

ALFALFA FOR BEEF CATTLE

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Alfalfa is sometimes said to be "too good" for beef cattle. Although it's nutritional value may sometimes exceed beef cows' needs, to dismiss it's potential for beef cattle would be a mistake. Alfalfa can be useful as a harvested feed or as a grazing crop.

Alfalfa is a high-protein roughage which is usually about 15-25% crude protein, over 50% TDN and high in calcium. Alfalfa and corn generally complement each other, and can form the basis for growing cattle diets. Grass hays are frequently low in protein and some alfalfa can raise the protein level ... either while it is being grown or at the time of feeding. Low quality grass hay also spends more time in the rumen during digestion than alfalfa hay (70 vs 36 hours). Therefore, animals fed some alfalfa hay can generally eat more, gain faster, produce more milk and maintain themselves in better condition.

This paper will be a brief review of some practical uses of alfalfa for cattle based on research at this station. Alfalfa can be used as (1) creep feed or creep grazing area for suckling beef calves, (2) feed during a postweaning conditioning period, (3) protein source during the growing phase, (4) grazing crop for stocker calves and (5) feed for well-milking beef cows after calving.

Creep grazing alfalfa for suckling calves

In 1996, we studied the use of alfalfa as a creep grazing area with the excess being grazed by the cows. Four groups of 12 cow-calf pairs were maintained during the grazing season on 16 acres of pasture each. Each group was grazed on Kentucky 31 or Johnstone fescue with or without 25% (4 acres) of the acreage in alfalfa. Cattle were grazed from April 19 to October 24 on these 4 systems.

Table 1. Least square means for cows and calves grazing different forage systems - 3 years (1993, 94, 95).

Item	KY 31 fescue-clover		Johnstone fescue-clover	
	Alone	w/Alfalfa	Alone	w/Alfalfa
<u>Cow data (per head)</u>				
Cows, no	36	36	36	36
Avg. gain, lb	61.9 ^a	81.1 ^a	108.8 ^b	71.3 ^a
Cow condition score ^d	4.8	5.1	4.9	4.9
Pregnancy rate, %	97	92	97	97
<u>Calf data (per head)</u>				
Calves, no	36	36	36	36
Overall gain, lb (4/19-10/24)	422.8 ^a	450.1 ^b	449.6 ^b	487.2 ^c
Adjusted 205-day wt, lb	553.2 ^a	581.1 ^b	586.3 ^b	615.2 ^c
Actual weaning wt, lb	607.6 ^a	629.9 ^a	633.9 ^{ab}	658.9 ^b
^{a,b,c} Means on the same line with different superscripts differ (P < .05).				
^d Taken at weaning - 1 = emaciated to 9 = obese.				

Calf gains and weaning weights varied among systems. Calf gains were lowest for KY 31-clover alone; intermediate for KY 31-alfalfa and Johnstone alone; and highest for Johnstone-clover with alfalfa. Calves grazing on KY 31 fescue (relatively low endophyte level) gained 27 lb more when given access to alfalfa creep. Those on Johnstone gained 37 lb more with the alfalfa creep. Since this trial lasted 3 years, it is important to calculate the additional gain over this period of time that was due to creep grazing alfalfa (Table 2).

Table 2. Calf performance for 16-acre forage systems (3 yrs).^a

Item	KY 31 fescue-clover		Johnstone fescue-clover	
	Alone	w/alfalfa ^b	Alone	w/alfalfa ^b
Calf gain, lb/acre/yr	317.1	337.6	337.2	365.4
Calf gain, lb/system/yr	5073.6	5401.2	5395.2	5846.4
Increased yearly calf gain (lb) due to substituting 4 acres of alfalfa for 4 acres of fescue	---	327.6	---	451.2
Increased calf gain for 3 years, lb	---	982.8	---	1353.6
^a Each system contained 12 cow/calf pairs per year on 16-acres divided into 4 paddocks.				
^b Four acres of a pure seeding of Alfagraz ^e was used instead of 4 acres of fescue-clover. Calves were permitted access to alfalfa via creep gates.				

Utilizing 4 acres of alfalfa instead of 4 acres of fescue-clover gave an additional 983 and 1354 lb of calf gain for KY 31 and Johnstone systems, respectively. We used alfalfa on 25% of the pasture acreage during this 3-year study. It was the observation of this author that 2 acres (12.5 %) of alfalfa would probably have been adequate for creep grazing 12 calves and the alfalfa lasted 4 years until the stand declined.

Alfalfa for preconditioning calves

A mixture of about half alfalfa and half corn can provide a good feed for weaned calves. In a trial evaluating corn/alfalfa or corn/SBM as supplements for calves, results indicated that alfalfa can be used successfully to start calves on feed after weaning.

