



# Buckhorn Plantain\*

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## Introduction

Buckhorn plantain (*Plantago lanceolata*) is a weed with increasing significance in Wasatch County. It is invading alfalfa fields and pastures in the Wallsburg and Heber valleys. Other names for buckhorn plantain are narrow-leaf plantain, ribwort plantain, English plantain, and ribgrass. Plantain is a problem because it reduces the health of the plants that remain by crowding out desirable plant species and using up soil nutrients, water, and light. Buckhorn plantain grows in both wet and dry periods, but tends to dominate pastures in very dry situations. Recent drought conditions have caused this weed to increase in significance.

## Plant Description

Buckhorn plantain is a cool season perennial, which means it grows best in the spring or fall and its rootstock survives the winter. It reproduces by seeds and roots (taproot). The root systems are fairly weak. It forms a rosette with dark-green, narrow, lance-like leaves with sharp tips and prominent veins. Leaves are between 3 and 12 inches long and  $\frac{3}{4}$  to  $1\frac{1}{2}$  inches wide with 3 to 5 veins. It has flower stalks from 12 to 18 inches tall. Flowers are tightly clustered at the ends of long stems. The inflorescences, or flower clusters, resemble a large caliber bullet. Flowers occur from May to October. The base and crown are covered with tan, woolly hairs. Its boat-like seeds are black and shiny and about  $\frac{1}{16}$  inches long. Buckhorn plantain is well adapted to irrigated areas where frequent mowing or grazing is practiced. This includes lawns, pastures, and alfalfa fields. Buckhorn plantain will tolerate drought when it is well established. The dense and broad crowns



of buckhorn plantain make it difficult to control by pulling it or hoeing it. Mowing buckhorn plantain is also not effective because its crowns are so close to the ground. Also, mowing it can spread the seeds to new areas if the seeds are caught by the mower. If you must mow buckhorn plantain, be sure to clean mowing equipment before moving to a new area.

## Control

**General comments:** Primary tillage implements, like the moldboard plow, are effective in controlling buckhorn plantain. Secondary tillage, including the spike-tooth harrow or “s”-tine harrows like the triple-K, is not effective in controlling buckhorn plantain. This is because of its dense crown and strong taproot which is too strong to be pulled out of the ground by secondary tillage methods.



**Small areas:** To control, remove new plantain seedlings along roadsides, flowerbeds, garden rows, and in turf before they produce seed. Isolate areas with infestations and remove all seed heads before they go to seed until the weed is controlled. If the weed is present in small quantities, mechanically dig and pull it as you would a dandelion, removing as much of the taproot as possible. This will prevent the plant from growing back at the crown. You may need to be diligent at pulling and digging it for several months. Hexazinone has been successful in the control of established plantain plants but is labeled only for non-crop industrial sites as it may cause severe damage to other broad leaf plants.



**Pastures:** Pastures need to be maintained, watered, fertilized, and aerated properly to maintain vigor. Avoid over-watering and use proper cutting or grazing height for the plant species involved. Dense pasture stands will shade the surface of the soil, making it more difficult for new seedlings to establish. During water restrictions, it can be difficult to maintain dense, healthy pastures. Fall is the best time to spray for buckhorn plantain. For established plants, 2,4-D and other herbicides such as metsulfuron, may be effective if repeat applications are used. Buckhorn plantain is not generally controlled in Utah with a single application of 2,4-D. If the pasture has a legume in it as part of the vegetative mixture, most of the legume will be killed as well. Always follow label directions when using chemical weed control. When spraying pastures with 2,4-D, note the residual times for lactating animals and animals used for slaughter. There are no labeled restrictions for horses; however, it is recommended to avoid spraying horses while

treating the pasture. Also, be sure horses have adequate amounts of salt before spraying because 2,4-D amine is a salt and can add desirable flavor to weeds that horses would normally avoid.

**Field Trials 2011:** An field trial was conducted in 2011 to evaluate chemical control of Buckhorn Plantain with chlorsulfuron, metsulfuron, triclopyr (amine), 2,4-D +Dicamba, and 2,4-D amine. The experiment was designed as randomized complete block with individual plots measuring 50 by 475 feet and treatments were replicated three times. Herbicides were applied

when plantain was in the early rosette stage. All treatments were applied using a trailer mounted boomless sprayer pulled by an ATV at 3 mph. The sprayer used boombuster nozzles and was calibrated to delivered 11 gallon per acre; the spray width was approximately 25 feet. The objective of the trial was to determine which herbicide would be most productive and least cost for local producers.

