

Pasture Weed Management



Managing Weeds in Pasture

- Know and understand your weeds
- Prevention Management
- Control Strategies
- Wrap up



Know Your Weeds

What do you need to know about your weeds when it comes to management:

- Life cycle (annual, biennial, perennial)
- Propagation (seed, rhizomes, stolons)
- Competitiveness/spread capacity
- Tolerance to mowing
- Forage Nutritional Value
- Palatability
- Toxicity

Know Your Weeds

Weeds of the Northeast

Softcover: ≈ \$30.00

Cornell University Press
Sage House
512 East State Street
Ithaca, NY 14850

Phone: 607-277-2211

<http://www.cornellpress.cornell.edu>

<http://pss.uvm.edu/vtcrops/?Page=articles/PastureWeeds/PastureWeeds.html>

Commonly Found Weeds in Vermont Pastures

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There are many weeds that can be found in pastures in Vermont. The following list represents some of the more commonly found species in some of the more problematic species. Weeds vary in their habitat and degree of aggressive growth. Some weeds are opportunistic, only showing up in open areas or compacted areas near fence gates and watering sites. Others can be quite competitive and will spread quickly through a field or pasture.

To see a larger image, click on the respective thumbnail picture.

Broadleaf Weeds

- Bedstraw, Smooth**
Daisy-like perennial
Resistant to seed and
herbicides
Very aggressive spreading
weed
- Buttercup species**
Simple and/or double
petals

Pasture Weed Management

<http://extension.umass.edu/landscape/weed-herbarium>

UMass Extension Landscape, Nursery & Urban Forestry Program

Weed Herbarium

Common Name Scientific Name Family Name Contact

UMass Extension Weed Herbarium

Common Name	Scientific Name	Family Name
agrimony, leaf hairy	Agrimonia eupatoria	Rosaceae - Rose Family
agrimony, round	Agrimonia eupatoria	Rosaceae - Rose Family
ambrosia, biennial	Ambrosia artemisiifolia	Asteraceae - Daisy Family
ambrosia, biennial	Ambrosia artemisiifolia	Asteraceae - Daisy Family
ambrosia, green	Ambrosia artemisiifolia	Asteraceae - Daisy Family
alysium, hairy	Alysium arvense	Brassicaceae (Cauliflorae) - Mustard Family
amaranth, spiny	Amaranthus spinosus	Amaranthaceae - Amaranth Family
angitia, American	Angitia americana	Asteraceae - Daisy Family
angitia, purpurea	Angitia americana	Asteraceae (Cauliflorae) - Mustard Family
arnica	Arnica montana	Asteraceae (Cauliflorae) - Mustard Family
arundo, reed	Arundo donax	Poaceae - Grass Family

Managing Weeds in Pasture

Weed Problems in Pasture Settings

Weeds due to sudden changes

- Tillage and establishment
- Extreme weather event

Weeds due to a slow response to poor management/soil conditions

- Scrub encroachment
- Unpalatable weeds

Introduction of exotic species

- Wind, flooding
- Feed, hay
- Birds, purchased livestock

Table 1. The most problem weeds in Vermont based on a 2010 survey of 49 farms.

Weed Species	Weeds Ranked As A Farm's Top Five Weeds					Overall Ranking	Weighted Ranking %
	1st	2nd	3rd	4th	5th		
Bedstraw, smooth	16	5	6	2	2	1	19.2%
Milkweed, common	5	7	9	4	5	2	14.4%
Canada thistle	3	8	2	3	2	3	9.4%
Goldenrod	3	3	4	7	1	4	8.4%
Bull thistle	5	0	7	1	0	5	7.4%
Burdock	3	3	2	2	3	6	6.2%
Buttercup	1	6	1	3	2	7	6.2%
Horsenettle	3	3	1	1	1	8	5.1%
Curly dock	1	4	0	2	0	9	3.9%
Wild carrot	2	1	2	1	0	10	3.4%
Knappweed, spotted	3	1	1	0	0	11	3.4%
Plantains	1	1	1	1	2	12	2.5%
Wild chervil	1	1	1	0	2	13	2.2%
Dandelion	1	1	0	0	1	14	1.5%
Pokeweed	0	1	0	1	2	15	1.2%
Cinquefoil species	0	0	1	2	1	16	1.2%
Spurge, leafy	1	0	0	1	0	17	1.1%
Wild garlic	0	0	1	1	0	18	0.8%
Nightshade, eastern black	0	0	0	1	3	19	0.8%
Dogbane, hemp	0	1	0	0	0	20	0.6%
Chicory	0	0	1	0	0	21	0.5%
White campion	0	0	0	1	0	22	0.3%
Yellow rattle	0	0	0	1	0	23	0.3%

Are all weeds bad?

