

Result Demonstration Report

2011 Soil Fertility Comparison Study in Bermuda Grass Pastures

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Cooperator

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Summary:

Fertilizers have been proven to be an effective method to increase forage yields and nutrient value of warm season grasses. Today, there are numerous choices for producers to make when determining what soil fertility to use.

Objective:

The objective of this result demonstration was to compare the different fertilizers for total yield and nutrient value of bermuda grass pastures and the economics of each.

Materials and Methods:

Materials used for this experiment were as follows; Conventional Fertilizer I, Conventional Fertilizer II, Poultry Litter, Poultry Litter plus 50 units of Ammonium Nitrate, Poultry Litter plus 50 units of Urea, Liquid Task Force 2 (11-8-5), Liquid Super Foliar (30-10-10), Parker Organic, and Control. The trial was a completely randomized block design replicated three times. Rates for the fertilizers are listed in Table I. The plots were 10 feet wide by 15 feet long. A one foot square was harvested from the plots, weighed and a laboratory analysis performed to determine protein, Acid Detergent Fiber (ADF) and Total Digestible Nutrients (TDN) twenty-eight (28) days after fertilizer application. The 2011 fertility plots were harvested one (1) time to simulate one (1) hay cutting per year due to the extreme drought conditions in Wood and surrounding counties. Due to the extreme drought conditions, the trials were fertilized one time and a laboratory analysis was conducted one time. The 2009 and 2010 fertility test plots were harvested three (3) times to simulate three (3) hay cuttings.

Table I. 2011 Fertilizer and Rates Used in Study

Fertilizer	1st Harvest Rate
Conventional Fertilizer I (30-0-20)	475 lbs/acre
Conventional Fertilizer II (30-0-20) for 1st and 2nd Harvest.	316 lbs/acre
Poultry Litter	2 tons/acre
Poultry Litter Plus Urea (50 units of nitrogen)	2 tons/acre poultry litter plus 109 lbs/acre of 46-0-0
Poultry Litter Plus Ammonium Nitrate (50 units of nitrogen)	2 tons/acre poultry litter plus 147 lbs/acre of 34-0-0
Parker Organic	30 gallons/acre of product plus 20 gallons of water/acre
Task Force Liquid 2 Liquid (11-8-5)	3 quarts/acre
Super Foliar Liquid (30-10-10)	12.5 lbs/acre
Control	0

Results and Discussion:

2011 was an extremely hot and dry year. Wood and surrounding counties were in extreme drought conditions. Wood County has received only 1/3rd of normal rainfall. The research plots were harvested 1-time. Only the first harvest was sent to the laboratory for analysis. There was not enough forage growth to warrant a second harvest. The test plots did not produce enough forage for a laboratory analysis. Lack of moisture, high heat, and grasshopper damage was noted in the test plots. Table I list the fertilizer and rates used in the study. Table II list the average yield, average tons, average protein, average ADF and average TDN for different fertilizers. Table III list the average cost per application and total cost for one application. Table IV list total yield for 1st harvest, lbs/acre, tons, bales/acre, average protein, cost/ton, and cost per 1000 lb. bale.

Table II. 2011 First Harvest Average Yield, Average Tons, Average Protein, Average ADF and Average TDN for Different Fertilizers.

Fertilizer	Ave. Yield (DM lbs/acre)	Ave. Tons /Acre	Ave. Protein	Ave. ADF	Ave. TDN
Conventional I	1400.8	0.7	16.5	30.5	63.8
Conventional II	1266.5	0.63	16.4	32.5	62.3
Poultry Litter	1065	0.53	12	34.3	59.3
Poultry Litter Plus Urea (50 units of nitrogen)	1525.6	0.76	16.2	31.5	62.9
Poultry Litter Plus Ammonium Nitrate (50 units of nitrogen)	1333.7	0.67	16.9	31.4	63.3
Parker Organic	690.8	0.35	12.9	33	60.6
Task Force Liquid 2 Liquid (11-8-5)	585.3	0.30	13.1	32.6	60.9
Super Foliar Liquid (30-10-10)	585.3	0.30	12.1	33.6	59.9
Control	498.9	0.25	8.6	35.8	56.9

Table III. 2011 Average Cost per for One Application

<u>Fertilizers</u>	<u>Cost (\$)/ Acre/Treatment</u>	<u>Total Cost for one Application /Acre</u>
Conventional I	1st Treatment =\$118.75	\$118.75
Conventional II	1st Treatment = \$79	\$79
Poultry Litter	\$70	\$70
Poultry Litter Plus Urea (50 units of nitrogen)	1st Treatment Poultry Litter \$70 plus Urea =\$23.44	\$93.44
Poultry Litter Plus Ammonium Nitrate (50 units of nitrogen)	1st Treatment Poultry Litter \$70 plus Ammonium Nitrate = \$33.08	\$103.08
Parker Organic	\$35	\$35
Task Force Liquid 2 Liquid (11-8-5)	\$13.50	\$13.50
Super Foliar Liquid (30-10-10)	\$14.90	\$14.90

Table IV. Total Yield for 1st Harvest, Lbs/Acre, Tons, Bales/Acre, Average Protein, Cost/Ton, and Cost per 1000 Lb. Bale.

Fertilizer	Total Yield Lbs/Acre (1 harvest)	Total Tons/Acre	Total Bales/acre (1000 lbs)	Average Protein	Cost/Ton	Cost per Bale (1000 LBS)
Conventional I	1400.8	0.7	1.4	16.5	\$169.64	\$84.82
Conventional II	1266.5	0.63	1.27	16.4	\$125.40	\$62.70
Poultry Litter	1065	0.53	1.07	12	\$132.08	\$66.04
Poultry Litter Plus Urea (50 units of nitrogen)	1525.6	0.76	1.53	16.2	\$122.95	\$61.47
Poultry Litter Plus Ammonium Nitrate (50 units of nitrogen)	1333.7	0.67	1.33	16.9	\$153.85	\$76.93
Parker Organic	690.8	0.35	0.69	12.9	\$100	\$50
Task Force Liquid 2 Liquid (11-8-5)	585.3	0.30	0.59	13.1	\$45	\$22.50
Super Foliar Liquid (30-10-10)	585.3	0.30	0.59	12.1	\$49.67	\$24.83
Control	498.9	0.25	0.50	8.6	\$0.00	\$0.00

Conclusion:

Fertilizers have been proven as the key to improve forage production. This is the third year of the applied research project. 2011 was an extremely dry year. Wood and surrounding counties were under extreme drought conditions. The research plots received very little rainfall. Extreme heat, lack of rainfall, and grasshopper infestation prevented the second harvest. The 2011 data mimics low yields in Wood and surrounding Counties.

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