Alfalfa for Horses
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ALFALFA FOR HORSES

R. S. HUDSON

Grand Champion Percheron Stallion, Sir Laet 190277, in addition to a grain ration, receives alfalfa hay throughout the year.

AGRICULTURAL EXPERIMENT STATION

MICHIGAN STATE COLLEGE
Of Agriculture and Applied Science

SECTION OF FARM AND HORSE

East Lansing, Michigan

Alfalfa for Horses

R. S. HUDSON

The question is often asked, "Is Alfalfa a good feed for horses?" and "Is it a safe feed for work horses?" Though some reports on alfalfa as a horse feed have been published by the Illinois, Kansas, and Utah Stations, it has been thought best to test alfalfa with a larger number of work horses over a long period of time.

The Michigan Station for years has been urging the growing and feeding of alfalfa. The experimental work reported on corn and alfalfa as a feed for horses should be of value to Michigan farmers because alfalfa yields are not much affected by dry weather and the acreage is increasing year by year while the timothy acreage is decreasing.

On December 2, 1923, nine teams of horses weighing from 1,430 to 2,000 pounds per horse, and ranging in age from two and one-half to fourteen years were selected for a year's feeding test. One horse of each team was fed corn and alfalfa and its mate received corn, oats, and timothy. This feeding trial continued for 13 weeks to March 2, 1924, when the results for the first or winter period were reported in the Michigan Agricultural Experiment Station Quarterly Bulletin for May, 1924.

At the close of the winter period, the rations were changed so that horses which had been fed corn and alfalfa now received corn, oats, and timothy, and the timothy-fed horses were given corn and alfalfa. The object in changing the rations was to determine whether the individuality of the animals had anything to do with the results reported for the winter period. Two of the horses were sold, so that 16 of the 18 original horses continued in the test.

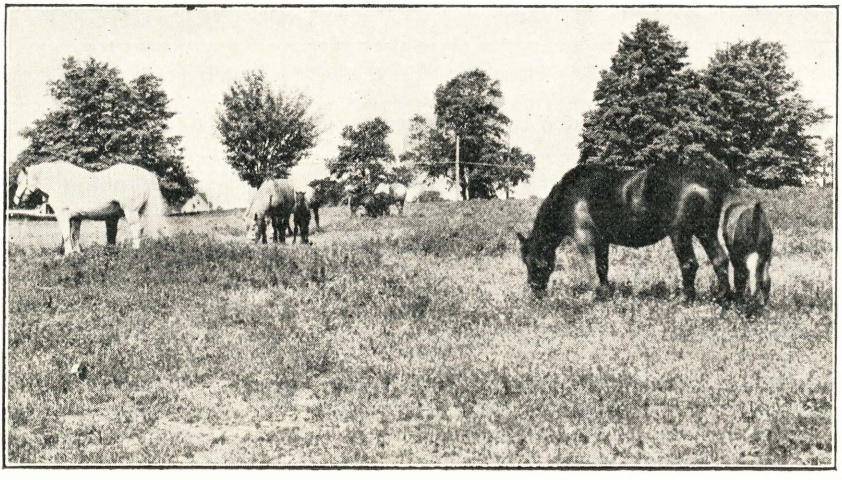

Fig. 1.—Maplegrove Leila 156680 and Coreen 117589 with foals in foreground. Two famous brood mares at Michigan State College in alfalfa pasture.

Fig. 2.—Yearling colts at Michigan State College have alfalfa pasture in summer and are fed alfalfa hay in winter.

1st PERIOD—WINTER

Table 1.—The result of the first 13 weeks test of the comparative feeding value of corn and alfalfa versus, corn, oats, and timothy.

LOT I.—CORN AND ALFALFA

Weight			Feed consumed		Cost		
Beginning	Close	Gain	Corn	Alfalfa	Total	Per head daily	Per hour of work
15,310	16,050	740	9,091	12,066	$243.50	$0.297	$0.064

LOT II.—CORN, OATS AND TIMOTHY

Weight			Feed consumed			Cost		
Beginning	Close	Loss	Corn	Oats	Timothy	Total	Per head daily	Per hour of work
14,720	14,690	30	6,049	3,921	15,601	$279.70	$0.341	$0.081

The ration received by the various horses was a constantly changing factor so far as quantity was concerned. This was due to the fact that some of the horses were doing heavier work than others. At times, some horses were idle, while, at other times, the work was heavier. The general practice in feeding was to cut the grain feed one-half when horses were idle.

Table 2.—Daily rations based on weight and work.

