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Trade increases the wealth and glory of a country; but its real strength and stamina are to be looked for among the cultivators of the land.— Lord Chatham

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What Feeds Shall I Buy For Winter Use?

Some Suggestions on a Problem that is Worrying Us All—E. S. Archibald, Dominion General Husbandman

THE live stock farmers who now prepare for all necessary feeds during the coming winter and spring will not only save money in the initial purchase, but will thereby guarantee greater and cheaper production and healthier and more profitable animals. The requirements of an ideal ration for any farm animal are as follows:

- (1) Cheapness, not necessarily per ton, but in protein and total digestible matter contained.
- (2) Bulk.
- (3) Per cent. digestibility.
- (4) Balance.
- (5) Variety.
- (6) Suitability to animals and their product.
- (7) Palatability.
- (8) Laxativeness.

The experienced live stock feeder needs no explanation of any of the above points. Different classes of animals and animals of different ages require different feeds due to one or a number of the above requirements.

The cheapest and best ration for live stock must be largely home grown. This applies to all classes of stock, but particularly to cattle, horses, and sheep. Particular attention is drawn to the value and cheapness of food ingredients for such rich and succulent farm grown roughages as alfalfa, clover, silage and roots. However, the buying of mill feeds is by no means a bad practice, provided such purchases are judiciously made. It may often pay the farmer both from the feed and fertilizer standpoints, to sell such cash crops as wheat, oats, barley, potatoes, turnips, etc., and buy such feeds as bran, oil cake, cottonseed, etc., which will cost little if any more per ton, and may be worth much more in both food and fertilizer value. For example, note the value of total digestible nutrients—and fertilizer value of wheat, and oats compared with oil cake and cottonseed, in table II. Certainly it has been proven beyond a doubt that the fertilizing ingredients in mill feeds may, in many cases, be obtained free of charge in that

the food value is sufficiently great to more than pay for the initial cost. That the fertilizing ingredients are fully as valuable as similar amounts contained in commercial fertilizers is beyond dispute.

What Feeds to Choose.

In the purchasing of meals there are only two methods of choosing the desirable feeds. Which of these methods the farmer uses depends altogether on the quantity, quality, and variety of farm-grown roughages. Either the farmer must purchase all feeds on the protein standard or he must purchase on the standard of total digestible nutrients. The two following examples are self-explanatory:

The dairy farmer who has an abundance of grass hay, such as timothy, and corn ensilage, must in purchasing meals choose those which are richest and cheapest in their protein content. It will be clearly seen from table I. that the meals

which would give greatest satisfaction would be: Dried distiller's grains, cottonseed meal, linseed oil cake, and wheat bran. Particular attention is drawn to the fact that it is the digestible protein and not the guarantee of protein given on the bag which should govern his purchase.

On the other hand, the farmer who has an abundance of alfalfa hay or red clover hay, corn ensilage, and a reasonable quantity of roots, need not worry as to the buying of meals to supply cheap protein. This is already supplied in the rich hay. His only reason for feeding a meal ration is to supply in a concentrated form the same proportion of digestible nutrients as found in his excellent roughages, since any animal can consume only a reasonable bulk of food. Hence at the present prices such feeds as corn bran, dried distiller's grains, and a limited quantity of gluten feed or cottonseed meal would be suitable. Moreover, he would require not more than two-thirds of the total grain to supply the desirable nutrients.

The accompanying tables are to the business farmer self-explanatory. However, the following points may be noted:

In table I. it will be noted that protein is the most expensive feed in a ration, yet is absolutely necessary in reasonable quantity and in readily digestible form. Protein can always be raised most cheaply on the farm in the form of high grade hay and good ensilage. It will, again be noted in this table that the highest grade feeds always contain the cheapest protein. For example, compare the two grades of cottonseed meal, or either of these with gluten feed. Again, guaranteed analysis on the bags represent the food ingredients not in the proportion in which it will be digested, but only in the actual total content. Compare, for example, the total content of corn, bran and wheat bran in the digestible content and the price thereof.

