

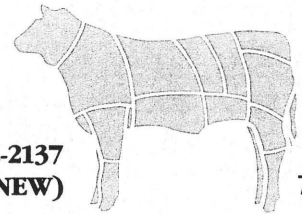
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Michigan State University Extension Service
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Issued August 1988
8 pages

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Planning Least Cost Feeding Programs for a Beef Cow Herd

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The foundation of a least-cost feeding program is built on two factors: (1) Matching the available feed supply with the cow's nutrient requirements; and (2) Minimum use of harvested feeds and maximum use of otherwise wasted feeds.

The first factor involves having the best quality feeds available during early lactation and rebreeding when the cow's nutrient requirements are at a peak. Then, when the cow is just being maintained, utilizing feeds that have little alternative use such as the poorest quality hay or crop residues.

The second factor suggests maximum use of pasture and crop residues that have limited alternative uses and keeping to a minimum equipment, fuel, labor, and housing costs. This is of particular importance in a long winter feeding period and relatively short growing season.

WINTERING THE HERD

Supplying winter feed is 30 to 40% of all costs to maintain a beef

cow herd. Over-feeding wastes money, but under-feeding costs dollars in the form of lower conception rates, lower milk production, lighter weaning weights, and less salvage weight when selling cull cows.

Divide the Herd into Nutritional Groups

Ideally, the herd should be broken into the following nutritional management groups for winter feeding: (1) Mature cows in good condition; (2) Pregnant yearling heifers, thin 2-year-olds that have just weaned their first calf, and old thin cows; (3) Weaned heifer calves; and (4) Herd sires.

Small herd owners may not have enough lots or fields to divide the herd into this many groups. If not, combine either groups 2 and 3 or groups 1 and 2. If absolutely necessary, mature herd bulls can winter with the cows. Yearling and 2 year old bulls should be separated so they can be fed some grain.

Small herds can get by with running different ages and classes of cattle together much better than can larger herds. When too

much mixing occurs, larger, stronger cattle eat more than their share while smaller, weaker ones are pushed aside and fail to meet their nutritional requirements. If plenty of feeding space is provided, this problem can be diminished.

A lack of watering sites often limits the number of wintering groups that small herd owners can run. If this is the case, investment in more water fountains usually pays dividends.

PASTURE & HAY REQUIREMENTS

Seeded Pastures

On highly fertilized, well-managed pastures composed of the most productive forage species, it is possible to carry one to two cow-calf pairs per acre. However, this is the exception and not the rule. Most seeded pastures have a summer-long carrying capacity of 1 to 3 acres per cow-calf unit.

The legumes most commonly used in new seedings are alfalfa and birdsfoot trefoil. Grasses commonly sown are bromegrass, orchardgrass, timothy, reed

canarygrass, and tall fescue. Legume-grass mixtures remain productive throughout the summer. Grass species alone peak in spring and early summer and are not very productive in late summer. When alfalfa is used in mixtures, it should be rotationally grazed because it does not withstand constant grazing pressure. Straight seedings of alfalfa are not recommended for pastures because of the risk of bloat.

Alfalfa is the preferred legume in most pasture mixes unless the soil is poorly drained, in which case birdsfoot trefoil will persist much better. However, trefoil is very difficult to establish and is not as high yielding as alfalfa.

Of the grasses, brome, timothy, and orchard are more palatable than canarygrass and fescue. Use canarygrass only in extremely wet areas. Fescue is ordinarily used in warmer climates for fall and winter grazing, but it is very unpalatable during the summer.

Generally speaking, straight grass pasture should receive 40 to 60 lbs nitrogen per acre per year to maintain high yields. Legume-grass mixtures should receive about 40 lbs of phosphate (P_2O_5) and 80 lbs potash (K_2O) per acre per year. However, use a soil test to determine exact requirements.

Alfalfa does poorly on acid soils. Add lime before establishment if pH is below 6.5.

Permanent or Native Pastures

Permanent or native pastures are usually composed of bluegrass or quackgrass. Wild white clover also appears in these pastures if it is encouraged with P_2O_5 and K_2O and kept closely grazed. A good stand of grass alone responds to nitrogen. If the pasture is heavily wooded and/or infested with weeds, fertilization may not pay.

