

# Considerations for Mowing & Managing Perennial Forage Plots

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Perennial forages represent the primary food plot planting for most deer managers, and for good reason. Forages such as ladino clover, alfalfa, and chicory peak in production of high-quality forage when antler growth is at its peak and when does are producing milk for fawns. These plantings also can provide excellent attraction for hunting during deer season in most areas.

The fact that perennial plots don't have to be planted every year is another reason these forages are popular, but it doesn't take long for managers to realize you can't just "plant 'em and forget 'em." Perennial plots require a fair amount of management to maintain productivity and longevity. However, there is considerable confusion surrounding the most effective and efficient ways to manage and maintain perennial plots for several years before crop rotation or replanting are necessary.

Here, we highlight what we have found most successful in maximizing

perennial plot productivity and attractiveness for several years with the least amount of effort possible.

## MAXIMIZING FORAGE WHEN IT MATTERS

As mentioned, perennial forages provide high-quality forage while bucks are maximizing antler growth from April to June and does are lactating from late May to July in most areas. Ensuring there is adequate forage available during this time is critical to meet many deer management objectives, so care should be taken to maximize forage production in food plots during this time.

Soil amendment according to soil-test results is the first step to maximize plant growth and yield. Do not expect plant nutrients to increase because you applied lime and fertilizer, but you can increase the *amount* of high-quality forage produced, which is very important, by amending soils to provide the proper pH and soil nutrient levels for maximum plant growth.

To make sure soil pH and nutrient levels are optimal for the crop you are growing, soil samples should be pulled and tested annually, especially during the first couple years after planting a new plot. Thereafter, soil testing and amendment every two years generally is sufficient to maintain productive perennial forages. Alfalfa and clovers are legumes, so they do not require nitrogen amendment after establishment. However, if chicory is planted alone, it will require nitrogen amendments for maximum productivity. Careful attention to soil amendment is especially important if alfalfa is included in a plot, as it does best with a neutral pH around 7.0, high levels of phosphorus and potassium, and elevated micronutrient levels – especially sulfur and boron – relative to other perennial species.

Related to maximizing forage availability, it is pertinent to think about the distribution of your food plots. Data from

several studies across the country show the core home range of adult bucks and does with fawns during spring and summer is less than 50 acres! And while we strongly advocate progressive management of forests, woodlands, and early successional plant communities throughout a property instead of relying solely on food plots for nutrition, you may impact more deer during spring and summer with more, smaller, well-distributed food plots than with fewer larger food plots spaced farther apart.

**MANAGE FOR EFFICIENCY AND EFFECTIVENESS**

The two primary management techniques for perennial plots include mowing and herbicide applications. We have implemented numerous experiments over the years to try and determine the best way to effectively maintain high productivity and quality with the least amount of time and effort.

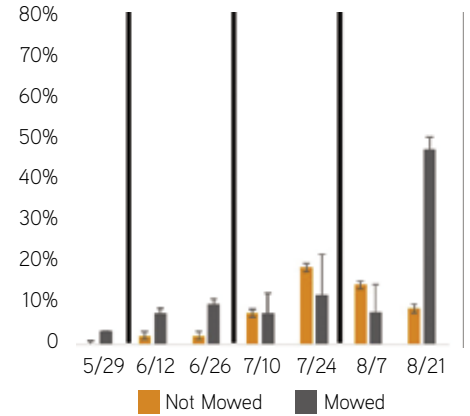
The main reason perennial food plots decline in forage production after a few to several years is that they are overtaken by weeds. Both broadleaf and grass weeds can outcompete perennial food plots within a couple of years. Fortunately, there are several herbicide options to control weeds within perennial plantings. For example, clethodim can be used to control grasses, and imazethapyr controls many broadleaf and grass species. Imazamox, imazapic, 2,4-DB, and bentazon also may be used in perennial clover and alfalfa plots to control many broadleaf weeds and sedges (refer to the book *Wildlife Food Plots and Early*

*Successional Plants* for specific rates and weeds controlled). We routinely tank-mix various herbicides, depending on weed pressure, and typically treat perennial plots twice per year, once in spring to control incoming warm-season weeds, and once in fall to control incoming cool-season weeds. Additional treatment, especially for annual grasses such as crabgrasses and foxtails, may be required during relatively wet summers.

