

Staff Report

ACCEPTANCE OF PERENNIAL PEANUT HAY
BY FLORIDA HORSEMEN

By

Robert L. Degner and J. David Locascio

Staff Report 15

November 1988



FLORIDA

AGRICULTURAL MARKET RESEARCH CENTER

FOOD AND RESOURCE ECONOMICS DEPARTMENT

Institute of Food and Agricultural Sciences

University of Florida

Gainesville, Florida 32611

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Food and Resource Economics Department
Institute of Food and Agricultural Sciences
University of Florida, Gainesville, Florida 32611

ABSTRACT

This research determined the current marketing environment for perennial peanut hay among horse owners. A telephone survey of 100 horse owners was conducted. Approximately 3,205 tons of hay were fed to 3,139 horses during the previous year. Coastal and alfalfa hay made up nearly 80 percent of total survey volume. Alfalfa averaged \$6.90 per 60 pound bale, and coastal hay averaged \$2.45 per 50 pound bale.

Nearly 90 percent of participating horse owners had no previous experience with perennial peanut hay. Most have never used perennial peanut hay, either because they had never heard of it or because there was not a ready supply to be purchased. Only four of the 100 horse owners expressed a negative reaction towards trying perennial peanut hay.

Assuming perennial peanut hay's production costs are similar to alfalfa's, the breakeven price would be approximately \$2.90 per 60 pound bale, given yields of 4.6 tons per acre. Survey respondents utilizing 64 percent of total alfalfa volume and 60 percent of total hay volume expressed a willingness to pay up to \$4.00 per bale for perennial peanut hay. Based on these projections and respondents' overall positive attitudes towards using perennial peanut hay, it appears that perennial peanut hay production could be a profitable north Florida crop.

Key Words: perennial peanut hay, horses, livestock, feed

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For more information about the Center, contact:

Dr. Robert L. Degner, Director
Florida Agricultural Market Research Center
1083 McCarty Hall
University of Florida
Gainesville, FL 32611
(904) 392-1845

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SUMMARY

*IFAS and USDA researchers have been working on the development of a new hay variety, perennial (rhizoma) peanut hay, which is felt to be a very acceptable substitute for alfalfa hay. Research shows promise for successfully growing perennial peanut hay on well drained Florida soils and has developed to the point where research plots have averaged 4.6 tons of hay per year over four years, after an approximate two-year establishment period on good sites with good management.

*A survey of horse owners was conducted by personnel of the Florida Agricultural Market Research Center to: (1) determine varieties of hay preferred by Florida horse owners and prices paid for hay; (2) determine the present usage of alfalfa hay and perennial peanut hay; and (3) estimate potential market acceptance of perennial peanut hay at various price levels.

*The 100 horse owners surveyed fed approximately 3,205 tons of hay to 3,139 horses during the previous year. Coastal Bermuda and alfalfa hay represented nearly 80 percent of the hay fed. The average cost of alfalfa was \$6.90 per 60 pound bale, compared with \$2.45 per 50 pound bale for coastal.

*Nearly 90 percent of those surveyed had no previous experience with perennial peanut hay. Most of these respondents have never used perennial peanut hay because they had never heard of it or because there was not a ready supply to be purchased. Given that perennial peanut hay was reasonably priced and readily available, only four of the 100 horse owners expressed a negative reaction towards trying perennial peanut hay.

*Survey respondents utilizing 64 percent of total alfalfa volume and 60 percent of total hay volume expressed a willingness to pay a minimum of \$4.00 per bale for perennial peanut hay. This is about \$133 per ton. Assuming a breakeven price of \$60 to \$70 per ton and survey respondents' overall positive attitude towards using perennial peanut hay, it appears that perennial peanut hay production could be a profitable north Florida crop.

