



# Using a Summer Stockpiling System to Extend the Grazing Season

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## Introduction

For many years, stockpiling fall pasture for winter grazing has been a common practice used to extend the grazing season in Virginia. However, the need for pasture to graze in fall often limits the amount of acreage that can be set aside to stockpile for winter grazing. This occurs despite an overabundance of spring pasture growth, which is commonly harvested as pasture hay or clipped to promote late summer growth. Summer stockpiling, a novel practice developed at the Shenandoah Valley Agricultural Research and Extension Center, enhances a producer's ability to maximize fall stockpiled acreage and consistently extends the grazing season into winter.

Essentially, summer stockpiling involves deferred stocking of livestock on a portion of cool-season pasture during spring and summer to accumulate standing forage for mid- and late-summer grazing (fig. 1).



Figure 1. Cattle graze a new allotment of summer stockpile. (Photo by David Fiske.)

In addition to reducing the acreage that needs grazed during the spring flush, when there is often an overabundance, the late-summer grazing afforded by summer stockpiling can enable fall stockpiling of other pastures for winter grazing. The following protocol for summer stockpiling tall fescue was developed by Virginia Tech researchers and has been used for more than 20 years at the Shenandoah Valley Agricultural Research Center to reliably extend their grazing season to more than 270 days annually.

## Summer Stockpiling Procedure

**Step 1, from April to mid-July. Select pasture to be summer stockpiled and exclude livestock from it (fig. 2).**

Defer grazing on approximately 25% of total pasture acres (about 0.5 acre per cow) while rotationally grazing livestock on the remainder of the acreage through spring and summer. Stockpiled forage may be mowed in spring if desired to manage weeds or promote vegetative growth, however, this should be weighed against the risk that dry conditions might limit growth after mowing. It is fine to allow forage to mature without any grazing or mowing. While a spring application of nitrogen fertilizer to the summer stockpile could increase the final yield, the yield response to nitrogen is highly weather dependent and might not be economical in some years and conditions.

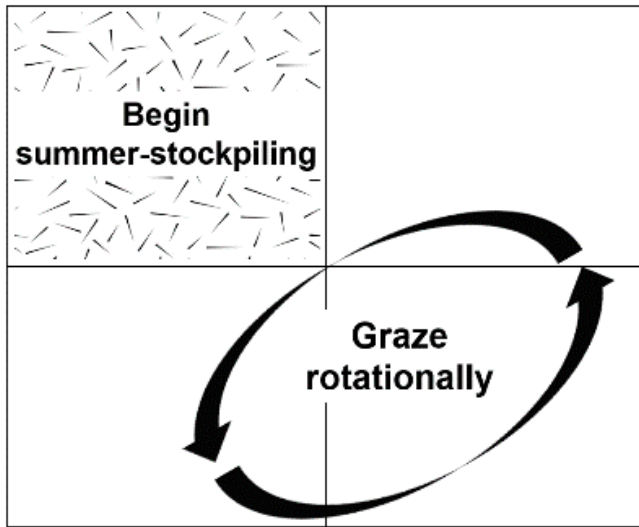


Figure 2. Step 1 management calendar, April to mid-July (squares represent relative proportions of total pasture acreage).

**Step 2, from mid-July to mid-August continue to summer stockpile the previously selected pasture and prepare 50% of total acres for fall stockpiling (fig. 3).**

Typical preparation for fall stockpiling includes grazing or clipping sometime in August and, in some cases, applying nitrogen fertilizer. The summer stockpile area will mature and begin to accumulate leafy growth from the crown of the plant. By August, any stems and seed heads that are present will dry down and begin to deteriorate.

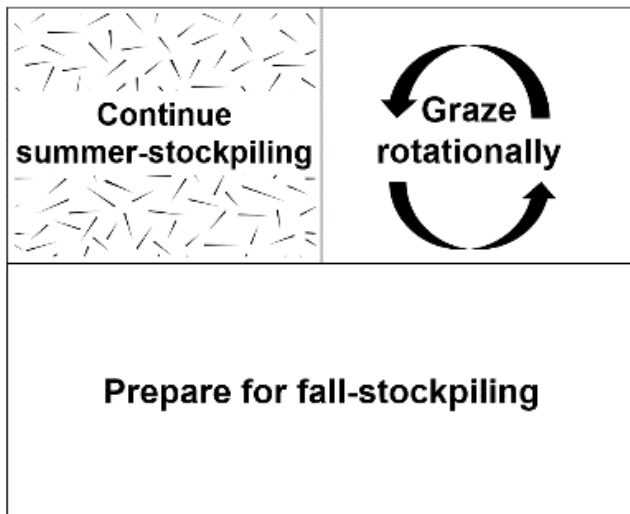


Figure 3. Step 2 management calendar, mid-July to mid-August (squares represent relative proportions of total pasture acreage).