Regular mowing is commonly recommended to maintain perennial plots, and mowing often is touted as needed to make plots more nutritious and attractive to deer. Mowing is thought to allow perennial forages to continue growing in the face of weed pressure, and how could it not? We certainly notice fewer weeds after we trim a clover plot! However, mowing does not get rid of most weed species, but rather just makes them shorter for a short time.

Common perceptions about mowing and weed control are not consistent with data we have collected. Mowing as frequently as once every three to four weeks during spring and summer reduces weed height but fails to reduce weed coverage. In fact, regular mowing actually may result in more weed problems over time. Perennial cool-season forages tend to reduce their growth and production later in the growing season, especially in the South when conditions are relatively hot and dry. Mowing during July and August may reduce coverage of perennial forages and allow warm-season broadleaf and grass

**Weed Coverage**



**THIS GRAPH** shows the relative coverage of weeds (both grass and broadleaf) in a clover/alfalfa food plot, May to August 2020. The orange bars represent weed coverage in unmowed portions of a plot, and the gray bars represent weed coverage in mowed portions of the plot. We included three replicates of mowed and unmowed treatment areas in the field. The black vertical lines indicate when we mowed. Notice how weed coverage increased in both mowed and unmowed sections of the plot later in the growing season, but especially in the mowed plots. Do you really want your food plots to have nearly 50% weed coverage in August?

weeds to take advantage of the increased growing space.

Mowing clearly is not an effective or efficient strategy to reduce weeds during summer, but you should not park the mower forever. We typically mow perennial plots once per year in late summer, which is when most warm-season weeds flower and produce seed. Mowing at this time can prevent or at least reduce weed seed production.

Mowing in late summer also provides shorter plant height which facilitates a fall herbicide application. Of course, if you are not able to spray the appropriate herbicide at the appropriate time, you will have increased weed pressure, and you may need to mow more than once per year simply to prevent your perennial forages from being overtaken and shaded-out by various weeds, but don't expect increased mowing to reduce the presence of weeds. Again, mowing just makes them shorter while reducing perennial forage biomass!

The white-tailed deer is a concentrate selector, meaning it concentrates feeding on select plants and select plant parts. Deer eat the youngest portions of

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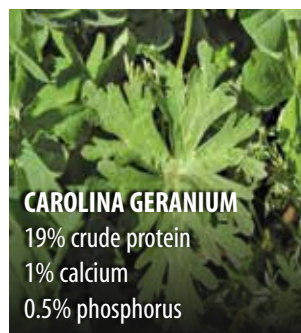
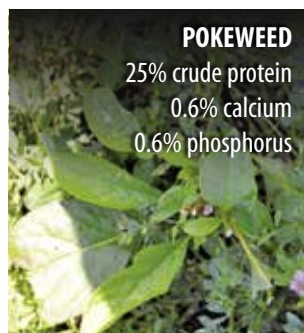
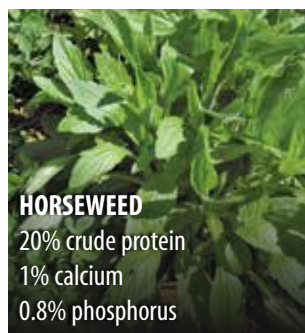
**MOWING AS FREQUENTLY** as once every three to four weeks during spring and summer reduces weed height but fails to reduce weed coverage, according to new research. In fact, regular mowing actually may result in more weed problems over time.

plants available, which are most digestible and usually most nutritious. When portions of plants that deer typically eat are sampled, as opposed to including larger stems that deer do not eat, there is little or no difference in nutrient concentration or digestibility between mowed or unmowed perennial forages. Crude protein, calcium, phosphorus, and acid detergent fiber all are similar, whether the plot is mowed or not, when you collect and sample those portions of the plant that deer select. Furthermore, there is more biomass of selected plant parts in unmowed than in mowed plots.

