

Weed Management in Pastures with Timed Mowing

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Abstract

Weed control is an essential part of all forage production systems because unwanted weeds compete for nutrients, water and sunlight needed for optimum growth. Forage growth in Ohio pastures is a critical part of farm production because grazing livestock are present on more than 36 percent of Ohio farms. Weeds can reduce forage crop quality and productivity if left uncontrolled. The purpose of this study was to determine if weed populations in pastures could be changed or reduced by varying the timing of mechanical mowing throughout the late spring and summer growing period without the use of herbicides. Treatments in this study consist of: (1) Control (no mowing), (2) June mowing, (3) July mowing, (4) August mowing, (5) September mowing, (6) June+August mowing, (7) July+September mowing, and (8) monthly mowing's; June+July+August+September. Forage dry matter samples were taken near the beginning of each month. Each plot was rated for the amount of broadleaf weed pressure contained at the time of sampling. A scale of 0-9 was used (0 meaning 0% weeds present to a 9, meaning 90% weeds present). Results indicate all of the mowing treatments had significantly less weeds present ($P<0.05$) than the control except for the June only treatment. The two mowing treatments of June+August and the four mowing treatments of June+July+August+September, were significantly less ($P<0.05$) than both the non-mowing treatments and the June only treatment. This study suggests that the June+August mowing combination may be the best option to reduce weeds.

Background

- Grazing livestock are used extensively to harvest forages in pasture fields.
- Ohio farms have more than 1.28 million cattle and calves, more than 117,000 sheep and lambs and more than 1.42 million acres of pasture land.
- Weed growth in perennial pastures can reduce quality of the forage, quantity of useable forage and or cause livestock mortality if poisonous weeds are present and consumed.
- Some weeds are not palatable so livestock reject eating them.
- Some weeds through allelopathy reduce growth of desired forage plants around them.
- Mowing can be an effective tool in weed management.
- Purpose of this study is to determine if weed populations in pastured forages could be changed or reduced by varying the timing of the mowing through the late spring and summer period without using herbicides.

Methods

- This is a thirty-two plot complete random block design with eight treatments, including a control, and four replications of each.
- Plot sizes 15' wide and 20' long with an additional one foot border on each side to allow for mechanical mowing equipment to pass between marker posts.
- Livestock graze plots after samples are taken, but before mowing
- Treatments with four replications
 - Control (no mowing)
 - June only mowing
 - July only mowing
 - August only mowing
 - September only mowing
 - June+August mowing
 - July+September mowing
 - Mown each month; June/July/August/September



Weed Control Plots Mown According to Plan

Results

Mean observed weed rating present during 2019

Rating period	Month Mowed							
	None	June	July	Aug	Sept	June, Aug	July, Sept	June, July, Aug, Sept
June ¹	1.0 ^{a,b}	1.0 ^a	1.3 ^{a,b}	1.0 ^{a,b}	1.3 ^{a,b}	1.0 ^{a,b}	1.0 ^{a,b}	1.0 ^b
July	2.0 ^a	3.5 ^{a,b}	1.5 ^{a,b}	1.8 ^b	2.0 ^{a,b}	1.3 ^b	2.3 ^b	1.3 ^{a,b}
Aug	3.0 ^a	3.8 ^{a,b}	1.5 ^b	2.8 ^{a,b}	2.8 ^b	2.3 ^b	1.8 ^{a,b}	1.5 ^{a,b}
Sept	4.5 ^a	6.0 ^{a,c}	1.8 ^{b,c}	2.0 ^{b,c}	3.5 ^c	1.5 ^b	3.0 ^c	1.5 ^b
Oct	3.0 ^a	6.0 ^b	1.0 ^b	1.0 ^b	2.3 ^b	1.5 ^b	2.0 ^b	1.0 ^b
Overall²	2.7^a	4.1^{a,b}	1.4^{b,c}	1.7^{b,c}	2.4^{b,c}	2.25^c	2.0^{b,c}	1.3^c

^{a,b,c} Different superscripts denote significant differences ($P<0.05$)

¹LSD = 1.64 ($P<0.05$)

²LSD = 1.249 ($P<0.05$)

Conclusion

A single mowing in June will not control most weeds satisfactorily. Mowing at specific times over multiple years can reduce and occasionally eliminate certain weeds. Regular mowing helps prevent weeds from establishing, spreading, and competing with desirable grasses and legumes. If mowing two times per year, this study indicates that a June/August mowing is a good option. Not only are weeds set back from becoming mature, but grass seedheads are removed in the June mowing to encourage vegetative growth with the grass. If one can reduce weed pressure by mowing at appropriate times, herbicide use may be reduced or eliminated and legume growth enhanced. Economics of multiple mowing passes should be considered, but aesthetic value to some producers is worth the additional cost.

Recommendations

- Maintaining a dense, competitive forage is key to preventing weed invasion and interference.
- Weeds are opportunistic in their germination and establishment. They favor open or disturbed areas caused by livestock pugging soil during wet conditions or over grazing.
- If farm managers plan to mow pastures more than one time per year, preliminary data suggests the June/August mowing date may be the best.
- More studies are needed to provide clear answers about the timing of mowing pastures to reduce or eliminate weeds.



Collecting Data From Weed Control Plots