LOT I.—CORN AND ALFALFA

Weight of horse	Age	Kind of work	Weight of corn	Weight of alfalfa	Cost per day
1,730	5	Excavating basement	18	17	.391
1,720	5	Drawing manure	12	14	.291
1,720	5	Idle. Turned out for exercise*	6	11	.191

LOT II.—CORN, OATS AND TIMOTHY

Weight of horse	Age	Kind of work	Weight of corn	Weight of oats	Weight of timothy	Cost
1,730	5	Excavating basement	12	9	20	.459
1,700	5	Drawing manure	8	3	20	.321
1,710	5	Idle. Turned out for exercise*	6	3	16	.262

*Horses were idle only temporarily, and were liable to be called on for day's work at any time. For this reason, they were fed a little more than horses which are idle continuously.

COST BASIS**

	December	January	February	Average
Ear corn, per basket of 35 lbs	$0.35	$0.40	$0.40	$0.383
Oats, per bushel	0.50	0.50	0.52	0.506
Alfalfa, per ton	20.00	25.00	24.00	23.00
Timothy, per ton	16.00	20.00	20.00	18.66

**The above prices were local, and represent amounts paid by the College for the various feeds during the months of December' January, and February.

Table 3.—The weights and ages of horses at the beginning and at the close of the test as well as the number of days, of eight hours, worked by each horse.

LOT I — Corn and Alfalfa					LOT II — Corn, Oats and Timothy				
Name	Age	Days worked	Weight Dec. 2	Weight Mar. 2	Name	Age	Days worked	Weight Dec. 2	Weight Mar. 2
Doc	6	51	1,670	1,700	Nig	4	37	1,640	1,610
Dime	6	48.5	1,810	1,850	Duke	5	48.5	1,730	1,690
John	4	57	1,680	1,750	Jim	4	55	1,630	1,670
Harry	4	61	1,770	1,900	King	5	61	1,750	1,770
Jerry	3	49.5	1,620	1,770	Henry	3	49.5	1,670	1,590
Don	10	65	1,920	2,020	Kate	14	24	1,650	1,660
Tony	5	32	1,650	1,740	Daisy	5	32	1,600	1,550
Baldy	2½	48	1,700	1,760	Tom	5	63	1,620	1,680
Jasper	2½	60	1,490	1,540	Dexter	2½	60	1,430	1,470
Total		472	15,310	16,030	Total		430	14,720	14,690

In conclusion, the results indicate that horses may be fed corn and alfalfa as a winter ration, and that they will gain in weight and can be wintered at less cost than when fed on a ration of corn, oats, and timothy. It was a question whether these figures would hold true with horses doing the spring work on a farm. Accordingly, the same plan of feeding and records were kept for the spring months, the only difference being that the horses in Lot II received corn and alfalfa, and the horses in Lot I, corn, oats, and timothy, so that a check was made of the individuality of the horses.

2nd PERIOD—SPRING

Horses doing spring work can be maintained in weight at less cost per day when fed an alfalfa and corn ration instead of corn, oats, and timothy.

Table 4.—The result of the second 13 weeks test of the comparative feeding value of corn and alfalfa versus corn, oats and timothy.

LOT I.—CORN, OATS AND TIMOTHY

Weight			Feed consumed			Cost		
Beginning	Close	Loss	Corn	Oats	Timothy	Total	Per head daily	Per hour work
14,300	13,730	570	6,305	4,362	14,759	$266.71	.374	.06

LOT II.—CORN AND ALFALFA

Weight			Feed consumed		Cost		
Beginning	Close	Loss	Corn	Alfalfa	Total	Per head daily	Per hour work
13,330	13,310	20	9,454	12,535	$227.99	.320	.05

Table 5.—The weight and ages of horses at the beginning and at the close of the second or spring period of the test, as well the number of days of eight hours worked by each horse and the amount of feed consumed daily.

LOT I.—CORN, OATS AND TIMOTHY

Name	Age	Days worked	Weight Mar. 9	Weight June 8	Feed consumed daily			Average day cost
					Corn	Oats	Timothy	
Baldy	3	62	1,740	1,720	9	5	20	.379
Dime	7	68	1,830	1,720	9.5	7	19	.385
John	5	74.5	1,760	1,740	10	7	21	.414
Harry	5	59.5	1,900	1,800	9	6	22	.387
Don	11	73.5	2,000	1,920	6	6	19	.340
Tony	6	52	1,730	1,680	7	5	20	.341
Doc	7	61	1,720	1,630	8	6	19	.361
Jasper	3	42	1,620	1,520	9	4.5	19	.341
Total	.....	492.5	14,300	13,730	.....	.....	.....	.....