Permanent pastures vary greatly in their carrying capacity, depending upon the factors previously mentioned. The range is from 2 to 10 acres per cow unit. The main problem is the fact that permanent grass pastures become virtually dormant during the months of July and August, when a few acres of improved legume-grass pasture could prove to be invaluable. Sowing an emergency

summer annual such as sorghum/sudan is an alternative, but the cost involved may make it a questionable practice. In a dry year, feeding supplemental hay may be the only way to survive on permanent pasture in late summer. Fall rains bring permanent pastures back so that they may be grazed up to early or mid-November.

Corn Stalk Grazing

In the Corn Belt, stalk fields may be grazed during late fall and early winter. One acre of good stalks will carry a cow for 40 to 50 days. Provide supplemental calcium, phosphorus, protein, and vitamin A, especially after the first 30 days of grazing.

If hay is worth \$30 per ton, corn stalks are worth a maximum of \$6.80 per cow per month; if hay is \$40/T, stalks are worth \$9.50/cow/mo; at \$50/T, \$12/cow/mo; at \$60 T, \$14.90/cow/mo.

Table 1. Winter Hay Requirements for Days Dry and Days Lactating

Total days	Days dry	Days lactating	Tons hay	Acres required @ 2.5 T/A
150	150	0	1.88	0.75
150	60	90	2.32	0.93
180	180	0	2.25	0.90
180	150	30	2.40	0.96
180	120	60	2.55	1.02
180	90	90	2.70	1.08
180	60	120	2.85	1.14
210	210	0	2.62	1.05
210	180	30	2.77	1.11
210	150	60	2.93	1.17
210	120	90	3.08	1.23
210	90	120	3.22	1.29

Winter Hay Requirements

During winter, a dry pregnant cow needs about 25 lbs of hay per day. A lactating cow needs about 35 lbs per day.

Depending upon the length of the dry and lactating periods as well as the total length of the winter period, hay needs range from 1.9 to 3.2 tons per cow. If average yield is 2.5 tons per acre, one cow needs from 0.75 to 1.3 acres of hay to meet her winter needs. This is shown in Table 1.

A typical situation in the Midwest would be to start feeding hay on November 1, calve on March 1, and go to grass on May 1. This is a total winter period of 180 days; 120 days dry and 60 days lactating. This cow needs about 2.5 tons of hay and a herd of 25 requires 62.5 tons or about 25 acres of hay.

If seven open yearling replacement heifers and a bull are wintered in addition to the cow herd, their requirements are shown in Table 2.

In a 25-cow herd, an additional 11.1 tons of hay and 4.5 acres of hay land have to be budgeted to carry 7 replacement heifers and a herd sire. This is 4.5 acres in addition to the 25 acres required for the cows alone, or a total of 29.5 acres for the entire herd.

GRAIN REQUIREMENTS

Grain requirements are minimal in a cow-calf enterprise. However, budget for some grain if herd sires and replacement heifers are to be wintered adequately.

Table 2. Winter Feed Requirements for Yearling Replacement Heifers and Herd Sire

	lb hay per head per day	Total tons hay for 180 days	Acres required @ 2.5 T per acre	Acres per cow in 25 cow herd
7 replacement heifers	12	7.56	3.02	0.121
1 herd sire	40	3.60	1.44	0.058
TOTAL	—	11.16	4.46	0.179

YEAR-ROUND FEED BUDGETS

Examples of year-round feed budgets for various classes of cattle in a 25-female beef herd are listed in the sections that follow. Budgets are presented for the following classes of cattle: (1) mature cows; (2) coming 2-year-old pregnant replacement heifers; (3) replacement heifer calves; and (4) herd sires. The budgets are designed to meet the requirements for a herd of medium size, moderate milk cattle under average Midwest conditions. Increase the budgets for larger-framed, heavier-milking cattle. In addition, worksheets are presented in conjunction with each budget to allow each herd owner to outline a feeding program. Finally, a feedstuffs summary sheet is included to evaluate the requirements of the entire herd.