Forage Yield = Forage Crop + Weeds

Weeds Can Be Nutritious

Forage quality of several weeds/forages (ranges = vegetative to flowering)

Plant	% Crude protein	% IVDMD*
Curly dock	30 - 16	73 - 51
Redroot pigweed	24 - 11	73 - 64
VA Pepperweed	32 - 17	86 - 63
Yellow foxtail	17 - 14	73 - 57
Large crabgrass	14 - 6	79 - 63
White clover	27 - 23	81 - 83
Tall fescue	22 - 12	78 - 67


*In vitro dry matter digestibility
Adapted from Bosworth et. al, 1980, 1985 (Auburn University)


Pasture Weed Management



Info on Poisonous Plants

- Numerous books, fact sheets, and websites on toxic plants
 - Trust university or science-based publications
- *Consult with veterinary scientist if you have concerns*



 Penn Veterinary Medicine
Computer Aided Learning
<http://research.vet.upenn.edu/poisonousplants/Home/tabid/5034/Default.aspx>
www.extension.purdue.edu/extmedia/WS/WS_37_ToxicPlants08.pdf

Managing Weeds in Pasture

Methods of Weed Management

- Prevention versus Control
- Cultural Weed Management
- Mechanical Control/Management
- Biological Control/Management
- Chemical Opportunities



Weed Prevention Practices

Be on the look out for newly introduced weeds at the field, farm or regional level.



This Canada thistle was introduced to this field via a purchased round bale

Weed Prevention Practices

By the next year...



Pasture Weed Management

Weed Prevention Practices

Develop a "Hit List" of these weeds you do not want and diligently look for them.



Eradication is possible for small patches

Weed Prevention Practices



Develop an isolation protocol for newly introduced animals

May want to isolate animals for five to six days

Weed Prevention Practices

Cultural Management of Weeds

- Preventative approach
 - Grazing management
 - Soil pH and fertility
 - Species/variety selection and overseeding

Cultural Weed Management




The best weed control in pasture is from competition by a strong stand of forage

Cultural Weed Management



Graze to the Optimum Residual Height

Pasture Crop Competition



Well managed
Verses
Poorly managed

Overgrazed pasture became infested with biennial thistles which were rejected the cattle

Source: Bill Curran, Penn State

Pasture Weed Management


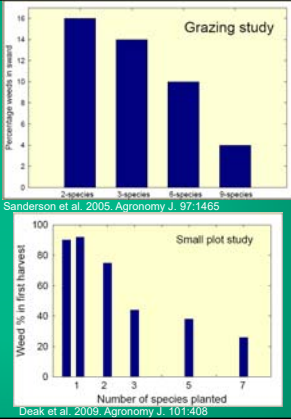
Cultural Weed Management

Soil pH and Fertility

- The addition of lime and fertilizer may help prevent weeds by improving pasture growth, density and competitiveness.
- Adding fertilizer to poor, weedy pastures without first controlling the weeds can often “feed” the weeds.
- It pays to soil test

Weed Prevention

Pasture Plant Species Diversity Can Help Reduce Weeds

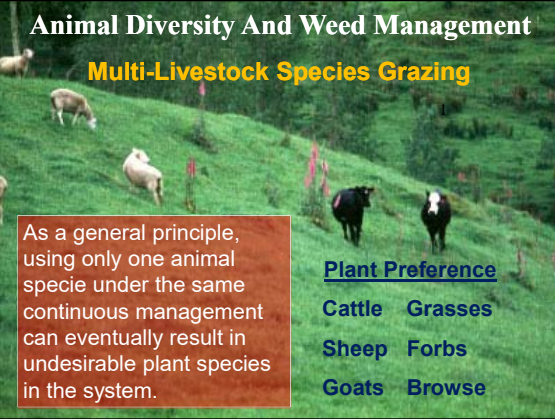



Sanderson et al. 2005, Agronomy J. 97:1465

Deak et al. 2009, Agronomy J. 101:408

Animal Diversity And Weed Management

Multi-Livestock Species Grazing



As a general principle, using only one animal specie under the same continuous management can eventually result in undesirable plant species in the system.