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Acceptance of Perennial Peanut Hay
by Florida Horsemen

by

Robert L. Degner and J. David Locascio

INTRODUCTION

Florida's horse population exceeds 314,000 and generates a cash flow in excess of \$600 million per year. Most of Florida's horses are fed hay for a four- to five-month period each year. In addition, many show and performance horses are fed hay year 'round. In the not so distant past, the general consensus among horse owners was that the high protein content of hays such as alfalfa and clover (legumes) was hard on a horse's kidneys. It was also believed that high calcium levels in legumes (versus grasses) caused improper bone development. Today, however, due to advances in horse nutrition, it is felt that the high protein and calcium levels of legumes, coupled with their palatability, contribute most to hay's value in many horse feeding programs. Through advanced horse husbandry research and education, high quality alfalfa hay has become the hay of choice at many race tracks and show barns and to serious hobbyists (Baltensperger, Ott, Johnson and Prine).

Florida produces in excess of 718,500 tons of hay each year on nearly 280,600 acres by over 5,500 growers. However, little alfalfa hay is produced in Florida. Only about 20,500 tons of alfalfa are produced each year in Florida, on 8,300 acres by just over 300 growers (1982 Census of Agriculture). Consequently, most alfalfa hay fed in Florida is shipped in from out of state. The cost of quality alfalfa hay is commonly two and a half times the amount paid for quality grass hays (on a per pound basis). High shipping costs are one reason for alfalfa hay's higher cost.

Alfalfa's greater cost is also attributed to higher priced seed and greater fertilizer requirements. Even so, many horse owners continue to purchase higher priced alfalfa hay because of its superior nutritional qualities.

IFAS and USDA researchers have been working on the development of perennial (rhizoma) peanut hay, a legume introduced from Brazil, which appears to be a very acceptable substitute for alfalfa hay. In tests conducted at the University of Florida, perennial peanut hay was found to have a protein content of 10 to 18 percent, compared with 12 percent for alfalfa. Perennial peanut hay had slightly higher levels of calcium and phosphorus than alfalfa hay (Table 1). Digestible energy is similar for perennial peanut hay and alfalfa hay (Baltensperger, Ott, Johnson and Prine).

Table 1.--Nutrient concentration of alfalfa vs. perennial peanut hays.^a

Hay Type, Quality Level ^a	Digestible Energy	Protein	Calcium	Phosphorus
	(Mcal/Lb.)	(-----Percent-----)		
Alfalfa 1	1.0	12.0-15.0	1.20	0.25
Alfalfa 2	1.0	15.0-18.0	1.20	0.25
Alfalfa 3	1.1	18.0-21.0	1.50	0.30
Rhizoma Peanut 1	1.0	10.0-12.0	1.50	0.28
Rhizoma Peanut 2	1.0	12.0-14.0	1.50	0.28
Rhizoma Peanut 3	1.1	14.0-18.0	1.70	0.35

^aThree quality levels of the two hay types were evaluated: 1 - low quality, 2 - medium quality, and 3 - high quality.

Source: Baltensperger, D., E. Ott, E. Johnson and G. Prine. Hay for Horses, Agronomy Research Report 85-1, Department of Agronomy, Agricultural Experiment Station, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, Florida. September 1984.

Research shows promise for successfully growing perennial peanut hay on well drained Florida soils. Research plots have averaged 4.6 tons of hay per year over four years after an approximate two-year establishment period (Prine, Dunavin, Moore and Roush). One drawback to producers may be the required lengthy establishment period. The perennial peanut must be sprigged, and establishment typically takes up to two years depending on the planting rate and management. Careful management is required to control competition from weeds. Approximately 1,000 acres of perennial peanut hay are being commercially produced in Florida (Wake, French, Spreen and Prine). Research is still needed regarding the most profitable production practices, marketing considerations and feeding practices.

OBJECTIVES

The overall objective of this study was to determine the extent of awareness and use of perennial peanut hay among horse owners in north-central Florida. The study also sought to ascertain horse owners' attitudes toward perennial peanut hay.

Specific objectives were to: (1) determine the varieties of hay preferred by Florida horse owners and their relative costs; (2) determine the present usage of alfalfa hay and perennial peanut hay; and (3) estimate potential market acceptance, including amounts consumers would be willing to pay, for perennial peanut hay.

