ALFALFA ECONOMICS FROM FOUR YEARS OF PRODUCTION ON COOPERATING STAKEHOLDER RANCHES IN THE SARE PROGRAM

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Background. In 1999, alfalfa was established on five or more acres on four stakeholder ranches. Ranches were located in Gregg, Smith, Cherokee, and Anderson counties. A fifth site was located on the Kilgore College Farm in Rusk County. Site selection criteria included evaluation for good soil drainage and aeration, subsoil pH of 5.5 or higher in the 6-12, 12-24, 24-36, and 36-48-inch depths, and agreement of cooperators to participate in evaluation of alfalfa production and to fence of the site. The Southern Sustainable Agriculture Research and Education Program provided funds to establish and maintain alfalfa on these sites. In return, stakeholders agreed to harvest the alfalfa at 10% bloom and they would own the produced hay.

This study was initiated in June, 1999. Soil samples were collected from the 0-6-inch depth at each site and analyzed for pH and plant nutrient levels including boron (B). Each site was limed to pH 6.8-7.0 using ECCE 100% limestone in mid-summer, fertilized according to Texas Agricultural Experiment Station recommendations based on soil tests, and the soil was disked to incorporate the lime and fertilizer and to kill existing bermudagrass. Where the soil tested low in phosphorus (P), potassium (K), and B, 120 lb P_2O_5, 120 lb K_2O, and 3.5 lb of B were applied per acre along with sulfur (S) and magnesium (Mg) for establishment of alfalfa. If the soil tested in the medium range for P, the P_2O_5 rate was lowered to 80 lb/acre. Sulfur and Mg at 40 and 20 lb/acre, respectively, were applied in the pre-plant fertilizer blend to ensure an adequate supply of these plant nutrients. Bermudagrass regrowth and volunteer annual ryegrass were sprayed with Roundup® where needed. Sites were seeded to 'Amerigraze 702' on one half and to 'GrazeKing' on the other half using a Tye drill after sufficient rainfall was received to germinate and support seedling growth. Adequate rain was received in late Nov. and seeding of all sites was done in early Dec., much later than the normal mid-Oct. seeding date. Alfalfa was sprayed with Poast Plus to control grass and with Pursuit to control broadleaf weeds. Alfalfa weevil was sprayed using Sevin XLR Plus in the initial years and with Fury in later years. Lady Beetle controlled aphids, and Malathion or Sevin XLR Plus was used for control of alfalfa leafhopper on two sites in one year. After the second harvest, we added additional K at the rate of 120 lb K_2O/acre. After the fourth harvest we added additional K, S, and Mg at rates of 120 lb K_2O, 30 lb S, and 15 lb Mg from muriate of potash (0-0-60, KCl) and KMag (0-0-22-11Mg-22S).

Immediately before each harvest, we collected yield-estimate samples from four random locations in each variety at each ranch by clipping alfalfa at two inches above the soil surface in a

1-meter square quadrant. Samples were dried and yield estimates for each of four production years were determined based on 12% moisture hay. The economics for hay production were computed each year and for the four-year total production.

Research Findings. Net income on three of the four ranches was highest the second growing season (Table 1). The greatest annual projected net return was $351.68/acre on the Griffin Ranch in year two, followed by $328.86/acre in year three on the 7-P Ranch where annual net return remained above $300/acre in year four. Second-year net return on the Kilgore College Farm was $-47.31 due to a declining stand where the bottomland sandy soil became excessively wet in a high rainfall early growing season. Total net return for the first four years, with alfalfa hay valued at $135/ton and establishment costs prorated over four years, was estimated to be $988.91/acre on the Griffin Ranch, $1,206.04/acre on the 7-P Ranch, $894.66/acre on the Taylor Ranch, and $517.68/acre on the Riley Ranch. For 1½ years of production on the Kilgore College Farm, net income was $124/acre with establishment costs prorated over two years.

Application. Results from these on-farm alfalfa production evaluations indicate the good economic potential for growing and marketing alfalfa on carefully selected soils. Alfalfa, carefully managed as a hay crop, has the potential to pay for good land on the Coastal Plain.

Table 1. Establishment costs; annual hay value, production expenses, and net return; and total net return from four years of alfalfa production on cooperating stakeholder ranches in the SARE program.

Input/Returns by Year for Four Years	*Griffin Ranch*	*Prud'homme 7-P Ranch*	*Taylor Ranch (Threlkeld)*	*Riley Ranch*	*Kilgore College*
	$/acre				
Establishment Costs, 1999	232.28	252.63	326.13	352.65	250.71
2000					
Hay Value†	676.35	599.40	546.75	544.05	604.80
Production Expenses	387.91	318.98	327.24	375.03	433.05
Net Return	288.44	280.42	219.51	169.02	171.75
2001					
Hay Value†	720.90	700.65	664.20	621.00	319.95
Production Expenses	369.22	422.32	376.29	381.95	367.26
Net Return	351.68	278.33	287.91	239.05	(-47.31)‡
2002					
Hay Value†	461.36	703.69	534.16	241.25	
Production Expenses	339.34	374.83	347.39	342.23	
Net Return	122.02	328.86	186.77	(-100.98)§	
2003					
Hay Value†	489.00	608.41	485.90	506.42	
Production Expenses	262.23	289.98	285.43	295.83	
Net Return	226.77	318.43	200.47	210.59	
Four-Year Net Return	988.91	1206.04	894.66	517.68	124.44‡

† Includes production costs, custom hay harvesting and hauling, interest, and overhead (machinery and equipment, land, and 5-year prorated establishment costs; alfalfa valued at $135/ton of 12% moisture hay)

‡ Stand terminated after severe decline in density due to excessively wet soils

§ Only two hay harvest estimates due to extended grazing periods- net return does not account for cattle weight gain