LOT II.—CORN AND ALFALFA

Name	Age	Days worked	Weights Mar. 9	Weights June 8	Feed consumed daily		Average daily cost
					Corn	Alfalfa	
Nig	5	69	1,630	1,660	13	17	.314
Duke	6	70	1,710	1,690	16	18	.361
Jim	5	74.5	1,680	1,710	15	18	.345
King	6	53.5	1,790	1,800	14	20	.362
Kate	15	45.5	1,700	1,750	8	14	.224
Daisy	6	52	1,560	1,560	11	14	.269
Tom	6	62.5	1,700	1,640	13	18	.319
Dexter	3	42	1,560	1,500	12	17	.302
Total	.....	469	13,330	13,310	.....	.....	.....

Data on rations fed to horses of various weights and doing various kinds of farm work are presented in Table 5. However, the amount fed to horses doing field work such as plowing and fitting land is practically the same as that presented in Table 2 for horses excavating basements.

Cost Basis for Spring*

Ear corn per basket of 35 lbs.	$0.38
Oats per bushel of 32 lbs.	.48
Alfalfa, per ton	20.00
Timothy, per ton	18.00

3rd PERIOD—SUMMER

The same eight teams of horses weighing from 1,500 to 1,920 pounds and ranging in age from 3 to 15 years were continued in the test. The horse in each team receiving corn and alfalfa during the spring months, continued on corn and alfalfa during this and the following period, and its mate continued on corn, oats and, timothy to determine, if possible, whether a long continued period of alfalfa feeding would in any way injure a horse.

During most of the period, the horses did farm work and general teaming that would class as medium to heavy work. The results given in Table 6 for the summer months do not look so well for corn and alfalfa as do the results reported for the winter and spring periods. The loss in weight for the corn and alfalfa fed horses during the summer is due to the reduction in weight of Kate. Kate was so fat on June 8 that she did not breathe well and she was given less feed to reduce her weight. A reduction of 200 pounds enabled her to do much harder work greatly increasing her usefulness, but did not allow a gain in weight for the group of horses fed corn and alfalfa.

The results clearly indicate that horses may be fed corn and alfalfa during the hot summer months when they are cultivating corn or harvesting grain and hay crops, and that they will do their work as efficiently and maintain their health and vigor as well as when fed a more costly ration of corn, oats and timothy.

During the summer period, the cost of feed for the corn and alfalfa fed horses still remained low as compared with that for the corn, oats, and timothy horses.

During this period, Tony, Daisy, Jasper, and Dexter were exhibited at two county fairs. This reduced the number of days worked by these particular animals, but made it that much more difficult to maintain their weight and health as they were on board cars four days of the time. None of them were sick or off feed, which further demonstrates the value and safety of alfalfa and corn.

4th PERIOD—FALL

The same animals, receiving the same feeds, were continued in the test. The methods of feeding, working, weighing, and keeping records were the same as in the three previous periods. The work largely consisted of cutting and hauling the corn crop, doing fall plowing, and general team work on the road, all of which would rank as heavy work.

The result of the 4th period, fall 12 weeks, of the comparative feeding value of corn and alfalfa versus corn, oats, and timothy as shown in Table 6 indicates that horses doing fall work can be maintained in weight at less cost per day when fed an alfalfa and corn ration in place of corn, oats, and timothy.

During this period, two animals were sick. Tony, Daisy, Jasper, and Dexter were again exhibited at two Michigan Fairs. Tony had an attack of colic while on the train and the sickness continued throughout the first night after the animals were taken to the fair grounds. Another horse, Duke, was sick one night during the period with an

attack of impaction. This kept him from working for six and one-half days. This, however, can hardly be charged entirely to the ration as Duke was the most delicate feeder of all the animals in the test. He never was a hearty feeder, always mincing his food, never licking his feed box, and always taking much time in eating what food he did consume. It must be remembered that these two animals were the only ones sick throughout the entire year. Tony received corn, oats, and timothy during the last nine months of the test. Since one horse in each lot was sick it cannot be charged that alfalfa and corn are unsafe feeds.

From the data presented in Table 1, it will be noticed that the alfalfa fed horses worked on an average of 236 days out of a possible 300, while the timothy fed horses averaged 232 days out of 300. The alfalfa fed horses made an average gain of 21 pounds each for the year, while the timothy fed horses lost an average of 17 pounds per head for the year.

The alfalfa fed horses consumed an average of 12.23 pounds of corn and 17.91 pounds of alfalfa daily while the timothy horses consumed more grain and hay, eating 8.02 pounds of corn and 6.23 pounds of oats with 19.59 pounds of timothy on the average per day.

It cost 31 cents per day for feed or 6 cents for an hour of work with the alfalfa horses, and 37 cents for feed or 7 cents for an hour of work with the timothy fed horses.

From a theoretical standpoint a ration made up of 12.23 pounds of corn and 17.91 pounds of alfalfa for a 1,670 pound horse at medium to heavy work, carries a high percentage of protein and is lacking in dry matter. It seems that the ration could be somewhat improved from this standpoint by substituting some timothy or oat straw in place of a part of the alfalfa. The substitution of oat straw would somewhat reduce the cost.

