

## Controlling Burdock (*Arctium minus*) along a Walking Trail

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Integrated Weed Management (IWM) includes five main methods of weed control. They are: preventive, cultural, mechanical, biological and chemical.

Preventive control minimizes the introduction of new weeds into an area by such measures as using weed-free seed and soils and removing flower heads before they have gone to seed.

Cultural control is made up of three parts: competition, which means that desired plants have the competitive advantage over weeds; rotation, which is the planting of different crops in the same field yearly; and smothering, wherein ground covers such as *Pachysandra*, are planted to help reduce weed growth in landscaped areas by smothering, which deprives weed seedlings from light, moisture, nutrients and space.

Mechanical control is comprised of: hand weeding, such as would be used in the home garden or new lawns; hoeing, which is most effective with shallow root systems of annual weeds; tillage which involves machinery, such as cultivators and rototillers and is best used to control weeds in row crops; mowing, which can reduce seed production and dispersal; smothering or mulching, as detailed earlier; and dredging or chaining, which is used in aquatic weed control by attaching chains and dragging them behind a boat, to pull out the weeds.

Biological control is comprised of three parts: classical control, which is the introduction of a control agent which naturally feeds on these weeds; inundative control which includes the introduction of natural enemies such as viruses and bacteria that would produce diseases in them; and herbivore management, which uses animals like sheep, goats, ducks or fish to graze selected areas.

Chemical controls include five parts: preplanting, which uses herbicides on prepared seedbeds, prior to the crops being planted; preemergence, which uses herbicides after the crop has been planted but before the seedlings have emerged; postemergence, wherein the herbicide is applied after the crop or weeds emerge; and finally seed treatment, wherein seeds can be treated with chemicals and/or fungicides before planting occurs.

Burdock (*Arctium minus*) is a biennial weed, meaning that the plant matures over a two year period. It germinates in the spring, produces mainly vegetative growth the first summer, overwinters as a rosette and the second summer it grows, flowers, sets seed and dies. "However, a study at Michigan State University found that *Arctium minus* generally takes four or more years to flower under field conditions with moderate to high densities of grasses and herbaceous dicots". (Doll, J. & Dr. J.). Based on this study, a longer IWM program may need to be put in place.



Rosette

A two year study in Ontario found that the common burdock (*Arctium minus*) averaged 11,700 to 13,400 seeds per plant. (Gross, 1980). On this basis, the highest priority of weed control along the walking path should be placed on “prevention” of further spread of the burred seed. The first step, should be the removal of all second year burdock stalks, either manually or with a mower before they have had a chance to flower and set seed. Next, any rosettes emerging should be hand-dug while they are still small, or if the path is long, a tiller should be used.



Close-up of Leaf



Growing

Now, at this “postemergence” stage, a chemical control might be employed, such as a 2,4-D, MCPA, 2,4-DB, and dicamba, to eliminate new weeds germinating from last year’s seeds. A cultural control of planting a smother crop, such as Pachysandra might be used at this point, followed by heavy mulching between plants.

Currently, there are no official forms of biological control for Common Burdock (*Arctium minus*).



In Flower

However, various provinces, in researching biological controls, have shown repeated interest. There are 13 insect species which attack common burdock (*Arctium minus*), but only one of these insects, the Burdock Moth (*metzneria lappella*), has been reported in North America. The moth’s larvae feed on the developing seeds of the burdock, thereby greatly reducing the number of seeds that are viable. (BudGuide). In BC, this is considered an “Adventive Biological Control”, which is one that has arrived by its own means, rather than being screened, approved and imported. (BC-Min.Forests et al).

To maintain the walking trail in future years, all burdock stalks arising from any missed rosettes the year before will need to be removed prior to their flowering and setting seed. Any emerging rosettes will also need to be hand dug, or individually chemically sprayed, taking care that overspray does not reach any of the smother crop. Finally, the addition of more mulch and additional smother crops should ensure air-born seeds from other areas do not have a chance to find a suitable site on which to germinate and begin the process again.



## Resources

Alberta Invasive Plants Council – *Common Burdock*

Taken from: <http://www.invasiveplants.ab.ca> British Columbia, Ministry of Forests, Lands and Natural Resource Operations, *Biocontrol Agent on Invasive Plant Matrix*

Taken From: [http://www.for.gov.bc.ca/hra/plants/biocontrol/Agent-plant\\_matrix.htm](http://www.for.gov.bc.ca/hra/plants/biocontrol/Agent-plant_matrix.htm)

BugGuide, *Species Metzneria lappella - Burdock Seedhead Moth - Hodges#1685*

Taken from: <http://bugguide.net/node/view/90442>

Doll, Julie & Dr. Jerry, University of Wisconsin Weed Science, *Common Burdock*

Taken from: <http://fyi.uwex.edu/weedsci/1997/11/02/common-burdock/>

Fletcher Wildlife Garden, *Common Burdock (Arctium Minus)*

Taken from: <http://www.ofnc.ca/fletcher.php>

National Forage & Grasslands Curriculum, *Describe how weeds are categorized by life cycle and how this is correlated with specific control methods*

Taken from: <http://forages.oregonstate.edu/nfgc/eo/onlineforagecurriculum/instructormaterials/available>

Penn State Extension, *Weed Management in Organic Cropping Systems*

Taken from: <http://extension.psu.edu/pests/weeds/organic/weed-management-in-organic-cropping-system>