**Step 3, from mid-August to mid-October. Begin strip grazing the summer-stockpiled forage in mid-August while resting all other pastures (fig. 4).**

Like grazing fall stockpiled forage, a high stocking density (typically around 50,000 pounds liveweight/acre) made possible by strip grazing is critical to efficiently use summer stockpiled forage (fig 5). It also maximizes the number of grazing days obtained from the stockpile. Use temporary electric wire and step-in posts to allocate two or three days of forage. Animals can backgraze toward the water source without permanent damage to plants because of the slow re-growth of grazed plants and the long recovery period that can follow. One-half acre of standard, strip grazed, summer stockpiled forage is needed to provide 1.5 to 2 months of grazing for a mature cow during late-summer/early-fall.

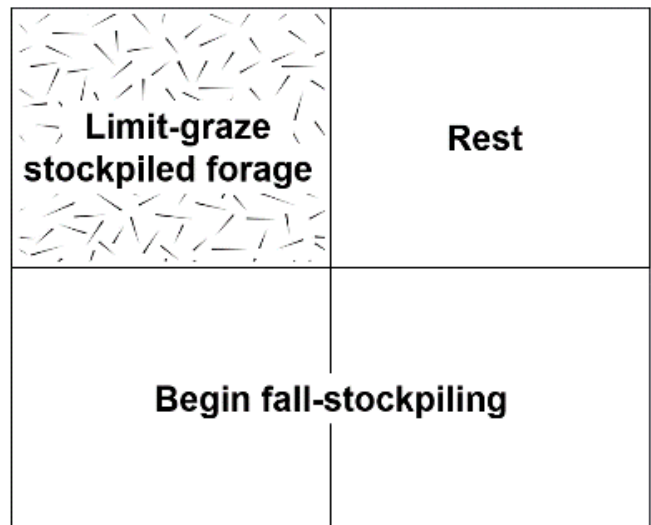


Figure 4. Step 3 management calendar, mid-August to mid-October (squares represent relative proportions of total pasture acreage).



Figure 5. Limit (strip) grazing with temporary electric fencing enables high forage utilization (mid-September). (Photo by Gabe Pent.)

**Step 4, from mid-October to December. Once the summer stockpile has been depleted, limit graze the rested pasture that was not dedicated to fall stockpiling (fig 6).**

Additional grazing on the summer stockpile may also be possible depending on how quickly regrowth occurs. Continue resting the fall-stockpiled forage.

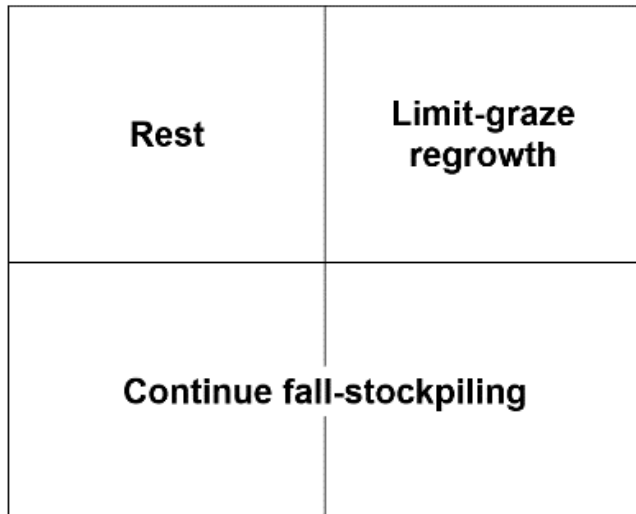


Figure 6. Step 4 management calendar, mid-October to December (squares represent relative proportions of total pasture acreage).

**Step 5, from December to February. Begin limit grazing (strip grazing) the fall-stockpiled pasture (fig. 7).**

When 50% of pasture acres are fall-stockpiled, this system has consistently extended the grazing season 60 days longer than the conventional grazing season. One acre of standard strip-grazed, fall-stockpiled forage is needed to provide 1.5 to 2 months of grazing for a mature cow during early winter.

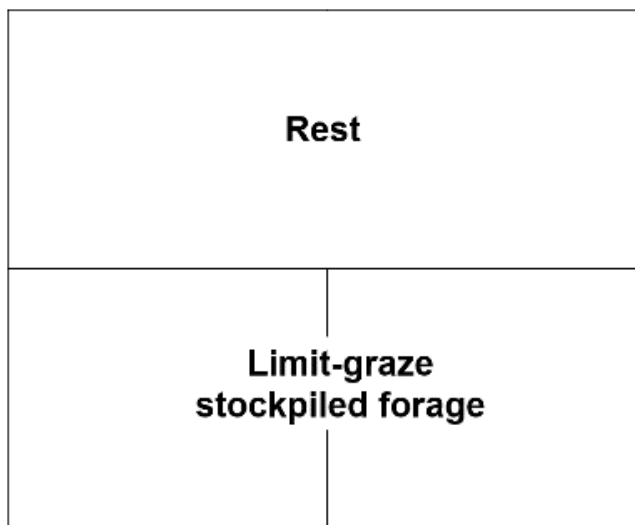


Figure 7. Step 5 management calendar, December to February (squares represent relative proportions of total pasture acreage).