PROCEDURES

It was assumed that persons most likely to try perennial peanut hay would be those who presently use alfalfa hay. Alfalfa hay is mainly used by owners of show or performance horses and by serious hobbyists. An

attempt was made to target this group of horse owners. One hundred horse owners were randomly selected from a total of 1,060 on the Equine Newsletter mailing list, an IFAS publication that reaches a broad spectrum of horse enthusiasts. Horse owners were interviewed by telephone in December 1986. Those contacted who did not own horses at the time of the survey were replaced with randomly selected alternates so that all 100 survey participants were current horse owners. Although a larger sample would have been desirable, resources were inadequate for a more extensive effort.

FINDINGS

Horse Breeds

A total of 3,139 horses were owned by the 100 persons surveyed. Sixty-five percent (2,036) of horses owned were thoroughbreds, 16 percent (508) Quarter horses, 14 percent (453) Arabians, and five percent (142) miscellaneous breeds (Table 2). Miscellaneous breeds included Palominos, Paints, Appaloosas, Buckskins, Standardbred, Morgans, Tennessee Walkers, Pasofinos, Clydesdales, mixed breeds, ponies and others.

Table 2.--Number of horses owned by survey participants, by breed.

Breed	Owners	Total Horses	Horses	Horses per Owner
	(-----Number-----)	(Percent of Total)	(Average Number)	
Thoroughbred	40	2,036	65	51
Quarter	38	508	16	13
Arabian	20	453	14	23
Other ^a	40	142	5	4
Totals	100 ^b	3,139	100	31.4

^aOther includes Palamino, Paint, Appaloosa, Buckskin, Standard Bred, Morgan, Tennessee Walker, Pasofino, Clydesdale, etc.

^bThis column does not sum to 100 due to multiple responses; i.e., some owners owned several different breeds.

Thoroughbred owners tended to have the most horses. Thoroughbred owners each averaged 51 thoroughbreds. Arabian owners averaged 23 Arabians, and Quarter horse owners averaged 13 Quarter horses. Owners of horses categorized in the "other" category had the fewest horses, an average of four each. Overall, 40 survey respondents owned Thoroughbreds, 40 owned Quarter horses, and 20 owned Arabians. The number of persons owning particular breeds sums to over 100 due to persons owning more than one breed. On an individual basis, Thoroughbreds were the predominant breed for 32 of the 100 horse owners, Quarter horses for 29 owners, and Arabians for 16 owners. Twenty-two of the owners had predominant breeds which were included in the "other" category (Table 3).

Table 3.--Number of survey participants, by predominant breed owned.

Horse Type	Farms (Number)
Thoroughbred	32
Quarter	29
Arabian	16
Other ^a	22
Unknown	<u>1</u>
Total	100

^aOther includes Palamino, Paint, Appaloosa, Buckskin, Standardbred, Morgan, Tennessee Walker, Pasofino, Clydesdale, etc.

Survey respondents were categorized into three size groups according to the number of horses they owned. Fifty-two percent of the horse owners owned one to nine horses, 22 percent owned 10 to 25 horses, and the remaining 26 percent owned 26 or more horses (Table 4).

Table 4.--Average hay consumption, by farm size.

Size Category, Head	Owners (Number)	Hay Fed to Horses (Average Tons per Year)
Small, 1-9	52	8
Medium, 10-25	22	21
Large, >25	26	97

Seasonality of Hay Feeding

All horse owners fed hay during December, January and February (Table 5). Ninety-six percent fed hay in March, 88 percent in April, and 87 percent in November. Over half fed their horses hay on a year 'round basis. The number of owners feeding hay during the May through October

period ranged from a low of 58 percent in July and August to 63 percent in October.

Table 5.--Owners feeding hay to horses, by month.

Month	Fed Hay	Did Not Feed Hay	Total
	(-----Percent-----)		
January	100	0	100
February	100	0	100
March	96	4	100
April	88	12	100
May	69	31	100
June	59	41	100
July	58	42	100
August	58	42	100
September	59	41	100
October	63	37	100
November	87	13	100
December	100	0	100

Hay Consumption and Variety

Horse owners estimated that slightly over 3,200 tons of hay were fed to their 3,139 horses during the past year. Owners of small operations each fed an average of eight tons of hay to their horses during the previous year, medium-sized farms 21 tons, and large farms 97 tons (Table 4). Overall, the 100 horse owners showed a clear preference for square bales over round (Table 6). Square bales were used by 78 percent of the owners and for 87 percent (2,497 tons) of total survey volume. Only 12 percent of owners used round bales (375 tons) and 10 percent used both square and round bales (333 tons). The proportions of farms using round bales were approximately the same for all size categories.