To obtain more bulletins in the Beef Production Series, visit your county Extension office, or write to:

MSU Bulletin Office
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FEEDING BUDGET WORKSHEET FOR MATURE COWS: EXAMPLE

FEEDING PERIOD	DATES	NUMBER OF DAYS	STAGES OF PRODUCTION	FEEDSTUFF	FEED PER HEAD DAILY	PERIOD	NUMBER OF HEAD	AMOUNT PER PERIOD
1A	11/1-12/15	45	Mid.-gest.	Graze cornstalks	—	1.A	20	20A.
1B	12/16-1/31	47	Mid.-gest.	Corn stover Low quality hay	25# 5#	1175# 235#	20 20	23,500# 4,700#
2	2/1-3/15	43	Late-gest.	Medium quality hay	30#	1290#	20	25,800#
3A	3/16-4/30	46	Calving & Lactation	Medium quality hay	40#	1840#	20	36,800#
3B	5/1-7/20	81	Early lactation through Re-breeding	Grass legume fertilized pasture	—	1A.	20	20A.
4	7/21-10/31	103	Early gestation Late lactation	Grass legume fertilized pasture Medium quality hay	— 10#	1.5A. 1030#	20 20	30A. 20,600#

FEEDING BUDGET WORKSHEET FOR REPLACEMENT HEIFER CALVES: EXAMPLE

FEEDING PERIOD	DATES	NUMBER OF DAYS	STAGES OF PRODUCTION	FEEDSTUFF	FEED PER HEAD DAILY	PERIOD	NUMBER OF HEAD	AMOUNT PER PERIOD
1-3A	11/1-4/30	181	Growing	Medium quality hay Corn		12 5	7 7	15,204 6,335
3B	5/1-7/20	81	Through breeding	Pasture	—	1A	7	7A
4	7/21-10/31	103	Early gestation	Pasture	—	1A	7	7A

FEEDING BUDGET WORKSHEET FOR COMING 2-YEAR OLD REPLACEMENT HEIFERS: EXAMPLE

FEEDING PERIOD	DATES	NUMBER OF DAYS	STAGES OF PRODUCTION	FEEDSTUFF	FEED PER HEAD DAILY	PERIOD	NUMBER OF HEAD	AMOUNT PER PERIOD
1A	11/1 - 12/15	45	Mid-gestation	Graze Cornstalks	—	1 A.	5	5 A.
1B	12/16 - 1/31	47	Mid-gestation	Medium quality hay	25#	1175#	5	5,875#
2	2/1 - 3/15	43	Late gestation	Medium quality hay	30#	1290#	5	6,450#
3A	3/16 - 4/30	46	Calving & early lactation	Medium quality hay	40#	1840#	5	9,200#
3B	5/1 - 7/20	81	Early lactation through re-breeding	Grass legume fertilized pasture	—	1 A.	5	5 A.
4	7/21 - 10/31	103	Early gestation late lactation	Grass legume fertilized pasture Medium quality hay	— 10#	1.5 A. 1030#	5 5	7.5 A. 5,150#

FEEDING BUDGET WORKSHEET FOR HERD SIRE (2-YEAR OLD BULL): EXAMPLE

FEEDING PERIOD	DATES	NUMBER OF DAYS	STAGES OF PRODUCTION	FEEDSTUFF	FEED PER HEAD DAILY	PERIOD	NUMBER OF HEAD	AMOUNT PER PERIOD
1 & 2	11/1 - 3/15	135	Gain 1.0# per day	Medium quality hay Corn	30# 10#	4050# 1350#	1 1	4050# 1,350#
3A	3/16 - 6/2	79	Gain 1.0# per day	Medium quality hay Corn	25# 12#	1975# 948#	1 1	1,975# 948#
3B	- 7/20	48	Breeding	Grass legume fertilized pasture	—	1 A.	1	1 A.
4	7/21 - 10/31	103	Gain 1.0# per day	Medium quality hay Corn	30# 8#	3090# 824#	1 1	3,090# 824#

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