

Utilizing Urease Inhibitors for Stockpiling Fescue

Penrose, C.*¹, McCutcheon, J.², Landefeld, M.³

1. Extension Educator, Ohio State University Extension, PO Box 179, McConnelsville, OH, 43756
2. Extension Educator, Ohio State University Extension, 871 W. Marion Rd. Mt. Gilead, OH, 43338
3. Extension Educator, Ohio State University Extension, 101 N.Main St. Woodsfield, OH 43793

Abstract

Stockpiling fescue with urea fertilizer to extend the grazing season is a viable option for many producers. The addition of 100 lbs./acre of urea (46 lbs. nitrogen) can increase yield and crude protein. One problem with this practice is the possibility of not having an adequate rainfall with 48 hrs. and the volatilization of the urea. The addition of urease inhibitors such as Agrotain® can reduce volatilization. In a 2014 replicated study, urea (46 lb./acre) with Agrotain® (four qts./acre) was compared with urea only (46 lb./acre) and no treatment (control). There was 0.59 in. rain within 72 hours which reduced the volatilization of the urea. Results indicated a trend toward higher yields with the treatments; significant increases ($P < 0.05$) in crude protein with the treatment; and no significant differences in ADF ($P < 0.05$) with the treatments. If there is concern about adequate rainfall when applying urea, a urease inhibitor may be a good option. The closer an adequate rain event occurs to the application of urea, the less likely the need will be for the addition of a urease inhibitor.



Background

Many studies have demonstrated that one way to improve the quality and yield of fescue is to apply nitrogen (N) when stockpiling is initiated. Urea is the most common form of N used for stockpiling in most areas, but the biggest risk is applying the urea, then not getting a rain allowing much of the nitrogen to be lost by or evaporating (volatilizing) in warm, dry conditions before it has a chance to react with the soil. Volatilization losses may be reduced if a urease inhibitor is used with the urea. The most common urease inhibitor is NBPT (N-(n-butyl) thiophosphoric triamide) sold under the trade name Agrotain® (Agrotain International) (Schwab, G., & Murdock, L., 2010). In Southeast Ohio, studies and demonstrations have been conducted to evaluate quality and quantity of stockpiling cool season grasses such as fescue.

The purpose of this study was to determine if the addition of a urease inhibitor can increase yield and quality of stockpiled fescue.

Agrotain® N Plots



Methods

- Study initiated August 8, 2014
- Plot size was 6 x 20 feet
- Treatments with four replications
 - No urea, no urease inhibitor (control)
 - 100 pounds urea per acre
 - 100 pounds urea per acre with four quarts Agrotain®/ton of urea
- Harvested December 3, 2014
- Location: Eastern Agricultural Research Station, Caldwell, Ohio

Results

Table 1. Yield and quality of stockpiled fescue *

	ADF%	CP%	Lbs. Dry Matter/Acre
Control	41.38	6.77 A	2,369
Urea	41.23	8.53 B	3,147
Urea with inhibitor	39.37	8.31 B	3,210
PR>F	0.4631	0.0446	0.0964

*Means with the same letter are not significantly different

Conclusion

Stockpiling cool season grasses and in particular fescue can reduce our need for stored forages and in many cases it is higher quality than the hay we make. The addition of adding nitrogen, approximately 50 #/acre when stockpiling is initiated can increase yields and quality. Finally, if there is any doubt about rainfall after applying urea, a urease inhibitor such as Agrotain® is a good option. Several cattle producers in our area have tried it with success and research from University of Kentucky (Schwab, G., & Murdock, L., 2010) confirms it improves yields. Research will continue to determine how the addition of a urease inhibitor will impact yield and quality during extended periods of no rain.

Recommendations

- The addition of nitrogen such as urea can increase quality and yields of stockpiled fescue.
- If rain is expected within 48 hours, apply urea only.
- If rainfall is uncertain, consider adding an urease inhibitor such as Agrotain®.

