



WHEAT FOR MILK COWS

Under War-time Conditions

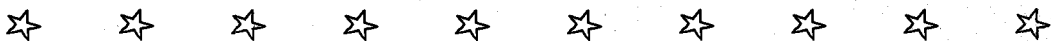
By

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Our country needs more milk and its products for the proper nutrition of its armed forces and industrial workers, and for lend-lease shipment to the United Nations. Well-nourished military and civilian people are necessary in the waging of total war. As a part of the program of increasing the production of dairy products, wheat has been released by the government for feeding to livestock at 95 cents per bushel in western Oregon and 91 cents in eastern Oregon for November and December 1942. The price is subject to minor adjustments each month. This program is designed to increase milk, egg, and meat production and, at the same time, to relieve a critical storage problem in the wheat-producing areas.

Oregon's dairy industry has been developed on the basis of cheap roughage, particularly hay and pasture. Continued improvement of hay and pasture will lower the cost of producing milk. The general practice has been to provide dairy cattle with all the hay or grass they will consume. Any deficiencies in requirements for maintenance and production are supplied by feeding concentrates.

With good quality roughage—hay, silage, green feeds, roots, or pasture—the average cow will eat enough to maintain her weight and produce about $\frac{3}{4}$ pound of butterfat daily. The increase in requirements for higher production should be met by the feeding of concentrates that include farm-grown grains, milling byproducts, and commercial dairy mixtures. High protein concentrates must be added to the farm-grown grains if necessary to satisfy the protein requirements for maintenance and production. Protein is usually



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the most expensive constituent in the dairy ration. It is important to supply enough protein in amount and quality to meet the requirements of cows in milk, but feeding an excess is uneconomical.

Practically all of the 1941 hay crop and the normal carry-over was consumed last winter. It now appears that alfalfa and other hays will be abnormally high priced during the 1942-43 feeding season. As a result, it may be cheaper to supply a larger part of the required total digestible nutrients in the form of concentrates and a smaller amount in the form of hay.

Until recent years, the price of feed grains in Oregon was based on the price of mill run. For the past few years there has been a decrease in the amount of the mill feeds available. In the fall of 1942 feed grain prices were based on the loan value of wheat or on the price of feed wheat made available by the Government. Under conditions prevailing at the present time, therefore, the feed wheat program becomes a major factor in sustaining dairy production in Oregon.

The feed wheat price for November and December as announced by the Government makes the bulk carlot price of whole wheat about \$31.65 per ton in western Oregon. Grinding and sacking will increase the cost to approximately \$35.00 per ton.

Many dairymen fed wheat in 1941 for the first time. There have been questions concerning the amount of wheat that can profitably be fed to dairy cows. Feeding trials at the Oregon Agricultural Experiment Station show that coarsely ground wheat can be used up to 50 per cent of the concentrate mixture with no ill effects on the animals and no loss in palatability. This mixture was fed in amounts up to 12 pounds per cow daily. One group of cows was fed a mixture containing 75 per cent wheat, without ill effects but with some loss in palatability. *It is important that wheat be ground coarsely for dairy cattle.*

Table 1 shows the value of a number of feeds calculated from the total digestible nutrients furnished and based on alfalfa hay at varying prices. For example, if good alfalfa hay is worth \$24.00 per ton, a dairyman could afford to pay \$39.90 for a ton of ground wheat and expect to get the same total digestible nutrient value for the money spent. In other words, *at the prices indicated* the cost per pound of total digestible nutrients in alfalfa hay and wheat would be the same. If wheat can be purchased for less than \$39.90, it is a better buy than alfalfa hay at \$24.00. To carry the comparison further, ton lots of ground barley should be bought at \$37.60, ground oats at \$34.00, mill run at \$33.30, and dried beet pulp at \$35.50 to be as economical as the alfalfa hay at \$24.00 and ground wheat at \$39.90 per ton.

