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# FEEDING COLTS.

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JAMES WILSON.

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## WHOLE GRAIN VS. GROUND GRAIN AND CUT HAY.

To secure the best results in wintering weanling colts is one of the difficult problems in animal husbandry, and so important as to very largely determine the after value of the horse, and the profit or loss of horse raising. During the past winter some investigations were made by this station, with a view to securing satisfactory results and making a comparison of ground and unground feed. The colts used in making the trials consisted of six head of imported weanling filleys, two Percherons, Victoreuse (37255) 16080, and Miss (37162) 16079, two English Shires, Stuntney Victoria 3925, and Stuntney Alexandria 3924, and two French Coach Neomie 1117, and Normandie 1118. The Percherons are both grand-daughters of Gilbert 5451 (461), and the Shires and Coachers are respectively half sisters, thus making a uniform even lot. All were foaled in the spring of 1891, but the Percherons were about one month older than the others. The importation was made in 1891, and the colts reached the college farm September 24. The trial of ground and unground feed was not begun until March 1, 1892, but the feeding from October 1st is here reported, in order to give conditions for comparison, and as a feeding period of interest when considered separately.

### PRELIMINARY PERIOD.

During the months of October, November, and December, the colts were feed nine pounds each of grain per day, consisting of 4 pounds oats, 2 pounds corn, 2 pounds ground wheat or barley, and one pound of oil meal; and 14 pounds of hay, 2 pounds of cut stover (tops), 2 pounds of carrots during the first six weeks, and 5 pounds of fresh whole milk. During November the colts also had 30 pounds, each, of cooked

barley, fed warm. The following are the gains made in this period: Victoreuse 177 pounds, Miss 232 pounds, Stuntney Victoria 150 pounds, Stuntney Alexandria 172 pounds, Neomie 126 pounds, and Normandie 155 pounds.

Beginning January first, separated milk from the creamery was substituted for the whole milk and the same amount continued until the close of the preliminary period, March 1.

From January 1st to March 1st the colts were fed  $6\frac{1}{2}$  pounds each of grain per day mixed in the following proportions: Oats 150 pounds, corn 50 pounds, ground wheat 25 pounds, and oil meal 25 pounds. The forage fed during this time consisted mainly of cut stover and sheaf oats, of which about 15 pounds each were consumed per day, in addition to 3 pounds each of timothy and clover hay fed at night. The gain made from January 1st to March 1st was as follows: Victoreuse 94 pounds, Miss 85 pounds, Stuntney Victoria 85 pounds, Stuntney Alexandria 72 pounds, Neomie 75 pounds, and Normandie 75 pounds. It will be seen by putting the results together that the colts are credited with the following gains from October 1st, a few days after landing, to March 1st, when the trial of ground and unground feed began: Victoreuse 262 pounds, Miss 326 pounds, Stuntney Victoria 235 pounds, Stuntney Alexandria 244 pounds, Neomie 201 pounds, and Normandie 230 pounds. The grain ration, as will be observed, was quite moderate. None of the colts had a full feed, or all that they would have eaten of the grain. The milk was taken with great relish by all the colts as soon as they learned to drink it and, by moistening their grain ration with it for a few days, they took to it readily.

On making the change from whole milk the amount had to be reduced for a day or two to prevent scouring, a precaution which should always be observed in beginning the use of separated milk. The carrots fed appeared to give good results, and were liked by all the colts, but an attempt to substitute sugar beets when the carrots were all fed gave evidence that they were less acceptable to colts than the carrot. Several unsuccessful attempts to get the colts to eat beets were made during the winter, although they were freely eaten by the sheep and cattle.

## GROUND VS. UNGROUND FEED.

On March first the six filleys were divided into two lots—Victoreuse, Stuntney Victoria, and Neomie constituting Lot I, and Miss, Stuntney Alexandria, and Normandie, Lot II. Lot I weighed 1004, 807 and 707, respectively, aggregating 2518 pounds, and having made a gain of 245 pounds during the previous sixty days as shown by the report of the preliminary period. Lot II weighed 1010, 792, and 744, respectively, aggregating 2546, and having made a gain of 241 pounds during the previous sixty days.

