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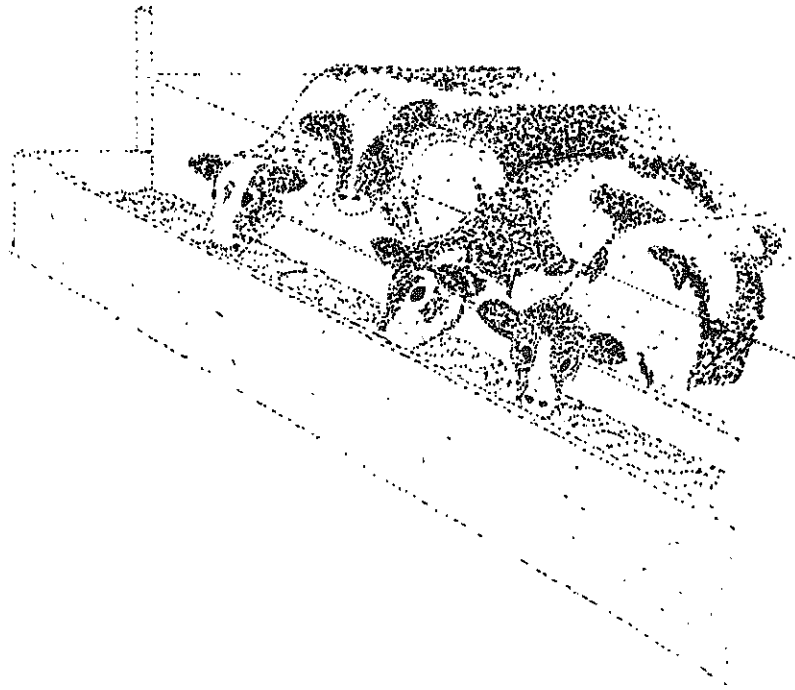
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SUPPLEMENTING MILK INCOME WITH DAIRY STEERS



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With slaughter beef prices expected to remain strong for the next several years, and perhaps beyond, dairymen who are exploring expansion possibilities may want to consider feeding dairy steers. Slaughter cows normally used for ground beef have been in short supply. With our current position in the cattle cycle and with a continued high demand for ground beef, an upward pressure is expected to continue on the prices of lean beef. Fast-food franchises have found Holstein beef very desirable for their purposes. With the new grading standards, Holstein steers will grade choice as readily as traditional beef breeds. The strong slaughter beef market combined with production advantages of dairy steers makes raising bob calves an attractive means for some dairymen to increase business size.

Expanding the size of the business with dairy beef has several advantages over expanding the milking herd. A lower labor requirement for dairy steers may be attractive for those unable to obtain or manage the larger amounts of additional labor required for increasing dairy herd size. Also, the capital investments to add feedlot facilities are often small in comparison to those needed for other dairy expansions. Production management for dairy steers as well may not be as demanding. In the expanding milking herd, checking for heat, breeding and mastitis problems are far more time consuming and important for profitability than most beef management tasks.

There are disadvantages to dairy steer production, too. Price variability is of increased significance. Milk prices are very stable in comparison to slaughter beef prices. Marketing dairy steers will require more effort in searching out desirable markets and in the timing of sales. Many dairymen will also need to learn the new management skills required for raising beef. Feeding programs are perhaps the most critical aspect of profitable dairy steer production. Feeding programs followed for the dairy herd will not always perform well with dairy steers. Feeding for growth of the dairy steer requires relatively much more energy than in milk production where larger quantities of protein and fiber are required.

A study of the profit potential reveals that either raising herd-generated bob calves or purchasing additional bob calves to supplement herd-generated calves could be profitable. A 100-cow dairy herd with a productive land resource of 400 crop acres has the potential for increasing returns to operator labor and management by \$5,000 to \$12,000 depending on forage system and number of bob calves fed.

Feeding Systems

A total of six different feeding systems containing different combinations of corn silage, mixed legume-grass hay, ear and shelled corn are compared in this

report. Rations are formulated for different stages of growth, with protein supplement levels being reduced as the cattle increase in weight.