Speaking of weeds and concentrate selectors, what about all those “weeds” that deer commonly select to eat? When you consider how deer may preferentially eat some of the “weeds” in your food plots over the forages you planted, you quickly see how many of those “other plants” growing in your food plots actually are desirable. Of course, we want to maintain production of high-quality forages in our food plots, but if other plants are growing with the planted forages and deer are eating them, and those plants contain nutrient levels above the maximum amount used by deer, then why worry about them? Instead, be glad you have them!

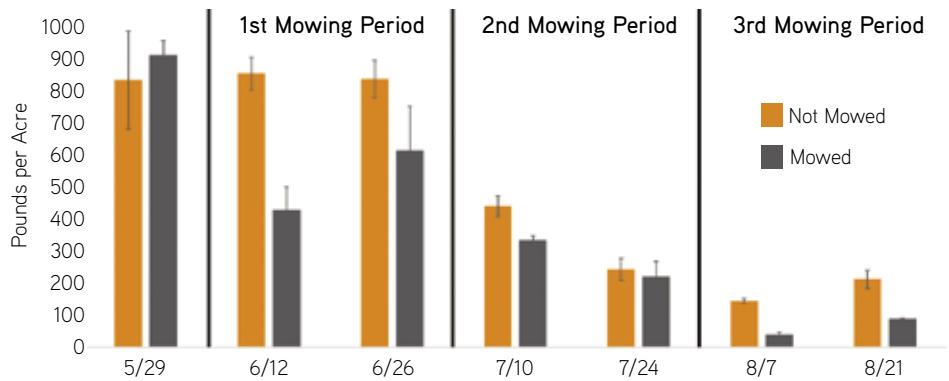
#### ATTRACTION AND DEER USE

Maximizing production and controlling weed pressure in perennial food plots is obviously important, but deer use and forage consumed is where the rubber meets the road. Additionally, almost



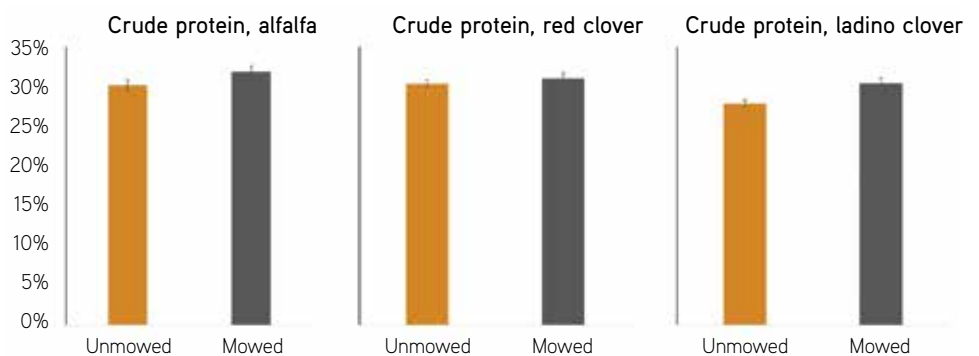
**WHAT IS A WEED?** Of course, weeds need to be controlled to the extent that we are able to maintain our planted forages, but you should ask “What is a weed?” Commonly, species such as common ragweed, horseweed, pokeweed, and Carolina geranium are growing in perennial plots, and these are all readily eaten by deer. Why should we spend time and money controlling plants that provide high-quality forage, especially if those plants are not reducing production of planted forages and may actually make the plot more attractive to deer because of the enhanced structure? Weed control is required when managing perennial food plots, but we should consider what species are present and our “weed threshold” before we hook up the bush-hog or sprayer just because we see other plants growing in our food plots. As you can see, the crude protein, calcium, and phosphorus values of horseweed, pokeweed, and Carolina geranium exceed what deer require for maximum production.

### Forage Biomass



**WE MOWED** portions of a ladino and red clover and alfalfa plot at the start of each month from May to August 2020 and collected the digestible forage each month. The black vertical lines indicate when we mowed. The first forage collection on May 29 was conducted just prior to the first mowing. As expected, forage production in both treatments declined as summer progressed. However, you can see how each mowing greatly reduced the amount of forage in the plot.

