

To grow more live stock we must have better crops, and to get better crops we must have a better system of farming, which means more live stock.

A delegate stated at the Dry-Farming Congress recently held in Lethbridge, Alta., that he had tried alfalfa tea, made by soaking alfalfa hay in hot water for a few hours, for feeding pigs, and found that with pigs weighing 46 pounds at the start they gained 15 pounds each more than those from the same lot which did not get the tea, the increased gain being made in 72 days.

In summing up the question of feeds, says a writer in The Farmer's Advocate and Home Journal, Winnipeg, Man., whether as grains, meals or fodder, it should be remembered that no one feed or ration is, when continued without change, judicious feeding. Every beast or bird requires variety, and a change of rations occasionally. True enough, that many a horse and beast works without much variety of feed, yet when it is possible the rations can be changed with very little trouble. It is a good policy for any farmer to provide for such, especially when the results obtained from the change will more than offset any extra trouble and labor expended on a few small fields of various grains.

### Carrying Cows through the Winter Economically.

One thing which has worked against beef production is the difficulty with which beef cows may be economically maintained during the winter months. It has been a problem just how to carry cattle through winter at a minimum of expense. As a bulletin of the Pennsylvania Station says: "The demand for hay has increased so rapidly during the past few years that many farmers would sell it rather than feed it to cattle were it not for the fact that they realize the necessity of keeping roughage on the farm in order to maintain the fertility of the soil."

To find a solution for the problem the station mentioned conducted experiments to ascertain what crop, if any, would produce a larger amount of food nutrients per acre than hay and be equally as well adapted to the feeding of breeding cattle, supplemented with a minimum amount of concentrated feeds, which would furnish the digestible nutrients not provided by the farm-grown crop. Corn silage was selected as most nearly meeting these conditions. It is adaptable to a wider range of soil conditions than any other crop except grass, it produces a large amount of food nutrients per acre, is palatable, succulent, easily grown, harvested with comparative ease and can be stored at less expense for buildings than any other forage crop. In addition to these advantages there is no other form in which the corn crop will be entirely consumed by live stock, thus it increases in value by being placed in the silo. Cottonseed meal was used as a supplement because of the fact that protein, in which corn silage is quite deficient, could be secured in this form cheaper than from any other source and because of the large percentage of protein that could be fed in very small quantities, thus reducing the expense for transportation and labor in feeding. Previous investigation has also shown that the laxative tendency caused by heavy feeding of succulent feeds is materially reduced by the addition of cottonseed meal to the rations.

Ten pure-bred Shorthorn cows and ten pure-bred Angus cows were used in the test. Each group of ten cows was allowed to run loose under an open shed used for steer-feeding purposes, adjoining which was an open lot. The floor space in each shed, exclusive of that occupied by mangers and feeding alley, was 420 square feet. The area of the open lot was 780 square feet. The cattle were confined in these lots from the beginning of the experiment on December 1, 1911, until the close, April 19, 1912, a period of 140 days. While the housing and shelter were ample, as shown by results secured, a greater area in the open lot would be desirable.

As beef cattle are maintained largely for the purpose of producing manure to be used in increasing the yield of crops, a record of the amount of bedding and manure produced in the Shorthorn lot was secured. During the 140-day feeding period, 9,851 pounds of straw were used in bedding the ten cows, and from this lot 88,405 pounds of manure were removed. It would require, under these conditions, the straw from approximately one acre of small grain to bed each individual and this would result in the production of 8,840 pounds of manure. A larger amount of straw could have been utilized to ad-

vantage where cows were closely confined as in this test, though under farm conditions where the cows were permitted to run in pasture during suitable weather, the required amount of bedding could be materially reduced.