Plant Preference	
Cattle	Grasses
Sheep	Forbs
Goats	Browse

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Controlling Existing Pasture Weeds

Cost/Benefit Analysis

- Costs can be high
 - Mechanical, chemical, extra fencing
 - Reduction in animal gain/sacrifice animals
- Benefits are hard to measure
 - Depends on weed density and forage use
 - Weed intake and nutritional value

Weed Control

Mowing/Clipping Weeds

Control:

- Preventing seed production
- Stressing perennial and biennial plants




Image: http://pineplaintractor.com/index.php?main_page=popup_image&pid=70

Pasture Weed Management

Mowing and Hand Removal

- Repeated mowing (2 to 4 times/year) reduces weed competition, helps deplete root/vegetative reserves, prevents seed production
- Particularly important during establishment year – mow when weeds are 8 to 10 inches tall
- For new or scattered weeds, dig, pull, or remove seedheads to prevent spread

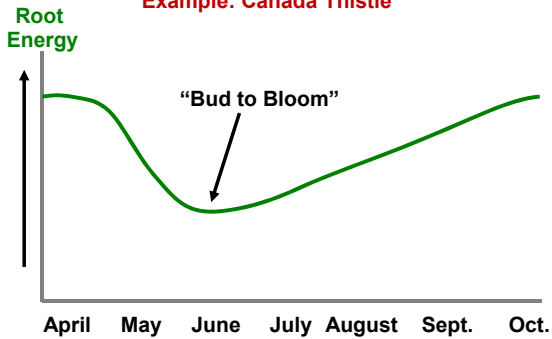


Clipping or Mowing

- May be sufficient for annual weed control
 - Mow after stem elongation
 - Mow before seed set to reduce seed production
- Helps deplete root carbohydrates of perennials
 - Frequent mowing necessary for complete control

Perennial Broadleaf Root Reserves

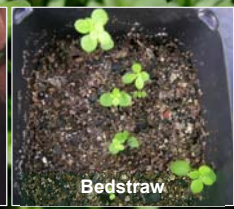
Example: Canada Thistle



Weed Control

Mowing/Clipping Weeds

Preventing seed production

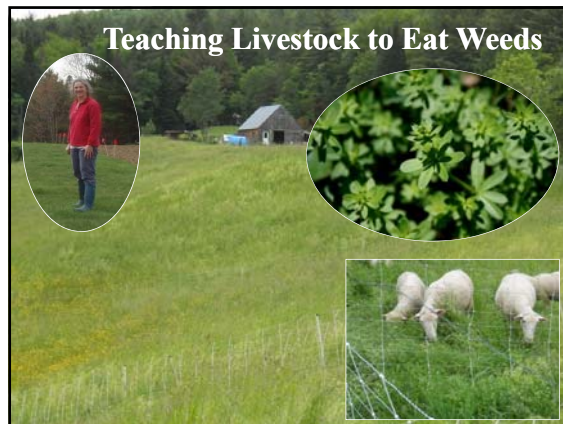


Weed Control

Strategic Grazing



Teaching Livestock to Eat Weeds



Pasture Weed Management

Teaching Livestock to Eat Weeds

Livestock for Landscapes

Home About Contact Store Blog Newsletter Speaker Requests Cows Eat Weeds Prescribed Goat Grazing

Educated Cows Eat Weeds!

In 2014, Kelly Voth invented a method for teaching cows to eat weeds. Based on decades of experience, her unique sheep make it possible for anyone to save money and take advantage of new forage by turning their cows into weed managers.

Learn More...

- Background
- How it Works
- Benefits
- How to Get Started
- What People Are Saying
- Read the Interview
- Links

Goat Prescribed Grazing

My six year research project explored the best ways to manage goats for the control. The results are useful for land managers and those interested in owning a prescribed grazing service.

Learn More...

- Goats!
- Find a Prescribed Grazer
- CD Download
- Links

"Cows Eat Weeds" The book is here!

Get the Newsletter! Email Address: _____

<http://www.livestockforlandscapes.com/>



Teaching Livestock to Eat Weeds

Concerns

- Poisonous Plants
- Weed Spread

Controlling Existing Pasture Weeds

Complete Renovation and Crop Rotation

For arable land, periodically rotating pastures with annual forage crops may be a viable economic option.