The rations for a specific farm should be developed to fit that farm's land resources and be balanced based upon analysis of feeds grown on that farm. General guidelines for rations that can be used as a starting point to develop a feeding system for either corn silage as the only forage or for using equal parts of corn silage and hay in the ration dry matter are presented in Tables 1 and 2. Systems using greater amounts of hay can be utilized, but require larger amounts of grain to provide adequate energy intake.

Table 1. Supplement Feeding Rates for Rations Using Corn Silage as the Only Forage^{a/}

Animal Body Weight	High Forage/Low Gain		High Grain/High Gain	
	No Added Corn		1.3 lbs. Shelled Corn Per Cwt. Body Weight Daily ^{b/}	
	lbs./hd./day	Supplement Formula	lbs./hd./day	Supplement Formula
To 700 lbs.	2.0	A	2.0	A
700 - 950 lbs.	1.5	B	1.5	C
950 lbs. - Market	1.0	B	1.0	C

a/ Balance of ration is corn silage fed to appetite. Corn silage contains 8 percent and shelled corn 10 percent protein in the dry matter. Supplement formulas are in Table 3.

b/ Increase grain 20 percent if high-moisture corn is fed.

Table 2. Supplement Feeding Rates for Rations Using Equal Parts Corn Silage and Grass-Legume Hay in the Ration Dry Matter^{a/}

Animal Body Weight	High Forage/Low Gain		High Grain/High Gain	
	Hay and Shelled Corn Each at 1% of Body Weight		Hay at 0.4% and Shelled Corn at 1.8% of Body Weight	
	lbs./hd./day	Supplement Formula	lbs./hd./day	Supplement Formula
To 700 lbs.	1.5	D	1.8	D
700 lbs. - Market	Free choice salt only		Free choice salt only	

a/ Corn silage fed to appetite. Corn silage contains 8 percent, shelled corn 10 percent and legume-grass hay 13 percent protein in the ration dry matter. Supplement formulas are in Table 3.

b/ Increase grain 20 percent if high-moisture corn is fed.

The high forage/low gain rations are formulated to support an average daily gain of approximately 2 pounds per day, and high grain/high gain rations are formulated to support an average daily gain of approximately 3 pounds. In calculating these levels of performance, cattle need to be implanted properly with a growth stimulant, and fed to appetite in a stress-free environment with good ventilation, minimum cold stress and no mud. Guideline supplement formulations are given for each type of ration in Table 3. The percentage of calcium, phosphorus and salt are given so appropriate commercial supplements can be selected, if so desired. In many instances, using a commercial supplement may be the only way to obtain Rumensin[®], which is used in all rations in this study, which reduces total feed requirements from 8 to 10 percent.

Table 3. Supplement Formulas for Dairy Steer Rations^{a/}

	Corn Silage as Only Forage			Equal Proportions Corn Silage & Hay
	A	B	C	D
	lb./1000 lb. batch			
Soybean meal, 44%	900	-	-	910
Ground shelled corn	-	705	555	-
Urea	-	120	125	-
Calcium carbonate	40	0	185	50
Dicalcium phosphate	30	70	40	-
Calcium sulfate	-	25	25	-
Trace mineral salt	<u>30</u>	<u>80</u>	<u>70</u>	<u>40</u>
Total	1000	1000	1000	1000
	Vitamins, IU/1000 lb. batch			
Vitamin A	20	30	30	30
Vitamin D	2	3	3	3
	Composition of Supplement			
Total protein, %	40	40	40	42
Calcium, %	2.4	1.5	4.5	1.9
Phosphorus, %	1.2	1.5	1.0	0.7
Salt, %	3.0	8.0	7.0	4.0

^{a/} If the above formulas are used and if the mill or farmer has a clearance to mix Rumensin[®], then it should be added at a rate to provide the following approximate amounts of Rumensin[®], per head daily.