SUMMARY OF HORSE FEEDING EXPERIMENT

December 1, 1923 to November 30, 1924

Table 6.—The following shows the result of one year's test in the comparative feeding value of corn and alfalfa versus corn, oats and timothy.

CORN, OATS AND TIMOTHY

Period	Days worked	Weight beginning	Weight close	Gain	Loss	Corn	Oats	Timothy	Total	Per day	Per hr. work
Winter	430	14,720	14,690	.....	30	6,049	3,921	15,601	$279.70	$.341	$.081
Spring	492.5	14,300	13,730	.....	570	6,305	4,362	14,759	266.71	.366	.075
Summer	538.5	13,730	13,770	40	.....	6,441	5,063	14,024	266.17	.365	.061
Fall	482	13,770	12,780	10	.....	4,858	5,039	13,365	263.40	.391	.068
Total	1,943	56,520	55,970	.....	.....	23,653	18,385	57,759	$1075.98	$1.463	$.285
Average per horse	232	1,713	1,696	.....	17	8.02	6.23	19.59	$.365	$.365	$.071

CORN AND ALFALFA

Period	Days worked	Weight beginning	Weight close	Gain	Loss	Feed consumed		Total	Cost	
						Corn	Alfalfa		Per day	Per hr. work
Winter	472	15,310	16,030	720	.....	9,091	12,066	$243.50	$.297	$.064
Spring	469	13,330	13,310	.....	20	9,454	12,535	227.99	.313	.060
Summer	553	13,310	13,200	.....	110	10,375	14,573	235.75	.323	.053
Fall	463	13,200	13,315	115	.....	7,148	13,608	207.47	.308	.056
Total	1,957	55,150	55,855	.....	.....	36,068	52,782	$914.71	$1.241	$.233
						Lbs. per day	Lbs. per day			
Average per horse	236	1,671	1,692	21	.....	12.23	17.91	$.31	$.31	$.058

COST BASIS

	Corn	Oats	Alfalfa	Timothy
Winter	$.383	$.506	$23.00	$18.66
Spring	.38	.48	20.00	18.00
Summer	.55	.60	10.00	10.00
Fall	.60	.55	12.50	14.00

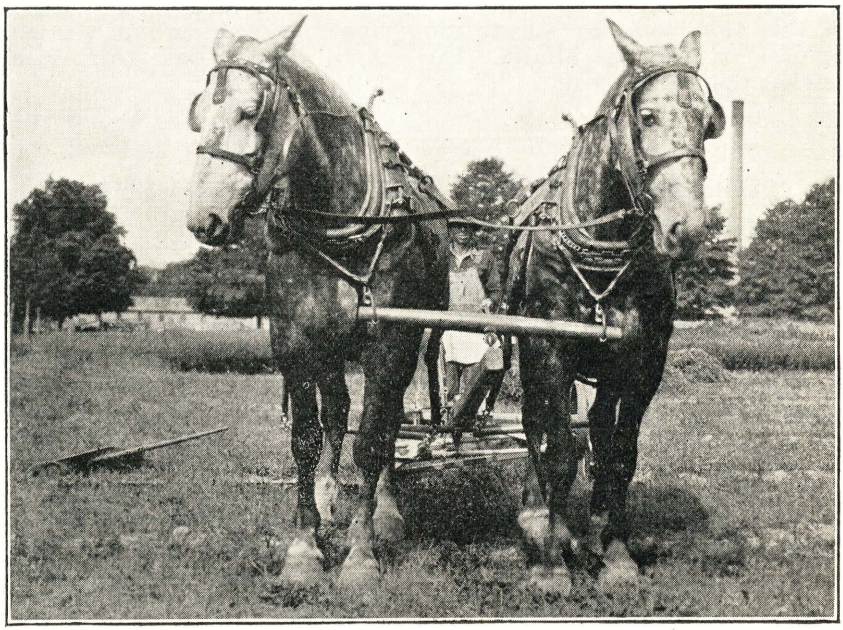

Fig. 3.—Daisy (Lot II) and Tony (Lot I) were two of the horses fed in the test.

CONCLUSION

Results reported here show that horses fed first cutting alfalfa hay and corn for one year, regardless of individuality, easily maintained their weight, health, and efficiency, doing just as much work of various kinds and at less cost than their team mates eating corn, oats, and timothy.

This test should help to overcome some of the suspicion which farmers and teamsters have had toward alfalfa as a feed for horses.

The alfalfa acreage in Michigan has increased to the extent that the state is now designated as an alfalfa State. Many farmers find a small acreage of timothy difficult to work into the rotation. In view of the results reported, there should be no hesitancy in feeding or using a greater amount of alfafa for horse hay and dropping the production of timothy out of the farm program.