Table 6.--Quantities of hay fed to horses in the previous year, by bale type.

Bale Type	Hay	
	(Tons)	(Percent of Total)
Square	2,497	78
Round	375	12
Both	<u>333</u>	<u>10</u>
Total	3,205	100

Coastal Bermuda ("Coastal") hay was the most popular type in the survey, both in the number of owners feeding it to their horses and in overall tonnage fed during the previous year. Fifty-two percent of the 100 horse owners surveyed used Coastal hay and fed their horses about 1,700 tons (53 percent of total volume) during the previous year (Table 7). Alfalfa hay was the second most popular. Although 42 owners fed their horses alfalfa hay, alfalfa made up only 26 percent of total volume (approximately 819 tons). Coastal and alfalfa hays combined made up nearly 80 percent of survey volume. The remainder of the survey volume was fairly evenly split between Timothy (nearly 180 tons or six percent of total volume), clover (182 tons or six percent of total volume), and miscellaneous hay types (234 tons or seven percent of total volume). Miscellaneous varieties included Alescia, Common Bermuda, Bahia, Pangola, Cali, and various mixes. Coastal hay users each fed their horses an average of 33 tons per year, alfalfa users 20 tons, and Timothy users 16 tons. Only two survey respondents had used perennial peanut hay in the last year. Their combined total of about a quarter of a ton of perennial peanut hay made up less than one-tenth of one percent of the total survey volume.

Table 7.--Hay fed to horses during the past year, by type.

Type	Total Tonnage		Users	Tons per User
	(Number)	(Percent of Total)	(Number)	(Average)
Coastal	1,703	53	52	33
Alfalfa	819	26	42	20
Clover	182	6	3	61
Timothy	178	6	11	16
Perennial Peanut	-- ^a	-- ^a	2	-- ^a
Other ^a	234	7	30	8
Unknown	89	3	<u>N.A.</u>	<u>N.A.</u>
Total	3,205	100 ^b	--	32

^aApproximately one-quarter ton of perennial peanut hay, amounting to less than one-tenth of one percent of the total, was fed by survey respondents. The average of about 250 pounds is virtually meaningless.

^bOther includes Alecia, Bermuda, Bahia, Pangola, Cali and various mixes.

^cDoes not sum to 100 due to rounding.

Hay Origin and Prices Paid

Most of the hay used by the surveyed horse owners was purchased, and not grown on their farms. Ninety-five percent of 42 alfalfa users purchased hay, as did over 90 percent of 52 coastal users, about 80 percent of the Timothy users, and two-thirds percent of the 30 using miscellaneous types (Table 8). Two of the three clover users grew their own, as did one of the two perennial peanut users. The other perennial peanut hay user traded goods for the hay.

Alfalfa was clearly the most expensive of all types surveyed, averaging \$231 per ton or \$6.90 per 60 pound bale equivalent, approximately 12 cents per pound (Table 8). Clover and Timothy were very similar, averaging \$170 and \$164 per ton, respectively. Coastal hay, the choice of most horse owners surveyed, averaged \$98 per ton or \$2.45 per 50

pound bale equivalent. Averaging about five cents per pound, coastal hay was significantly cheaper than all other types.

Table 8.--Sources of hay and prices paid per ton, by type of hay.

Type	Users			Average Price per Ton of Purchased Hay
	Purchasing Their Hay	Growing Their Hay	Total	
	(-----Percent-----)	(Number)	(Dollars)	
Alfalfa	95	5	42	231
Coastal	91	9	52	98
Timothy	82	18	11	164
Perennial Peanut	50 ^a	50	2	--
Clover	33	67	3	170 ^b
Other	33	67	30	116

^aOne person traded goods for perennial peanut hay and could not give a fair market value.