	Animal Body Weight, Lb.			
	140-300	300-500	500-700	700-Market
Rumensin [®] , milligrams/hd./day	120	180	240	300

Total feed requirements for dairy steers are dependent on the amount of forage in the ration which closely corresponds to the rate of gain. A ration containing a high forage content of equal proportions of corn silage and hay on a dry-matter basis will take a dairy steer 495 days on feed to attain market weight (Table 4). A two-phase system which feeds a high-forage ration to 850 pounds followed by a high concentrate ration will lower days on feed by 50. Moving to a high concentrate system lowers days on feed even further to 410.

Table 4. Feed Requirements and Days on Feed for Raising Holstein Steers From Weaning at 140 lb. to 1250 lb. on Six Alternative Feeding Systems^{a/}

Feedstuff	Corn Silage as the Only Forage			Equal Proportion of Forage Dry Matter From Hay and Corn Silage		
	High Forage	Two Phase ^{b/}	High Concentrate	High Forage	Two Phase ^{b/}	High Concentrate
Corn silage, (tons)	12.5	7.8	5.4	4.5	3.0	2.1
Hay, (tons)	-	-	-	3.4	2.2	1.5
High moisture shelled corn, (tons)	-	1.2	1.8	1.3	1.9	2.2
Protein-mineral supplement						
Soybean meal based, (lbs.)	330	330	215	380	340	300
Urea based, (lbs.)	240	115	115	-	-	-
Days to reach 1250 lbs.	495	445	410	495	445	410
Number marketed/head feedlot capacity/year	.75	.82	.89	.75	.82	.89

a/ The values in the tables are based on the following:

1. A growth stimulant was properly implanted. Decrease daily gain 12 percent if a growth stimulant (Ralgro or Synovex S) is not implanted every 100 days.
2. Rumensin^(R) was fed. Increase feed requirements 8 to 10 percent if Rumensin^(R) is not fed.
3. A stress-free environment with good ventilation, minimum cold stress and no mud. Increase average requirements 8-12 percent for cemented or well drained dirt outside lots.

b/ High-forage ration is fed to 850 lb., then switched to a high-grain ration until 1250 lb. market weight is reached.

Feedlot Investments and Production Costs

Additional investments for dairy steer production range from \$250 to \$350 per head of feedlot capacity (Table 5). The lower investments for the 50-head capacity feedlot result from a reallocation of existing forage storage for the dairy livestock and a suitable shelter currently on the farm thereby minimizing additional investment. With the 100-head feedlot capacity, all housing and forage storage is new construction specifically for the additional feedlot capacity, thus the higher investment.

Table 5. Additional Investments Required for Dairy Steers Housing and Feeding, 1978

Type of Dairy Beef Enterprise and Level of Forage Feeding	Feedlot Capacity	Concrete Silos & Unloaders	Housing & Concrete Lot	Feedbunks, Waterers & Fencing	Total
Bob Calf Enterprise	50				
High Forage		\$13,170	\$ 1,200 ^{a/}	\$1,600	\$15,970
Two-Phase		\$10,720	\$ 1,200 ^{a/}	\$1,600	\$13,520
High Concentrate		\$ 9,260	\$ 1,200 ^{a/}	\$1,600	\$12,060
Dairy Steer Feedlot	100				
High Forage		\$22,330	\$10,090	\$2,810	\$35,230
Two-Phase		\$20,530	\$10,090	\$2,810	\$33,430
High Concentrate		\$18,700	\$10,090	\$2,810	\$31,600

^{a/} Use of an existing building for shelter only, concrete lot and windbreak are new construction.

Variable costs other than roughages, corn grain and labor per dairy steer from weaning to market weight are approximately \$80 (Table 6). These costs will not likely vary greatly from one farm situation to another. It is important to note, however, that careful management is required. Implants of Synovex and Ralgro are used as well as a combination of soybean meal and urea as protein sources.