Table 1. Plant counted per square foot in plots. \*DAT= Days after Treatment

<b>Treatment</b>	<b>36 DAT*</b>	<b>68 DAT*</b>	<b>99 DAT*</b>
	Plants per square foot (P ft <sup>2</sup> )	Plants per square foot (P ft <sup>2</sup> )	Plants per square foot (P ft <sup>2</sup> )
Control	12.1 a	34.5 a	24.0 a
Triclopyr	8.4 a	11.7 bc	11.6 ab
Chlorsulfuron	8.2 a	21.3 b	25.0 a
Metsulfuron	12.3 a	3.3 c	5.2 b
2, 4-D +Dicamba	15.6 a	7.8 c	6.6 b
2,4-D, Amine	10.23 a	4.6 c	6.3 b

Table 1 indicates number of plants per square foot 36, 68, and 99 days after treatment. The letter following the number explains significant difference. In column 1 all letters are “a” indicating no significant difference at this time. In column 2 and 3 the b’s and c’s indicate significant difference at the 68 and 99 days after treatment.

Table 2 indicates the percent of visual reduction in the plantain stand. Again the first measurement had no significant difference. It was not until the 68 and 99 days after treatment that significant difference was shown. The c’s in column 2 and the b’s in column 3 represent significant changes in the plantain stand.

Table 2. Percent visual reduction of the Buckhorn Plantain stand.

<b>Treatment</b>	<b>36 DAT</b>	<b>68 DAT</b>	<b>99 DAT</b>
	% Visual Reduction in Stand	% Visual Reduction in Stand	% Visual Reduction in Stand
Control	0-a	0-a	0-a
Triclopyr	58% b	57% c	53% b
Chlorsulfuron	62% b	27% b	23% ab
Metsulfuron	63% b	73% c	57% b
2, 4-D +Dicamba	66% b	77% c	63% b
2,4-D, Amine	66% b	67% c	63% b

Table 3 indicates the application rates and the total cost per acre for treating buckhorn plantain infested pastures. Based on the numbers during the study, Metsulfuron, 2 4-D, and 2, 4-D Amine showed significant differences at the 68 and 99 DAT (Days After Treatment) in all three categories; plants per square foot, percentage visual reduction in stand, and percentage visual injury. It should be noted that metsulfuron and chlorsulfuron showed some damage to the pasture grass especially at the 36 DAT stage. Estimates were 50% grass reduction for metsulfuron and 30% grass reduction for chlorsulfuron. Metsulfuron was the least cost at \$2.63 per acre, followed by the 2, 4-D, Amine and 2, 4-D which were both \$12.00 per acre. Results were analyzed using Student-Newman-Keuls, P=.05.

Table 3. Application rates and cost per acre.

Treatment	Application Rates	Cost/Acre	Surfactant	Total/Acre
Triclopyr	2 pints/ acre	\$18.00	\$1.25	\$19.25
Chlorsulfuron	1/2 ounce/ acre	\$10.62	\$0.13	\$10.75
Metsulfuron	1/2 ounce/ acre	\$2.50	\$0.13	\$2.63
2, 4-D +Dicamba*	4 pints/acre	\$12.00	n/a	\$12.00
2, 4-D, Amine	4 pints/acre	\$12.00	n/a	\$12.00

\*1/2 lb dicamba + 1.44 lbs. 2, 4-D

**Alfalfa:** Buckhorn plantain is slow to establish in alfalfa fields, but is difficult to control once it is there because of its extensive crown system. By preventing isolated plantain plants from producing seeds in and around production fields, you can reduce the seed source for new seedling establishment. A healthy, vigorous crop stand can shade out and discourage germination of new seedlings. There are no herbicides currently labeled for use in alfalfa that will control buckhorn plantain. Perhaps the best plan is to rotate to a cereal grain like barley or wheat. When the field is plowed, it should kill most or all of the buckhorn plantain. The remaining plants can be controlled in the cereal grain using 2,4-D amine. Once the pasture is clean from buckhorn plantain, it can go back into alfalfa.

\*Revised from original publication by Alica Wall and Ralph Whitesides, Ag/Weeds/2008-01pr

## References

<http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7478.html>

Two pictures were taken from [http://www.ppws.vt.edu/scott/weed\\_id/plala.htm](http://www.ppws.vt.edu/scott/weed_id/plala.htm)

**Note:** To simplify technical terminology, trade names sometimes may be used. No endorsement of products is intended nor is criticism implied of products not mentioned.

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock. Consult the pesticide label to determine active ingredients and signal words. Pesticides applied in your home and landscape can move and contaminate creeks, lakes, and rivers. Confine chemicals to the property being treated and never allow them to get into drains or creeks. Avoid drift onto neighboring properties, especially gardens containing fruits or vegetables ready to be picked. Do not place containers with pesticides in the trash or pour pesticides down sink, toilet, or outside drains. Either use the pesticide according to the label until the container is empty, or take unwanted pesticides to a Household Hazardous Waste Collection site. Dispose of empty containers by following label directions. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways. Contact your local landfill, county Extension agent, county weed supervisor, or county commissioner for more information about disposal.

<http://www.ipm.ucdavis.edu/PMG/PESTNOTES/warning.html>

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