## Forage Yield

Several studies conducted at the Shenandoah Valley Agricultural Research and Extension Center provide a starting point for understanding the potential yield and forage quality of summer-stockpiled, tall fescue-based pasture (Hickman 2013; Langford 2020; Booher, Benner, and Fiske 2016). In the studies, dry matter yields varied from approximately 2.75 to 4 tons per acre, providing roughly 50 to 60 days of grazing per year, depending on rainfall and temperature. While spring fertilization with nitrogen sometimes increased yield, the yield response was very dependent on weather. Many producers are interested in harvesting a spring hay cutting prior to initiating summer stockpiling, and this can work as long as growing conditions after hay harvest are favorable. However, one large benefit of summer stockpiling without nitrogen or any kind of mowing or clipping is that it can produce dependable yields with very few inputs. Another benefit of summer stockpiling without any mowing or clipping is that it preserves habitat for ground-nesting grassland bird species, many populations of which are threatened in Virginia.

## Forage Nutritive Value

In one study, nutritive value was measured using a fistulated steer grazing summer stockpiled pasture (fistulated animals are fitted with a device to allow sample collection of only that forage selected by the grazing animal). Crude protein (CP) of the forage selected by the steer ranged from 10% to 14%, while total digestible nutrients (TDN) measured 58% to 67%. Another study reported summer stockpiled forage that tested between 10%-19% CP and 61-73% TDN depending primarily on rainfall. Study results also suggest that both spring fertilization with nitrogen and spring hay harvesting may improve the CP and TDN of summer-stockpiled pasture in summers with adequate rainfall. The forage quality reported by these studies exceeds the required nutrition for dry cows and closely matches or even exceed the needs of lactating cows (fig. 8).



Figure 8. Lactating beef cows graze mature summer stockpile in August. (Photo by Matt Booher.)

Fescue toxin levels were also measured to assess the potential for increased risk of toxicosis to livestock. Results indicated high toxins (up to 1,200 ppb ergot alkaloids) in the forage. However, similar toxin levels were measured in surrounding tall fescue fields that had not been summer stockpiled. Fertilization with nitrogen would be expected to consistently increase fescue toxin levels in summer-stockpiled pasture.

## Animal Performance

A study of fall calving cows on summer-stockpiled tall fescue fields found cow body weight and condition declined slightly (about 99 pounds and 0.7 body condition scoring [BCS] point over a 52-day treatment period, with calving occurring around the midpoint of the study). This is similar to what is typically experienced under other, nonstockpiled and nonstrip-grazed management practices. Subsequent conception rates and calf weaning weights were also comparable to conventional grazing systems where summer stockpiling is not practiced (Langford 2020). While not considered in

these studies, growing or finishing livestock on summer stockpile would likely require energy and possibly protein supplementation to ensure adequate performance. It would be prudent when strip grazing any class of livestock with higher nutrient demands (e.g., cows that are nursing calves, replacement heifers, etc.) to balance the desire for increased forage utilization with the need for adequate nutrition. In other words, consider moving temporary fencing more frequently or providing access to a larger area to ensure adequate forage intake and allow animals to select higher quality forage.

## Costs and Returns

Producers should consider the opportunity cost of not grazing or harvesting pasture while it is stockpiling, as well as the labor cost of moving temporary fencing to limit graze summer-stockpiled pasture. Despite these drawbacks, many operations find summer stockpiling to be an achievable method to significantly reduce winter feed costs by extending the grazing season.

By using summer stockpiling as part of a system to enable fall stockpiling of pasture, the Shenandoah Valley Agricultural Research and Extension Center has extended its grazing season by 30-60 days per year at an estimated cost savings of \$1.39 per cow for every day of grazing (based on a hay cost of \$115 per ton).

## Other Considerations

Many livestock producers have concerns related to pink eye when grazing cattle on mature forage such as stockpiled summer pasture. While any irritation or injury to the eye can increase the likelihood of pink eye infection in cattle, there have not been any research studies that indicate tall grass or seed heads contribute to the incidence or spread of the disease. Some producers have observed that clipping pastures often results in short, tough stubble that — when compared to long stems — is less easily pushed aside with the muzzle of a grazing animal.

An additional concern of some producers is that summer stockpiling can suppress legumes such as white clover, or it may permit some weeds to thrive and set seed while grazing is being deferred. It is strongly recommended to rotate the location of summer stockpile paddocks each year to prevent any possible negative impacts to long-term pasture species composition. This same approach is also recommended for fall stockpiled pastures. Pastures that are grazed close during winter offer excellent seed-to-soil contact and are therefore particularly good candidates for frost-seeding legumes to ensure their continued presence in the grazing system.

## Summary

Summer stockpiling tall fescue can be a valuable technique for storing excess cool-season pasture growth during the spring and summer to provide forage for mid- and late-summer grazing. When used as part of a grazing system, summer stockpiling can enable fall stockpiling of other pastures for winter grazing. The forage quality of summer-stockpiled tall fescue is variable and weather dependent, but in general it is adequate to support dry and lactating mature beef cattle.

## Acknowledgments

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