The grain ration throughout the trial period was made up in the following proportions: Oats 150 pounds, shelled corn 50 pounds, barley bran 25 pounds, and oil meal 25 pounds. Lot I had the corn and oats ground, and received their grain mixed with a small amount of moistened cut hay. Lot II had the same amount and kind of grain unground, fed dry and without hay. Both lots had seven pounds per day of separated milk until March 24, when the milk from the college herd had to be sent to the boarding hall instead of the creamery, and the supply of separated milk thus cut off. On discontinuing the milk the grain ration was increased two pounds per day to each colt, and later two pounds more to the Percherons and one pound to the others. The following tables show the grain fed and gains made by the colts individually, and in lots during the test period of 79 days, extending from March 1st to May 18th, 1892:

## FEED AND WEIGHT—MARCH.

	Ground feed, with cut hay.	Unground feed.	Skim milk.	Weights, Feb. 29.	Weights, Mar. 31.	Gain in March.	Total lot gain in March.
Lot I—							
Victoreuse .....	265	....	161	1004	1072	68	....
Stuntney Victoria.....	265	....	161	807	872	65	....
Neomie .....	261½	....	161	707	768	61	194
Lot II—							
Miss.....	....	265	161	1010	1092	82	....
Stuntney Alexandria.....	....	265	161	792	848	56	....
Normandie.....	....	265	161	744	795	51	189

FEED AND WEIGHTS—APRIL.

	Ground feed with cut hay.	Unground feed.	Weights, April 30.	Gain in April.	Total lot gain in April.
Lot I—					
Victoreuse .....	423	1144	72	...	...
Stuntney Victoria.....	371	953	81	...	...
Neomie.....	371	819	51	...	204
Lot II—					
Miss.....	423	1164	72	...	...
Stuntney Alexandria.....	371	867	19	...	...
Normandie.....	371	848	53	...	144

FEED AND WEIGHTS, MAY 1ST TO 18TH.

	Ground feed with cut hay.	Unground feed.	Weights, May 18.	Gain May 1-18.	Total individual gain for period.	Total lot gain for period.
Lot I—						
Victoreuse .....	285	1161	17	157	...	...
Stuntney Victoria.....	247	984	31	177	...	...
Neomie.....	247	845	26	138	...	472
Lot II—						
Miss.....	285	1195	31	185	...	...
Stuntney Alexandria.....	247	912	45	120	...	...
Normandie.....	247	870	22	126	...	431

All weights were determined by weighing three days in succession (the day preceding and the day following the date given in tables) at the same hour and under, as nearly as possible, the same conditions each day. The coarse feed eaten, as near as could be estimated, was 15 pounds of mixed clover and timothy hay per day by the Percherons, 13 pounds by the Shires, 12 pounds by the Coachers, and 3 to 4 pounds each of cut stover per day in addition. Each lot had the same amount of hay and stover. The colts were stabled at night in good roomy box stalls and had the run of an adjoining yard during the day. Salt was within reach of each colt

all the time. The grain eaten by the two lots varied only  $3\frac{1}{2}$  pounds during the period—the amount left by Neomie on March 30. This was the only instance in which any feed was left. All of the colts were in good health, and thrifty.

It will be seen from the table that lot 1, on ground feed, gained 472 pounds during the period, while lot 2 gained 431 pounds on the same feed unground, showing a difference of 41 pounds in favor of grinding. In the sixty days feeding, previous to the test period, the colts that were in lot 1 gained 245 and those in lot 2 gained 241, a difference of only 4 pounds. It will be seen that the difference was considerably greater while the colts were on the ground and unground grain rations than while the feed was the same and, although the trial does not show marked or decided results in favor of the ground feed, yet we have reason to believe that the grinding gave an advantage. In case of older horses of less vigor and somewhat impaired digestion, or in case of work horses, having less time between labor hours for feeding, it would be reasonable to suppose that the results would be more strongly in favor of ground feed; but this station has made no investigation in this line and a trial made at the Utah station recently showed no advantage in grinding grain for horses. We quote from the report of this trial: "In one sweeping generalization it may be stated that recent accurate trials fail to show an average gain favoring grinding grain. \* \* \* I know of no trials with whole versus ground grain for horses and sheep save those being conducted at our station." \*

\* \* Where such sweeping generalizations are claimed as being established, they would be more persuasive if details were given. The report of the experiment only shows that horses aggregating 2310 pounds in lot one and 2440 in lot two, were fed 22 pounds of grain a day to each lot for 42 days and 18 pounds a day to each lot for 70 days, and that the horses "on ground grain lost 48 pounds and those on whole grain 55 pounds for both periods." If there were two work horses in each lot the amount of grain given at a feed would be  $3\frac{3}{4}$  pounds for one period, and 3 pounds for the other. The number, age, and condition of the horses, at work or at rest, is not given.