Controlling Existing Pasture Weeds

Chemical Weed Control

Herbicide Considerations

- Efficacy
- Cost
- Grazing/haying restrictions
- Legume impact?
- Safety
- Environmental Impact

<https://www.youtube.com/watch?v=R6aFznZ4JohnDeere>

Effect of Herbicides on Selected Pasture Weeds

Weed	2,4-D	Clarity (dicamba)	2,4-D + Clarity	Cimarron Plus	Crossbow	ForeFront	Roundup (spot)
Milkweed	6	8	8+	N	7+	6	7+
Poison hemlock	7	8	9	N	9	7	9
Pokeweed	7	7	7		9	8	8
E. Black nightshade	7+	8+	8	8	8+	9	9
Horsenettle	7	8	8+	6	8+	9	8
Jimsonweed	8	9+	9+	9+	9	8	9
Buttercup	8+	8	9	9+	9	9	9
Lambsquarters	9	9+	9+	9+	9+	9	9
Pigweed	9	9	9+	9+	9	8	9
Ragweed	9	9	9+	7	9+	9	9+
White snakeroot	8	9	9	N	9	8	8
Plantain species	9	8	9+	9	9	7+	9
Smooth bedstraw	7	N	7	N	8+	9	9
Canada thistle	8	8	8+	8+	8	9+	8
Multiflora rose	6	6	7+	8+	8+	7+	8

*Weed control ratings: 10 = 95-100%, 9 = 85-95%, 8 = 75-85%, 7 = 65-75, 6 = 55-65%, N = no control

Source: Bill Curran, Penn State

Pasture Weed Management

Follow Herbicide Grazing and Haying Restrictions
(taken from PSU Agronomy Guide)

Table 2.6-9. Grazing and haying restrictions for grass forage and pasture herbicides.

Herbicide	Type of Animal	Interval Between Application and Grazing	Interval Between Application and Haying	Comments
2,4-D amine	Lactating dairy	7 days	30 days	Remove meat animals from treated area 3 days before slaughter. 2,4-D labels vary. See specific label of product used.
2,4-D DE	Lactating dairy	7 days	30 days	Remove meat animals from treated area 3 days before slaughter. 2,4-D labels vary. See specific label of product used.
Cimarron Plus (metsulfuron + chlorsulfuron)	All	None	None	Be cautious of crop rotation restrictions. See label for details.
Clarity/Banvel (dicamba)	Lactating dairy	7 days if < 1 pt 21 days if < 2 pt	37 days if < 1 pt 51 days if < 2 pt	No waiting period between treatment and grazing for nonlactating animals. Remove meat animals from treated areas 30 days prior to slaughter.
Crossbow (2,4-D + triclopyr)	Lactating dairy	Do not graze until 14 days post season	14 days	Remove meat animals from treated areas or dried hay 3 days prior to slaughter.
ForeFront (aminopyralid + 2,4-D)	All	None	7 days	Do not transfer grazing animals for 3 days from treated areas to areas with Milestone sensitive species. Do not spread manure to areas where sensitive species are or will be grown.
Metsulfuron	All	None	None	Do not seed to other crops for 1 or more years. See label for restrictions.
Milestone (aminopyralid)	All	None	None	Do not transfer grazing animals for 3 days from treated areas to areas with Milestone sensitive species. Do not spread manure to areas where sensitive species are or will be grown.
Ovintox/Distinct (dicamba + diflufenicopyr)	All	None	None	Do not apply more than 8 oz/a per season.
Roundup/glyphosate	All	Spot—7 days Broadcast—60 days	Spot—7 days Broadcast—35 days	Use as spot treatment. Do not treat more than one-tenth of any acre. Leaves no soil residue.

Source: Bill Curran, Penn State

Common Herbicides for Grass Hay/Pastures

Herbicide	Avg. herbicide cost/acre
• 2,4-D	<\$5
• Banvel/Clarity (dicamba)	<\$10
• Cimarron Plus (metsulfuron + chlorsulfuron)	\$15
• Crossbow (triclopyr + 2,4-D)	\$20-30
• ForeFront HL (aminopyralid + 2,4-D)	\$15
• Roundup/glyphosate products	\$5-10
– Spot treatments or renovation	
• Facet (quinclorac)	≈\$25 (25 fl oz)

*The avg. cost does not represent the use of spray additives or application costs
**Generic alternatives are available for some of these herbicides

Source: Bill Curran, Penn State

Selected Generic alternatives for grass hay/pasture

Active ingredient(s)	Tradename	Manufacturer	Alternative to:
Clopyralid	Clopyr AG Spur Pyranid	UPI Albaugh/Agri-Star Albaugh/Agri-Star	Stinger
Metsulfuron-methyl	Accurate Ciramet Metsulfuron-methyl Metsulfuron 60EG AG Plotter	Cheminova AgSurf FarmSaver.com Arysta LifeScience Rotam North Amer.	Cimarron 60DF (DuPont no longer sells the single ai product for pastures)
Metsulfuron-methyl + chlorsulfuron	Chisum	Cheminova	Cimarron Plus
Triclopyr + 2,4-D	Candor Crossroad	NuFarm Albaugh/Agri-Star	Crossbow

Source: Bill Curran, Penn State

