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PASTURE

Should You Fertilize Native Grass Pastures and Hayfields?

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Effect of fertilizer rate on yield and profitability ranking of native grass at two Oklahoma locations (two-year average 2008-09).



We get quite a few questions each year on the feasibility and profitability of fertilizing native grass. Long-held wisdom states that it is not profitable to fertilize native grass. With that in mind, I conducted a research trial in 2008-09 to study the issue.

Treatment (N-P-K)	Location		Profitability Ranking
	Pottawatomie Co., Oklahoma	Carter Co., Oklahoma	
	Yield (pounds of dry matter forage per acre)*		1= most profitable 5 = least profitable
0-0-0	2,536 D	1,504 B	1 A
50-0-0	3,674 C	2,213 B	3 A
50-50-0	4,648 AB	3,720 A	4 A
100-0-0	4,014 BC	2,161 B	5 B
100-50-0	5,212 A	4,024 A	2 A

*Yields followed by the same letter are not statistically different at the 5 percent level of probability.

THE TEST

The test was conducted at two locations with native grass: one in Carter County, Oklahoma, and one in Pottawatomie County, Oklahoma. Both sites had low phosphorus levels according to the soil tests, which is very

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common in native grass fields in the Southern Great Plains.

Five fertilizer treatments (shown in the table) with varying rates of nitrogen and phosphorus were applied in the spring of each year of the two-year study and replicated three times at each location. The plots were not fertilized in the third year of the study but were harvested to determine if there was a carryover effect from fertilization. An economic analysis was conducted to determine the economic viability of the treatments.

RESULTS

Native grass responded very well to fertilizer, especially phosphorus. In addition, plots fertilized with phosphorus produced significantly more forage than unfertilized plots or plots only fertilized with nitrogen one year after fertilization ceased. The carryover effect lasted only one year in this study.

There was no difference in profitability between the fertilization treatments except for the treatment fertilized with 100 pounds of nitrogen per acre and no phosphorus. This treatment was significantly less profitable than the others.

For more information on this study, a fact sheet from the Noble Research Institute can be found at www.noble.org/globalassets/docs/ag/pubs/soils/nf-so-12-02.pdf

Since there is economic risk in applying fertilizer, we generally do not recommend applying fertilizer unless there is a significant advantage to doing so. Therefore, the general recommendation of not fertilizing native grass is correct in most instances.

This will vary depending upon fertilizer and cattle prices. At least two findings can be gleaned from this study:

1. If there is sufficient land area available to run the number of cattle desired, do not fertilize native grass. Economic analysis showed that not fertilizing native grass was as profitable as applying fertilizer, according to soil test results.

2. If a rancher needs to increase carrying capacity and does not have introduced species such as bermudagrass available to fertilize, an application of 50 pounds of nitrogen per acre, plus the amount of phosphorus and/or potassium recommended from soil test results, can significantly increase the carrying capacity of the land for a growing season if sufficient rainfall occurs to allow the grass to fully utilize the fertilizer (assuming that a desired native grass community is present). Proper grazing management must be incorporated into this plan to ensure that overgrazing does not occur. 🐮



Fertilizer warehouse in Grandfield, Oklahoma.