

## COMPARISON OF NET RETURNS FROM ALTERNATIVE PRODUCTION SYSTEMS FOR ALFALFA GROWN ON ACID HUMID-REGION SOILS

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**Background.** Anticipated enterprise profitability is a major consideration when making planting decisions. Developing budgets in which costs and returns are estimated for alternative production strategies is an important part of the farm planning process. This paper presents the results of preparing enterprise budgets for several scenarios producers might consider when establishing alfalfa in a humid region with acid soils. Budgets include estimates of revenues that result from selling alfalfa and bermudagrass as hay. Costs are segmented into establishment, production and overhead.

**Research Findings.** Variations in initial growing conditions and planting strategies over the first three years of production demonstrate the range of costs and net returns that can be expected from growing alfalfa in East Texas. Results in Tables 1 and 2 illustrate the economic impact of row spacing (9", 18" and 27") and initial soil fertility levels (low, medium and high) on production costs and profitability. Establishment costs vary between \$290/ac and \$330/ac depending on the level of fertilization required. Annual production costs range from \$300/ac to \$380/ac, and depends primarily on lime and fertilizer requirements during the first three years of production. Estimated net returns range from \$250/ac to \$442/ac or \$40/ton to \$81/ton of hay during this period.

Results indicate that the 9-inch row spacing option is the most profitable alternative planting strategy in terms of estimated net returns per ton of hay produced during this three-year period, regardless of the beginning soil fertility level. Cost per ton was fairly constant, so variations in net returns are a function primarily of changes in the value of forage produced. Value of forage produced depends directly on the total amount of forage produced, the proportion of bermudagrass and alfalfa produced, and the prices of these forages as hay.

**Application.** Producers should strongly consider using a narrow row spacing and planting on more fertile soils when establishing a stand of alfalfa. Narrow row spacing results in higher yields of alfalfa relative to bermudagrass in the first few years following establishment; therefore, more revenue may be generated early in the life of the stand. Producers are cautioned to follow recommendations based on soil tests to insure pH is adjusted to 7.0 and there are adequate levels of nutrients such as phosphorus, potassium, calcium (from lime), magnesium, sulfur, and boron. Results point to the importance of planting on more fertile soils at the outset in order to diminish fertilizer and lime requirements and decrease production costs.

**Table 1. Summary of Alfalfa Hay Production Costs Per Ton of Hay, by Row**

System		Total Cost of Production/Ton			
		3-year Total	Year 1	Year 2	Year 3
Rows	Fertility				
9"	Low	\$181.06	\$61.49	\$59.12	\$60.45
18"	Low	\$180.40	\$61.26	\$58.69	\$60.45
27"	Low	\$179.72	\$59.71	\$59.01	\$61.00
9"	Medium	\$173.53	\$58.16	\$57.14	\$58.23
18"	Medium	\$172.91	\$57.95	\$56.73	\$58.23
27"	Medium	\$172.34	\$56.55	\$57.04	\$58.75
9"	High	\$157.15	\$51.18	\$52.46	\$53.51
18"	High	\$156.63	\$51.01	\$52.11	\$53.51
27"	High	\$156.24	\$49.92	\$52.37	\$53.95
System		Net Returns/Ton			
		3-year Total	Year 1	Year 2	Year 3
Rows	Fertility				
9"	Low	\$200.19	\$53.61	\$72.51	\$74.07
18"	Low	\$184.95	\$45.70	\$65.18	\$74.07
27"	Low	\$171.10	\$40.45	\$59.32	\$71.33
9"	Medium	\$207.72	\$56.94	\$74.49	\$76.29
18"	Medium	\$192.44	\$49.01	\$67.14	\$76.29
27"	Medium	\$178.49	\$43.61	\$61.30	\$73.58
9"	High	\$224.11	\$63.92	\$79.18	\$81.01
18"	High	\$208.71	\$55.94	\$71.76	\$81.01
27"	High	\$194.58	\$50.24	\$65.97	\$78.37