It is a commonly accepted opinion, however, where grain is high and the best results from feeding are essential, that it unquestionably pays to grind grain for horses, and New England feeders carry this theory into practice quite generally. Viewed from the standpoint of increased gain alone, and as 41 pounds of live weight at a reasonable valuation per pound, as we would estimate it on beef, the increase in gain given by grinding in this experiment certainly covered the additional expense. It required while the colts were not having milk an average of 7.5 pounds of grain and 13 pounds of hay to make a pound of gain. On this basis the 41 pounds additional gain made on ground feed is equivalent to a saving of 307.5 of grain and 533 pounds of hay.

The value of a horse is determined by the aggregate of all of his qualities at maturity and a price paid for a colt is only an estimate on these qualities, yet undeveloped. If by changing any of our methods we can add even a little to the superiority of the finished horse that little will have relatively a high value. For this reason it is difficult and practically impossible to decide during a brief trial whether increased growth is always made at a profit or not. It does not follow in feeding colts if ground grain costs a given per cent more than unground that the growth must be an equal per cent more rapid in order to return a profit. The excellence of the finished product will determine value, and profits will be large or small in proportion as the value of this product exceeds the cost of production. A certain degree of excellence makes the common horse, with which our markets are over-stocked. It is in proportion as we rise above this mediocrity and attain superior excellence in horse flesh that we produce the really valuable and high priced horse.

#### VALUE OF SEPARATED MILK.

The value of separated milk for feeding colts, although not an object of this experiment, is nevertheless worthy of attention. By selecting two periods, one extending from January 1st to March 1st, when the colts had separated milk as a part of their ration, and the other from April 1st to May 19th when no milk was given, we have an interesting comparison.

During the first period the six colts had 2250 pounds of mixed grain as already stated and 5 pounds each of separated milk per day and made a gain of 486 pounds in 60 days or 8.1 pounds per day, and during the second period they had 3888 pounds of grain of practically the same kind (the only difference being the substitution of 25 pounds of barley bran in a 250 pound mixture for 25 pounds of ground wheat, a change that would make no material difference in feeding value of the mixture), and made a gain of 520 pounds in 48 days, or 10.8 pounds per day. The 8.1 pounds of gain per day in the separated milk period was made on 37.5 pounds of grain supplemented with 30 pounds of milk, or one pound of gain to 4.6 pounds of grain. The 10.8 pounds of gain per day in the other period was made on 81 pounds of grain, or one pound of gain to 7.5 pounds of grain.

The coarse feed was not exactly the same; some sheaf oats were fed during the first period, but the little grain received in the sheaf oats fed with the stover would not be more than sufficient to offset the excess of tame hay eaten during the last period, hence we can safely say that the feeding value of the coarse fodder was about equal during the two periods. Assuming then that the forage did not materially differ, we have the 30 pounds of milk fed per day, producing results equal to 2.9 pounds of grain, which is the difference between the amount of grain that it took to produce a pound of increase when the colts had the separated milk and when they had not. This would indicate that ten pounds of separated milk had in this trial about the same feeding value as one pound of the best grain mixture, and considering the fact that the first period covered two of our severest winter months (January and February), and the second occupied a time of milder temperature, it is probable that the milk had even higher feeding value than the results indicate in this case. The results of utilizing separated milk for feeding colts may be regarded as highly satisfactory. Those who have had experience in the care of imported stock of this age soon after reaching this country, after the hardship incident to a rough sea voyage and the changes met in passing from one continent to another, are aware how difficult it is to make a satisfactory improvement under these conditions. Often the

digestion and vitality is so deranged as to check growth for several months, but under the treatment given in this case every animal responded promptly and made uninterrupted progress. That the satisfactory results obtained were to a considerable extent due to the milk fed during the winter is not unlikely.

The average gain made per day during the entire period, October 1st to May 18th, was 203 pounds by the Percherons, 168 pounds by the Shires, and 150 pounds by the Coachers, an average of 1.74 pounds each per day for the six colts.