The following summary gives a good idea of the value of silage for beef cows:

Length of experiment	140 days
Initial weight of 20 cows	21,438.7 lbs.
Final weight of 20 cows	24,729.66 "
Total gain	3,290.84 "
Average daily gain per cow	1.17 "
Total feed consumed	
Corn silage	16,039.75 "
Cottonseed meal	2,800.00 "
Average daily feed per cow	
Corn silage	57.64 "
Cottonseed meal	1.00 "
Cost of feeding 20 cows	
Corn silage @ \$3.50 per ton	\$280.69
Cottonseed meal @ \$30.00 per ton	42.00
Total	322.69
Average cost of feed per cow	16.13
Bedding used per cow	
985 lbs. wheat straw @ \$3.00 per ton	3.94
Labor in feeding	2.00
Total expenditure	22.07
Value of manure per cow	
8,840 lbs. @ \$1.50 per ton	6.63
Value of increase in weight	
164.5 lbs. @ 5c. per lb.	8.22
Total value	14.85
Net cost of wintering cow	8.22

The data presented in the summary is based upon prevailing local (Pennsylvania) prices of feeds during the winter of 1911-12. Corn silage is valued at \$3.50 per ton, which is equivalent to 70 cents per bushel for corn, thus allowing a very material profit in its production before charging it as feed. It required four tons of silage to winter each cow.

With pasture at \$1.00 per head per month the total cost of maintenance throughout the year will be \$15.22 per head, or with pasture at \$2.00 per head it will amount to \$22.22, either of which estimates allow ample profit from the growing of crops and a reasonable rate of interest on land kept in permanent pasture. The writer of the bulletin, W. A. Cochel, concludes that this system of farming will permit a uniform distribution of labor throughout the year, a maximum profit in the production of crops, the maintenance of soil fertility at a minimum expense and the utilization of all rough and broken land capable of producing grass. It will also solve the problem of securing feeding cattle at less cost than they can be purchased on the central markets of the country, eliminate loss in transit and insure a better bred lot of cattle in those sections where the system is followed.

### Digestibility of Red Clover and Alfalfa.

Experiments have been carried on at the Massachusetts Agricultural College to determine the relative digestibility of red clover and alfalfa. The alfalfa hay used was cut in early blossom, and was quite free from weeds and grass. The red clover was taken from a field which yielded well, was in early blossom when cut, and was cured in cocks. It was not well-cured, owing to bad weather. The amount of digestible matter is called the digestion coefficient. Four trials were made with each fed to sheep.

The coefficients obtained with the alfalfa varied considerably, but the average for all trials is believed to be a fair average for eastern-grown alfalfa.

The most noticeable difference in the four single trials with clover hay consisted in the variation in the digestion coefficients obtained for the fiber. This was evidently due in part at least to the individuality of the several animals. The fiber in the second cutting was apparently not as digestible as the first cutting.

When the average of the clover coefficients was compared with the average of the coefficients for alfalfa, it was noted that in case of the total dry matter the former showed to advantage, although the reverse was true in a comparison of the experiments reported for all trials. The protein in the clover was shown to be substantially 12 per cent. less digestible than in the alfalfa; in case of the average for all trials the difference was 16 per cent. In case of the fiber the conditions were reversed—differences of from 5 to 8 points being noted in favor of the clover. The comparative digestibility of the extract matter was about the same, although the average figures show 7 points in favor of the alfalfa. In making a comparison of the two plants from the standpoint of digestibility, two important differences were noted: (1) the protein in the alfalfa was noticeably more digestible than in the clover (12 to 16 points), and (2) the fiber from 5 to 8 points less so. In total digestibility the two plants approach each other, showing an average of about 60 per cent., as against 55 per cent. for timothy, 60 per cent. for early cut fine hay, 65 per cent. for rowen, 70 per cent. for the entire corn plant, and 85 per cent. for corn meal.

It is evident that the relative value of the two crops cannot be determined from their digestibility alone; other important factors to be considered are cost of production and yield and adaptability to other conditions. Taking all the evidence into consideration it would appear that although the cost of seed and preparation of land is somewhat against the alfalfa, yet its much greater length of life, its larger average yearly yield, and its rather superior nutritive value are all in its favor. The conditions governing its



First-prize Pair.

In class open to Clydesdales or Shires, Western Fair, London, 1912. Owned and exhibited by G. A. Attridge, Muirkirk, Ont.