Experience with Perennial Peanut Hay

Including the two horse owners who were using perennial peanut hay at the time of the survey, only 13 of the 100 survey participants had previously fed perennial peanut hay to their horses (Table 9). Seven of the 13 said they would use it again, and six said they would not (Table 10). Of those not willing to use perennial peanut hay again, two said it had too much protein, two said they grew other types of hay, and one said it was too expensive (Table 11).

Table 9.--Previous experience with perennial peanut hay.

Respondents	Percent
Used in the Past	13
Never Used	<u>87</u>
Total	100

Table 10.--Past users' willingness to use perennial peanut hay again.

Respondents	Number	Percent
Will Use Again	7	54
Will Not Use Again	<u>6</u>	<u>46</u>
Total	13	100

Table 11.--Past users' reasons for not wanting to feed perennial peanut hay again.

Reason	Responses	
	(Number)	(Percent)
Too Much Protein	2	33
Grow Other Species	2	33
Too Expensive	1	17
No Answer	<u>1</u>	<u>17</u>
Total	6	100

Eighty-seven of the 100 horse owners surveyed had never tried perennial peanut hay. Eighty-five of the 87 answered questions concerning their reasons for never using perennial peanut hay. Thirty-five of the 85 (41 percent) said they had never used perennial peanut hay because they had never heard of it (Table 12). One-fourth said they never used perennial peanut hay because it was not readily available. About one-fifth were reluctant to try something new. Four said they grew other

types of hay. Two said perennial peanut hay had too much protein, one said too much potassium, and another said "quality" was lacking.

Table 12.--Reasons why non-users have never tried perennial peanut hay.

Reason	Responses	
	(Number)	(Percent of Total)
Unaware of It	35	41
Unavailable	21	25
Traditional Feeding Program	16	19
Too Expensive	5	6
Grow Other Species	4	5
It Has Too Much Protein	2	2
It Has Too Much Potassium	1	1
Poor Quality	<u>1</u>	<u>1</u>
Total	85 ^a	100

^aTwo of the total 87 non-users did not respond to this question.

Horse owners were asked what their initial impression was toward trying perennial peanut hay (Table 13). Overall, only four of the 100 horse owners answering the question reacted unfavorably. Fifty-eight were favorably predisposed toward feeding perennial peanut hay to their horses, and 37 were neutral.

Table 13.--Overall reactions to using perennial peanut hay.

Reaction	Responses
	(Number)
Favorable	58
Neutral	37
Unfavorable	4
No Answer	<u>1</u>
Total	100

Willingness to Buy at Various Prices

Horse owners were asked whether or not they would consider buying perennial peanut hay at several price levels. Prices started at \$8.00 per 60 pound bale and went down to \$3.00 in one dollar increments (Table 14). At \$8.00, only 13 expressed a willingness to consider perennial peanut hay, but at \$5.00 per bale, nearly half were interested. At \$4.00, 60 percent were willing to buy it, and at \$3.00, the percentage increased to slightly over 70 percent.

Table 14.--Overall willingness to purchase perennial peanut hay at various prices.

Price per Bale	Positive Responses	Cumulative Responses ^a			Total
		Positive	Negative	Undecided	
(Dollars)	(Number)	(-----Percent-----)			
8	13	13	87	0	100
7	6	19	81	0	100
5	27	47	52	1	100
4	13	60	37	3	100
3	11	71	23	6	100

^aTwenty-three respondents were unwilling to buy perennial peanut hay at any price.

Total volumes of hay presently purchased by those willing to purchase perennial peanut hay at various prices is also an indication of the potential demand for perennial peanut hay. Total alfalfa purchased by those willing to purchase perennial peanut hay at various prices is also reported because perennial peanut hay is felt to be a good substitute for alfalfa hay. The 13 respondents willing to pay \$8.00 per bale for perennial peanut hay presently use only 64 tons of alfalfa, eight percent