	Supplement	
	Corn/SBM	Corn/Alfalfa
Calves, no	15	15
Initial wt., lb.	621	627
Daily intake, lb.		
Round baled hay (ad lib)	7.8	5.4
Corn	6.2	6.8
SBM	0.4	—
Soyhulls	2.5	—
Alfalfa	—	7.0
Gain, lb./day	2.0	2.2

Alfalfa for stocker calves fed corn silage

Seventy-two steers averaging 580 lb. were used in a 90-day feeding trial to evaluate different protein supplements for growing steers fed corn silage diets. Steers were allotted to four treatments: soybean meal (SBM), extruded broiler litter (EBL), ground alfalfa hay or urea. Steers were provided *ad libitum* intake of corn silage-ground corn diets supplemented with their respective protein source. All diets were formulated to contain 11.0% crude protein and 73.5% total digestible nutrients for a predicted average daily gain of 2.5 lb.

Overall performance (Table 4) favored SBM, EBL and alfalfa supplementation over urea. Steers receiving the alfalfa-supplemented diets had the greatest daily

gains. Steers fed urea gained less and were less efficient than those on the other treatments.

Table 4. Feedlot Performance of Steers Fed Corn Silage Diets <i>Ad libitum</i> with Different Sources of Supplemental Nitrogen (90 days).				
Item	Supplemental nitrogen			
	SBM	EBL	Alfalfa	Urea
Steers, no.	18	18	18	18
Pens, no.	3	3	3	3
Initial wt., lb ^a	581.1	576.9	576.8	583.1
Final wt., lb ^a	802.8	802.9	825.4	784.3
Avg. daily gain, lb ^{a,b,c}	2.47 ^b	2.51 ^b	2.76 ^c	2.23 ^d

^aShrunk weights

^{b,c,d}Means with different superscripts are different (P < .05).

Steers were fed diets with a predicted average daily gain of 2.5 lb/day. Steers receiving SBM and EBL gain as predicted. However, those receiving alfalfa gained more and those receiving urea gained less than predicted based on their N.R.C. requirements. Steers receiving alfalfa consumed more dry feed and had higher gains during the first 28 days. Steers fed urea had lower gains and were less efficient during the same period. Overall, steers receiving alfalfa had the highest gains and dry matter intake while those fed urea had the lowest gains.

Alfalfa for grazing beef steers

In 1991, a grazing demonstration was conducted at Princeton on 16 acres of alfalfa. The 16 acres was crossfenced with one strand of polywire into eight 2-acre paddocks. Grazing began on May 1 with 52 steers averaging 626 lb and continued until October 1. The 32 heaviest calves were sold on July 17 and the 20 lightest calves were retained. Fifteen calves were added on July 25. Calves were grazed on the alfalfa through the season despite hot and dry weather. The following results were obtained.

Table 5. Performance of Steers Grazing Alfalfa-1991.					
	PERIOD				
	5/1-6/4	6/4-6/17	6/17-7/17	7/18-8/27 (7/25-8/27)	8/28-10/1
Calves, no.	52	48	48	20 (15)	34
Days	34	13	30	41 (33)	34
Gain/hd, lb	35.2	53.5	28.6	126.4	44.8
ADG, lb	1.04	4.10	0.95	3.36	1.31
Gain/acre, lb	160.5	85.8	276.6	95.1	114.4
(Overall 732.4 lb/acre)					

Under optimum conditions, cattle producers can expect: a 120-180 day grazing period, 3 to 5 hd/acre stocking rate, 1.5 to 2.0+ A.D.G. and 500 to 1000 lb gain/acre. However, this requires good management, good cattle and a good growing season.

A rotational grazing system is necessary which will permit this "short duration - long rest period" grazing. Before pasturing an alfalfa field, it should be divided into several (at least 5) equal sized paddocks using temporary electric fencing - e.g. if there are 8 paddocks, all of the cattle would be placed on paddock 1 until the alfalfa is grazed down (4 or 5 days), then to paddock 2 for a similar period of time, then to 3 and so on until the cattle are back to paddock 1. By the time the cattle are back on paddock 1 (about 30 days) the alfalfa should be at the proper stage of maturity (early bloom) for grazing. Before initiating grazing, some of the field could be cut for hay so that alfalfa in the latter paddocks will not get too mature.

All paddocks should ideally open into a common lane for watering, feeding, moving cattle and for shade. A "sacrifice" paddock containing grass should also be provided for times when the regular grazing area is muddy or hasn't recovered - rather than abusing the stand of alfalfa.

Stocking rates should be adjusted to the quality and quantity of the forage - depending on thickness of the stand, age of the stand, weed infestation and fertility. A stocking rate of 1500 to 2000 lbs body weight per acre is a reasonable amount for pasture which would normally produce about 6 tons of hay per acre.

Alfalfa for beef cows

Alfalfa-grass hay is a good feed for producing beef cows. First cutting hay that is more mature or has been weather damaged can be well utilized by these cows; the best hay can be fed 30 days period to calving until about 60 days after calving.

Alfalfa hay may be used as a protein source for cattle being fed poor quality grass hay or grazing corn stalks. A small amount of alfalfa hay (5-10 lb/day) will furnish all the protein needed by these animals. Alfalfa will furnish needed protein and increase the rate of passage, allowing increased consumption and digestion of low quality forage.

If it is inconvenient to feed this small amount of hay every day, twice this amount can be fed every other day.