

## SOILS

# Is Fertilizing Native Grass Profitable?

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**A high** percentage of the grazing land in our area is native grass. Most ranchers do not fertilize native grass because it is widely thought that it is unprofit-

able to do so. In fact, one of the appealing characteristics of native grass systems is that they do relatively well with minimal inputs.

We conducted a study examining the effects of fertilizing native grass on yield and profitability in 2008-2009, with locations in Carter and Pottawatomie counties, Oklahoma.

Soils at both locations did not need lime or potash, but soil tests showed very low phosphorus. Five fertilizer rates were replicated three times at each location: 0-0-0, 50-0-0, 50-50-0, 100-0-0 and 100-50-0 per acre. We mimicked a

system where the grass was cut for hay in early July and then grazed to a 6-inch stubble height after frost. Forage quality measurements (crude protein and total digestible nutrients) were analyzed for each cutting. Yields and profitability ranking are shown in Table 1.

Fertilizing native grass resulted in large increases in yield. At both locations, 50 pounds of nitrogen per acre yielded the same as 100 pounds

protein or total digestible nutrient levels in the forage when harvested in the manner we did.

As can be seen in Table 1, all treatments were equally profitable except for 100-0-0 per acre, which was less profitable than the other fertilizer rates tested. This seems to justify the decisions of most ranchers to not fertilize native grass, since it is usually inadvisable to spend money and increase risk to achieve the same

profitability as doing nothing. However, if soil test phosphorus levels were high and no phosphorus was needed, the fertilizer systems are more profitable.

We are currently evaluating the test to see if there are carryover

effects from the fertilizer treatments. The plots were fertilized in 2008 and 2009, and have not been fertilized since. The plots were harvested in 2010, and the plots that received

Table 1. Effect of fertilizer rate on yield and profitability ranking of native grass at two Oklahoma locations (two-year average 2008-09)

Treatment	Location		Profitability Ranking 1= most profitable 5 = least profitable
	St. Louis, Okla.	Ardmore, Okla.	
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.

of nitrogen per acre. It was essential to apply phosphorus along with the nitrogen to optimize yields on these low phosphorus soils. Fertilizing native grass did not greatly affect crude

## SOILS

phosphorus (P) in 2008-09 yielded significantly more than any of the other treatments. The plots were harvested again in 2011 and there were no yield differences in any of the plots, but overall yields were very low due to severe drought. We will continue to harvest the plots each year

until yield differences between plots disappear. If there is a long-term carryover effect of fertilization, it could revise the conclusions about the profitability of fertilizing native grass.

In short, not fertilizing native grass is probably the correct decision in most instances. It may be

advisable to fertilize native grass in certain situations, such as if a rancher needs to increase carrying capacity and only has native grass as a forage base. In these cases, choose the most productive soils and apply 50 pounds of N per acre, plus phosphorus according to soil test results. ■