Table 6. Variable Costs Per Dairy Steer With Equal Parts of Corn Silage/Hay Forage System From Weaning to Market Weight^{a/}, 1978

Item	High Forage	Two-Phase	High Concentrate
Milk Replacer (35 lbs./hd.)	\$15.10	\$15.10	\$15.10
Calf Starter (125 lbs./hd.)	\$11.30	\$11.30	\$11.30
Soybean Meal	\$17.10	\$17.10	\$19.20
Urea	\$11.30	\$ 9.50	\$ 9.50
Implants: Synovex or Ralgro	\$ 4.00	\$ 4.00	\$ 4.00
Veterinary and Medicine	\$ 4.55	\$ 4.55	\$ 4.55
Utilities	\$ 7.00	\$ 7.00	\$ 7.00
Transportation & Marketing	<u>\$ 8.20</u>	<u>\$ 8.20</u>	<u>\$ 8.20</u>
Total	\$78.55	\$76.75	\$78.85

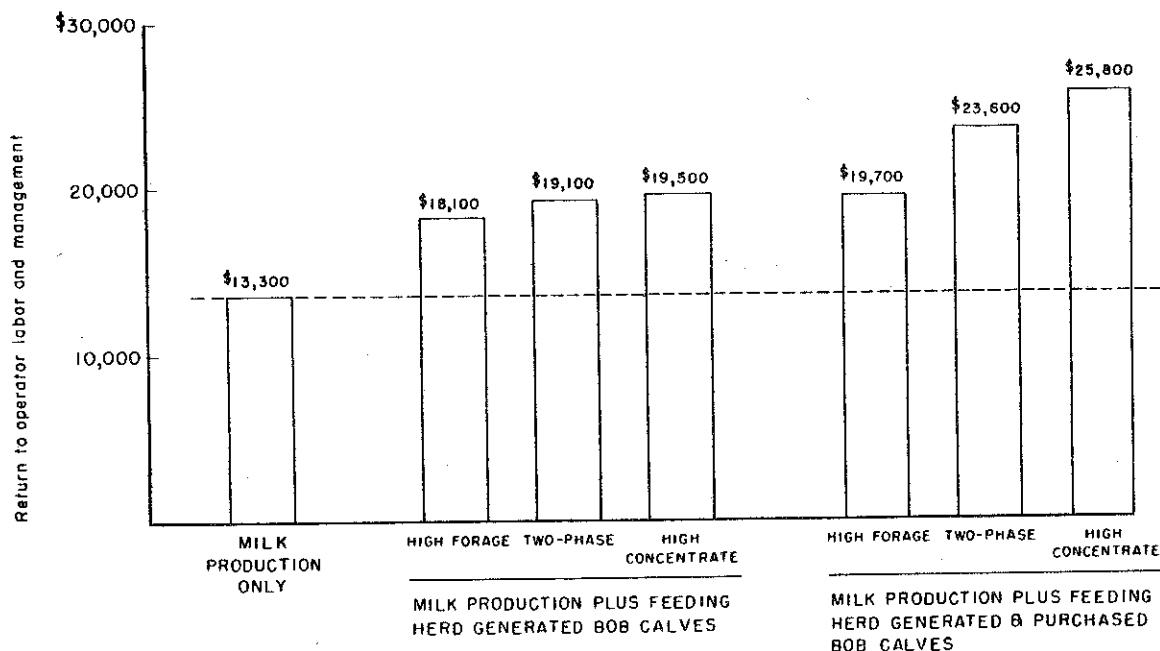
a/ Add the cost (or value if farm produced) of bob calf and 10 percent for death loss. A calf purchase price of \$85 was used for profitability calculations. Does not include value of farm-grown forages, corn, or labor.

Profitability

Profitability of adding a dairy steer enterprise is dependent upon the feeding system and the number of animals marketed (Figure 1). For comparison, the return to operator's labor and management for a base 100-cow dairy farm is calculated to be \$13,300. By feeding the 39 herd-generated bob calves a half corn silage and half hay forage base, labor and management income could be increased by \$5,000 to \$6,000. Profit could be increased by over \$12,000 through the purchasing of additional bob calves to bring the total number marketed to 89, the forage producing capacity of the land resource, and by feeding the high-concentrate ration.