### Forage Quality



**CRUDE PROTEIN CONTENT** of forage from mowed and unmowed clovers and alfalfa plots are similar (samples include only those portions of plants that deer select, not relatively large, tough stems). We also detected no trend when analyzing phosphorus, calcium or acid detergent fiber.

every manager is interested in maximizing the attractiveness of food plots to facilitate hunting. Much has been written about managing perennial forage plots to

maximize attractiveness to deer, and many consider mowing a key strategy. How many times have you read or heard someone mention how deer are attracted to a freshly mowed perennial plot? We hear this so often, it has become dogma, though you never see any data to substantiate the claim.

Upon measuring forage availability and quality in mowed and unmowed portions of perennial forage plots following an application of imazethapyr and clethodim in spring, we wanted to directly measure deer attraction and use. We have heard countless claims of deer attraction to mowed plots, and we wanted to collect data to demonstrate whether these anecdotes were accurate.

We placed a trail-camera in each of three equally sized sections of the plot containing ladino and red clover and alfalfa that we mowed, and in each of three sections of the plot that we left unmowed, from late May through the end of August

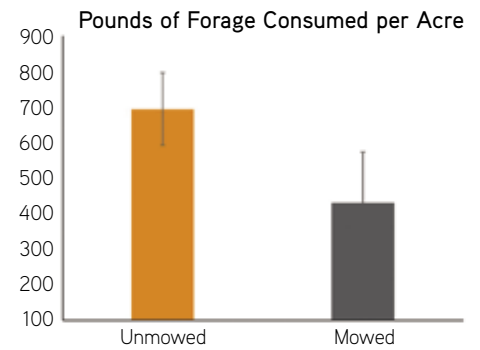
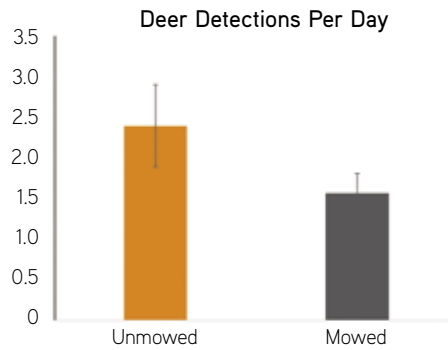
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2020. We also measured deer forage consumption by collecting forage inside and outside exclusion cages within each section at the end of June, July and August. By measuring both deer detections and forage consumed, we hoped to determine whether deer were attracted more to mowed plots.

Much to our surprise, we actually saw 53% fewer deer detections in the mowed sections! The forage intake results mirrored what we were seeing on trail-cameras, as deer consumed 608 pounds/acre less forage in the mowed sections. These results clearly indicated deer were selecting the unmowed sections, which makes sense given these areas had more young forage available for deer to consume. For us, these data were the final nail in the coffin for regular mowing.

### CONCLUSION

Perennial clovers, alfalfa and chicory will continue to be among the most popular forages planted for deer. Amending the soil and controlling weeds is necessary to maximize production, but the most popular technique used to maintain these plots actually may reduce their benefit to deer.



**DEER DETECTION AND USE.** From late May to August 2020, we detected fewer deer via trail-cameras (below, left) and measured less forage consumed by deer (below, right) in mowed sections of a perennial forage plot when compared to unmowed sections.



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Regularly mowing perennial food plots may reduce forage production and deer use while failing to reduce coverage of weeds or improve plant nutrition.

Going forward, we recommend you consider mowing your plots once per year in late summer prior to applying the appropriate herbicide to control incoming cool-season weeds. Why spend precious time regularly mowing your perennial plots, and reducing forage availability, when you could be doing something much more productive to meet your goals and objectives? Let's say, spraying undesirable plants in old-fields, conducting forest stand improvement, or even going fishing!

Mark Turner is a Ph.D. student and Bonner Powell is a master's degree student at the University of Tennessee working under the direction of Dr. Craig Harper. Mark's research is investigating how nutritional carrying capacity and land use influence deer morphometrics across the eastern United States. Bonner's research focuses on effects of management on early successional plant communities. Craig is a professor of wildlife management and the Extension Wildlife Specialist at the University of Tennessee. Craig conducts programming and directs research primarily related to applied habitat management for white-tailed deer and other wildlife.