Targeted-Grazing**

For more information on the goats on the Wood River Trail, contact: Blaine County Recreation District at **www.bcrd.org** or the Pesticide Action Network of Blaine County at **www.pesticideactionnetwork.net**

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Bio-Integral Resource Center. *2002 Directory of Least-Toxic Pest Control Products.* The IPM Practitioner. Vol XXIII, No. 11/12. November/December 2001. Berkeley, CA. **www.birc.org/onlinepubs.htm**

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Drlik, Tanya. 2002. Marin Model School IPM Project: Fact Sheet for Parents and Teachers. Aphids. **www.co.marin.ca.us/depts/AG/main/ipm/factsheetsparentteacher.cfm**

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Frieberg, Becky, Director, Southern Idaho Bio-Control Program. Personal communication, July, 2011.

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Health Effects of 30 Commonly Used Lawn Pesticides. 2005. Beyond Pesticides: Washington, DC. **www.beyondpesticides.org**

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Lacy, J.R., Wallander, R. and Rutz. K. Olson. 1992. *Recovery, Germinability and Viability of Leafy Spurge (Euphorbia esula) seeds ingested by sheep and goats.* Weed Technology. 6:599-602.

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National Pesticide Information Center, Corvallis, OR. Personal communication with staff at NPIC August 26, 2011 and September 1, 2011. **www.npic.orst.edu**

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Read Your Weeds—A Simple Guide to Creating A Healthy Lawn. National Coalition for Pesticide-Free Lawns, Washington, DC. **www.pesticidefreelawns.org**

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University of Idaho Extension's Southern Idaho Bio-Control Program. **www.bugcrew.org**

Wallander, R.T., B.E. Olson, and J.R. Lacy. 1995. *Spotted knapweed seed viability after passing through sheep and mule deer.* Journal of Range Management. 55:65-69.

Additional information about chemical free lawn care and the health effects of chemical pesticides: **www.safelawns.org**

www.pesticide.org

Additional information about chemical free lawn care and the health effects of chemical pesticides: **www.harmonyfarm.com**

www.groworganic.com

www.planetnatural.com

www.sustainablegrowth.com

For local educational resources and demonstrations on Wood River Valley plants: Sawtooth Botanical Garden, **www.sbgarden.org**

Also consult University of Idaho Extension Service at 302 South 1st Avenue, Hailey or (208) 788-5585.

Information regarding government testing of long-term health effects associated with chemical pesticides and herbicides:

www.epa.gov/pesticides/reregistration/status_op.htm
www.epa.gov/pesticides/reregistration/status_carbamates.htm
www.epa.gov/pesticides/carlist
http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showSubstanceList
http://ntp.niehs.nih.gov/?objectid=72016262-BDB7-CEBA-FA60E-922B18C2540 http://monographs.iarc.fr/ENG/Classification/index.php
www.epa.gov/tri/trichemicals/OSHA/oshacarc.htm
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www.ec.europa.eu/environment/endocrine/strategy/substances_en.htm
www.oehha.ca.gov/prop65/prop65_list/Newlist.html

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