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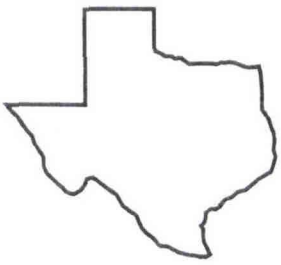

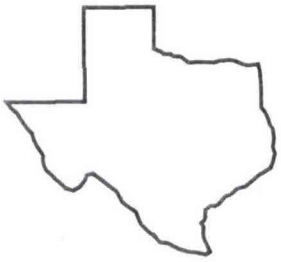

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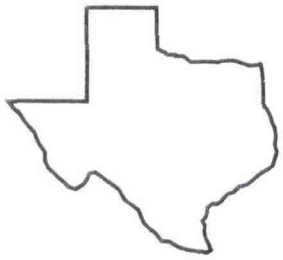

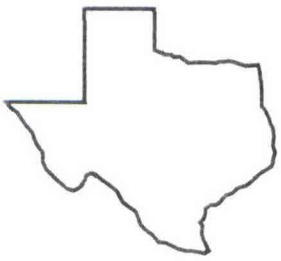

1994 Research Center Technical Report No. 94-1

Texas Agricultural Experiment Station • Edward A. Hiler, Director
The Texas A&M University System • College Station, Texas

COMPARISON OF POULTRY LITTER VS. COMMERCIAL FERTILIZER

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Background. The poultry industry in Texas generates over 1.2 million tons of poultry litter (manure + bedding) a year. Most of the poultry litter is applied to permanent pasture as fertilizer. Its economic value as a fertilizer will depend on its nutrient content which is quite variable due to poultry house management, type of litter, number of batches of birds since last clean out, and other factors. Poultry litter has additional advantages besides the nitrogen (N), phosphorus (P), and potassium (K) content. It contains other minor elements such as calcium, sulfur, magnesium, boron, copper, zinc, and iron. Calcium helps maintain a neutral soil pH. The added organic matter improves water and nutrient holding capacity of the soil. A 2-year study was conducted at the Texas A&M University Agricultural Research and Extension Overton Center comparing 0, 100, 200, and 400 lb N/acre with single and split applications of 4 and 8 tons of poultry litter per acre. Nitrogen fertilizer applications were split into a late spring and mid-summer application with phosphorus and potassium added in a N-P-K ratio of 3-1-2. Poultry litter rates were applied in late spring or split between late spring and mid-summer.

Research Findings. There was a 10% yield advantage to applying all the poultry litter in late spring vs. splitting it into two equal application in 1992 (Table 1). Temperature and moisture conditions are more favorable for Coastal bermudagrass growth in May and June than July and August. Applying all the poultry litter in late spring allowed more plant nutrients available to the grass during the period of optimum bermudagrass growth. Applying 8 tons (344 lb available N) and 4 tons (172 lb available N) of poultry litter in late spring produced similar yields as applying 400 and 200 lb of commercial N fertilizer in split applications. Nitrogen use efficiency, lb forage produced per lb N applied, decreased as N rate increased.

Poultry litter used in 1993 contained only 42 lb available N/ton which made the 8 and 4 ton rate similar to the 200 and 100 lb N rate. As in 1992, applying poultry litter in a single spring application instead of two split applications produced higher yields and N use efficiency (Table 2).

Application. Coastal bermudagrass produced similar yields regardless if the N was supplied by commercial N fertilizer or poultry litter. When fertilizing warm-season perennial grasses such as bermudagrass and bahiagrass, poultry litter should be applied in a single spring application instead of split applications during the growing season. Additional benefits of using poultry litter are that it contains additional plant nutrients besides N, P, and K and some of the

N is in organic form which is more slowly released.

Table 1. Comparison of poultry litter and commercial fertilizer on Coastal bermudagrass production in 1992.

Treatment	Available N[1]	Yield	N efficiency[2]
	---lb/acre---	----------lb DM/acre----------	
8T PL	344	9811 a[3]	14.6
400 N	400	9636 ab	12.2
4T + 4T PL	344	8850 bc	11.8
200 N	200	8679 c	19.5
4T PL	172	8324 cd	20.6
2T + 2T PL	172	7576 de	16.3
100 N	100	7137 e	23.6
0	-----	4774 f	-----

[1] A ton of poultry litter contained 71 lb N, 115 lb P, and 77 lb K, assumed 60% availability of N first year.

[2] Yield/lb available N-yield difference between treatment and control (no N) divided by available N.

[3] Yields followed by the same letter are not significantly different at 0.05 level, Waller-Duncan MRT.

Table 2. Comparison of poultry litter and commercial fertilizer on Coastal bermudagrass production in 1993.

Treatment	Available N[1]	Yield	N efficiency[2]
	---lb/acre---	----------lb DM/acre----------	
400 N	400	10,458 a[3]	16.0
8T PL	258	9,274 b	20.2
200 N	200	8,294 c	21.2
4T + 4T PL	258	7,838 cd	14.7
4T PL	129	7,451 d	26.3
2T + 2T PL	129	6,927 e	22.3
100 N	100	6,446 e	23.9
0	----	4,052 f	-----

[1] A ton of poultry litter contained 42 lb N, 32 lb P, and 48 lb K, assumed 60% availability of poultry litter N from this year and 10% from last year.

[2] Yield/lb available N: yield difference between treatment and control (no N) divided by available N.

[3] Yields followed by the same letter are not significantly different at 0.05 level, Waller-Duncan MRT.