A slaughter price of \$55 per hundredweight is used for the calculations. Higher prices have existed, any may exist in the next few years, yet this price is believed to represent longer run prices. Prices received are a very important aspect of beef production and need to be examined with respect to each individual farm situation and marketing area.

FIGURE 1. OPERATOR LABOR AND MANAGEMENT INCOME FROM A 100 COW DAIRY AND WITH SELECTED DAIRY STEER ENTERPRISES



The high concentrate system results in increased profits, but requires additional acreage planted to corn grain which increases crop production expenses and reduces hay sales. With the constant number of herd generated bob calves the difference in profit results not from cash expenses per head but rather the lower forage storage costs. Allowing additional bob calves to be purchased up to the feedlot capacity finds the increased revenue generated from the greater number that can be marketed each year with the high concentrate system increasing the differences between systems.

Although not examined in this study, raising dairy steers to a feeder weight may also be a means of supplementing milk income. Up to a feeder weight the dairy steers may be housed and fed in the same manner as the dairy heifers. This alternative would reduce corn grain utilization greatly, but would increase the importance and effort required in marketing the animals.

Break-even Corn Prices

Corn grain prices have a significant impact on the decision to feed or not feed dairy steers. If acreage to produce grain requirements is available, an alternative market for the grain is a cash sale. Dairy managers are, therefore, interested in the market price that would be received if the corn were sold and the resulting profit compared to feeding dairy steers. If corn grain must be purchased, managers are interested in the purchase price above which profits will not be realized.

The break-even prices of corn grain for dairymen in each of the above situations are presented in Table 7. Two prices of corn are indicated. The first is the price at which all variable costs of production would be covered. Variable costs of production include the cost of the calf, purchased feeds, veterinary and medicine, and utilities. The second price of corn indicated is the price at which both variable and fixed costs are covered. Fixed costs include housing, feed storage and feedlot investments.

Table 7. Break-Even Corn Prices for Dairy Steer Feeding

Farm Acreage and Forage System For Dairy Steers ^{a/}	Variable Costs Covered	Variable and Fixed Costs Covered
	(Dollars Per Bushel)	
400-Acre Dairy Farm; Growing Corn Grain		
High Forage	3.94	2.75
Two-Phase	4.17	3.41
High Concentrate	4.30	3.73
250-Acre Dairy Farm; Purchasing Corn Grain		
High Forage	3.35	2.55
Two-Phase	3.76	3.32
High Concentrate	3.87	3.56

^{a/} Forage is equal portions of hay crop and corn silage, dry matter basis.

At prices above these levels it would be more profitable not to feed dairy steers. For farms with existing dairy steer facilities, the price at which variable costs are covered is appropriate. For those needing to make capital investments, the price at which both variable and fixed costs are covered is appropriate. Break-even corn grain sale prices increase as larger amounts of concentrate are included in the ration. With corn grain prices below the low \$4.00 per bushel level for the 400 acre dairy farm with existing facilities or below \$2.75 to \$3.73 per bushel depending on forage system without existing facilities, it would be more profitable to raise beef steers than sell cash corn. With market prices above these levels it would be more profitable to sell cash corn.

On a reduced acreage (250 acre dairy farm) where corn grain must be purchased, prices below mid-\$3.00 per bushel levels with existing facilities or below \$2.55 to \$3.56 per bushel depending on forage system result in more profit raising dairy steers. Corn grain purchase prices above this would mean dairy

steer production would not be profitable.

Summary

Feeding dairy steers may be a way of supplementing milk income without committing large amounts of capital or labor. Yet, the dairy beef enterprise must not be managed as a supplementary enterprise. Production management, especially feeding must be given careful attention. Marketing also needs to be explored fully before entering into production and given constant attention thereafter.