of total alfalfa volume, and 145 tons of all hay types, five percent of total survey volume (Table 15). The 19 persons willing to pay \$7.00 per bale purchased 140 tons of alfalfa, 17 percent of total alfalfa volume, and 239 tons of all hay types, eight percent of total survey volume. The 47 persons willing to pay \$5.00 per bale purchased 346 tons of alfalfa, 43 percent of total alfalfa volume, and 1,536 tons of all hay types, 51 percent of total survey volume. The 60 persons willing to pay \$4.00 per bale purchased 515 tons of alfalfa, 64 percent of total alfalfa volume, and 1,836 tons of all hay types, 60 percent of total survey volume. The next 11 respondents, those willing to use perennial peanut hay at \$3.00 per bale, bought no alfalfa, but they did buy about 2,130 tons of hay of all types. There were 23 respondents not willing to purchase perennial peanut hay at any price; they purchased 287 tons of alfalfa, 36 percent of total alfalfa volume, and 909 tons of all hay types, 30 percent of total survey volume.

Table 15.--Annual hay purchases of respondents willing to buy perennial peanut hay at various prices.

Price per 60 Pound Bale	Percent ^a Willing to Buy	Cumulative Proportions and Tonnages of Total Survey Hay Volume			
		Alfalfa		All Types	
(Dollars)	(Percent)	(Percent)	(Tons)	(Percent)	(Tons)
8	13	8	64	5	145
7	19	17	140	8	239
5	47	43	346	51	1,536
4	60	64	515	60	1,836
3	71	64	515	70	2,131
<u>--</u> ^b	<u>--</u> ^b	<u>36</u>	<u>287</u>	<u>30</u>	<u>909</u>
--	--	100	802	100	3,040

^aBased on 100 respondents; six owners who purchased a total of 17 tons of alfalfa and 165 tons of all types of hay were undecided as to whether or not they would buy perennial peanut hay at any price.

^bTwenty-three respondents were unwilling to buy perennial peanut hay at any price.

SUMMARY AND CONCLUSIONS

Survey Highlights

The 100 horse owners surveyed owned a total of 3,139 horses, and they estimated that they fed approximately 3,200 tons of hay during the previous year. All owners fed their horses hay during December, January and February, and over half fed their horses hay on a year 'round basis.

A majority of owners fed Coastal Bermuda hay. Fifty-two owners fed a total of 1,703 tons, 53 percent of survey volume, to their horses during the previous year. Alfalfa hay represented the second largest group using it and the second largest volume. Forty-two owners fed their horses 819 tons of alfalfa hay, 26 percent of total volume. Coastal and alfalfa hay together made up nearly 80 percent of total survey volume. Ninety-two percent of coastal users and 95 percent of surveyed alfalfa users purchased their hay.

This survey indicates that most horse owners have had no previous experience with perennial peanut hay. More importantly, two-thirds of those who have never used perennial peanut hay were not against it, but simply had never heard of it before or indicated there was not a ready supply to be purchased. Both of these crucial factors may be dealt with through education and promotion programs aimed at horse owners, perennial peanut hay producers and sales representatives.

Education programs aimed at horse owners should include information concerning feeding practices, nutritional benefits, where to buy it, and the economic benefits to be gained by using perennial peanut hay. Producers' programs should examine the most profitable production practices given soil and climatic conditions, expected economic returns, and

marketing considerations. Sales representatives should be informed of the benefits potentially derived from both sides as well as their own profit potential. Since many sales representatives are in continuous contact with both producers and consumers, they can do a great deal to promote the benefits of establishing perennial peanut hay as a less expensive substitute for alfalfa hay.

In December 1985, breakeven costs for perennial peanut hay were estimated at approximately \$98, \$73 and \$59 per ton at yields of 3, 4 and 5 tons per acre, respectively (Swisher). Experimental plots of perennial peanut hay averaged 4.6 tons per year over a four-year period (Prine, Dunavin, Moore and Roush), thus the breakeven costs were approximately \$60 to \$70 per ton given experimental yields.

In the current survey of horse owners conducted in late 1986, 60 percent of the respondents, representing 64 percent of all alfalfa hay purchases, were willing to pay a minimum of \$4.00 per 60 pound bale (\$133 per ton) for perennial peanut hay. Thus, it appears that perennial peanut hay production has the potential to be a profitable crop for north Florida farmers. However, before conducting promotional programs for the crop, updated research is needed to document production costs and likely economic returns.

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