Table 1. COMPARATIVE VALUE OF FEEDS IN DOLLARS PER TON BASED ON
TOTAL DIGESTIBLE NUTRIENTS FURNISHED

Hay, alfalfa	Ground barley	Ground wheat	Ground oats	Mill run	Dried molasses beet pulp	Soybean meal
\$12.00	\$18.80	\$19.90	\$17.00	\$16.60	\$17.70	\$19.60
14.00	21.90	23.30	19.80	19.40	20.70	22.90
16.00	25.10	26.60	22.70	22.20	23.60	26.10
18.00	28.20	29.90	25.50	24.90	26.60	29.40
20.00*	31.30	33.20	28.40	27.70	29.50	32.70
22.00	34.50	36.60	31.20	30.50	32.50	36.00
24.00	37.60	39.90	34.00	33.30	35.50	39.20
26.00	40.70	43.20	36.90	36.00	38.40	42.50
28.00	43.90	46.50	39.70	38.80	41.40	45.80
30.00	47.00	49.90	42.50	41.60	44.30	49.00

* Example: If alfalfa hay is selling for \$20.00 per ton, one could afford to pay \$31.30 per ton for ground barley, \$33.20 for ground wheat, \$28.40 for ground oats, \$27.70 for mill run, \$29.50 for dried molasses beet pulp, or \$32.70 for soybean meal.

If sufficient home-grown hay is available but it is necessary to purchase low-protein concentrates, Table 1 will show which feed is most economical at prevailing prices. Let us assume that a dairyman can purchase ton lots of feed at the following prices: ground wheat at \$37, ground barley at \$37, ground oats at \$43, beet pulp (molasses) at \$38, and mill run at \$38. Wheat would be the best purchase, followed in order by barley, beet pulp, mill run, and oats. The money saved in buying the ton of wheat would be more than \$2 in comparison with barley, about \$5 in comparison with beet pulp, almost \$9 with mill run, and more than \$12 with oats.

Under normal price conditions, high-protein concentrates are included in mixtures to bring the percentage of crude or digestible protein to the necessary level. As shown in Table 1, however, a protein concentrate such as soybean meal, which may be used interchangeably with cottonseed meal, peanut meal, or linseed oil meal, may be a good value based only on its total digestible nutrient content. It supplies practically the same amount of digestible nutrients pound for pound as wheat. Unless high protein concentrates are cheap enough to feed on the basis of their total digestible nutrient value, they should be used only to provide variety and sufficient protein to meet the protein requirements.

Table 2 gives some concentrate mixtures utilizing considerable amounts of wheat that can be fed with different kinds of roughages. Other mixtures are listed in Oregon Agricultural Experiment Station Bulletin 398, "Feeding for Milk Production," available on request.

Table 2. CONCENTRATE MIXTURES UTILIZING LARGE AMOUNTS OF COARSELY GROUND WHEAT

Group A—Low protein. For feeding with high quality legume hay, or with closely grazed, luxuriant pasture.

(1)		(2)	
	Pounds		Pounds
Ground wheat	500	Ground wheat	500
Ground oats	250	Ground barley	200
Mill run	250	Dried beet pulp	300
Per cent		Per cent	
Crude protein	11.2	Crude protein	9.8
Digestible protein	9.4	Digestible protein	7.6
Total digestible nutrients	77.1	Total digestible nutrients	79.9

Group B. For feeding with average legume hay, or with good pasture.

(3)		(4)	
	Pounds		Pounds
Ground wheat	500	Ground wheat	500
Ground oats	200	Ground barley	100
Mill run	200	Dried beet pulp	275
Soybean meal	100	Soybean meal	125
Per cent		Per cent	
Crude protein	14.4	Crude protein	14.2
Digestible protein	12.1	Digestible protein	11.4
Total digestible nutrients	78.2	Total digestible nutrients	80.4

Group C. For feeding with mixed legume and nonlegume hay and succulent feeds, or with average pasture.

(5)		(6)	
	Pounds		pounds
Ground wheat	500	Ground wheat	500
Ground oats	125	Ground barley	100
Mill run	200	Dried beet pulp	200
Soybean meal	175	Soybean meal	200
Per cent		Per cent	
Crude protein	17.0	Crude protein	16.7
Digestible protein	14.4	Digestible protein	13.8
Total digestible nutrients	79.0	Total digestible nutrients	81.0

Group D. High protein. For feeding with nonlegume hay and succulent feeds.

(7)		(8)	
	Pounds		Pounds
Ground wheat	400	Ground wheat	400
Ground oats	150	Ground barley	100
Mill run	200	Dried beet pulp	200
Soybean meal	250	Soybean meal	300
Per cent		Per cent	
Crude protein	19.6	Crude protein	20.2
Digestible protein	16.5	Digestible protein	16.7
Total digestible nutrients	78.2	Total digestible nutrients	80.8

Soybean meal is the only high protein concentrate suggested in the mixtures, but if the cost of peanut, cottonseed, or linseed meal is lower, any of them may be substituted.

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