In table II. the total digestible nutrients are calculated by adding all of the elements contained in the feed; namely, protein, carbohy-

Table 1 BUYING PROTEIN IN FEEDS

Feeds	Price per ton, July 1, 17	Crude protein		Digestible protein per 100 lbs.	Ratio of digestible to crude	Net cost per ton
		Lbs.	per 100 lbs.			
Meals and Grains—						
1. Ground Corn	\$88.00	10.1	5.5	10.4	28.6	45.3
2. Gluten Feed (23 per cent.)	45.00	25.4	21.6	2.7	3.4	11.1
3. Corn Bran	20.00	17.7	5.8	11.6	16.3	17.2
4. Dried Distillers' Grains	36.00	30.7	23.4	3.0	3.8	8.0
5. Ground Feed Wheat	52.00	18.4	9.2	7.7	20.9	28.2
6. Wheat Middlings	45.00	17.8	15.7	4.0	12.0	13.7
7. Wheat Bran	24.00	16.0	12.5	3.9	10.6	12.6
8. Ground Oats	52.00	12.4	9.7	6.3	20.9	26.8
9. Ground Barley	51.00	11.5	9.0	7.8	22.2	28.3
10. Linseed Oil Meal (O. P.)	60.00	33.9	30.2	1.6	7.3	8.2
11. Cottonseed Meal (choice)	60.00	44.1	37.0	1.1	5.6	6.7
12. Cottonseed Meal (good)	46.00	27.6	21.6	1.4	6.1	7.2
13. Dried Beet Pulp	32.00	8.9	4.8	14.6	17.9	34.7
Roughages—						
1. Alfalfa Hay	\$14.00	14.9	10.6	3.9	4.7	6.6
2. Red Clover Hay	12.00	12.8	7.6	5.7	4.7	21.9
3. Timothy Hay	12.00	6.2	3.0	15.2	18.4	21.9
4. Corn Ensilage	2.00	2.1	1.1	15.1	4.7	9.0
5. Mangels	2.00	1.4	.8	8.2	7.1	12.5

Table 2 BUYING TOTAL DIGESTIBLE NUTRIENTS IN FEEDS

Feeds	Price per ton, July 1, 17	Digestible nutrients per ton	Cost of digestible nutrients per 100 lbs.	Manure value per ton	Net cost per ton	Net cost of digestible nutrients per 100 lbs.
Meals and Grains—						
1. Ground Corn	\$88.00	1676	\$ 4.05	\$ 2.78	\$64.22	\$ 3.81
2. Gluten Feed (23 per cent.)	45.00	1614	2.97	7.99	45.99	2.87
3. Corn Bran	20.00	1463	1.37	5.61	16.29	1.12
4. Dried Distillers' Grains	36.00	1778	2.02	2.43	26.57	1.49
5. Ground Feed Wheat	52.00	1602	3.24	4.68	47.32	2.95
6. Wheat Middlings	45.00	1564	2.78	5.13	37.87	2.42
7. Wheat Bran	24.00	1218	2.75	7.81	26.19	2.15
8. Ground Oats	52.00	1408	3.69	4.83	47.47	3.37
9. Ground Barley	51.00	1588	3.21	4.56	44.44	2.92
10. Linseed Oil Meal (O. P.)	60.00	1558	2.90	12.10	37.25	4.3
11. Cottonseed Meal (choice)	60.00	1564	3.19	16.87	34.12	2.18
12. Dried Beet Pulp	32.00	1432	2.33	3.01	28.99	2.03
Roughages—						
1. Alfalfa Hay	\$14.00	1032	1.35	\$ 6.40	\$ 7.80	\$ 7.4
2. Red Clover Hay	12.00	1018	1.17	7.71	6.23	6.6
3. Timothy Hay	12.00	979	1.34	3.05	3.55	1.62
4. Corn Ensilage	2.00*	354	.85	1.97	.33	.48
5. Mangels	2.00*	148	.59	5.9	3.41	.95

*—Cost of raising and storing an average crop in an average season.
x—Manure value of feed based on 50 per cent. of nitrogen and 75 per cent. of potash and phosphoric acid contained and these valued at pre war prices of 18c, 6c, and 5 1/2c per lb.