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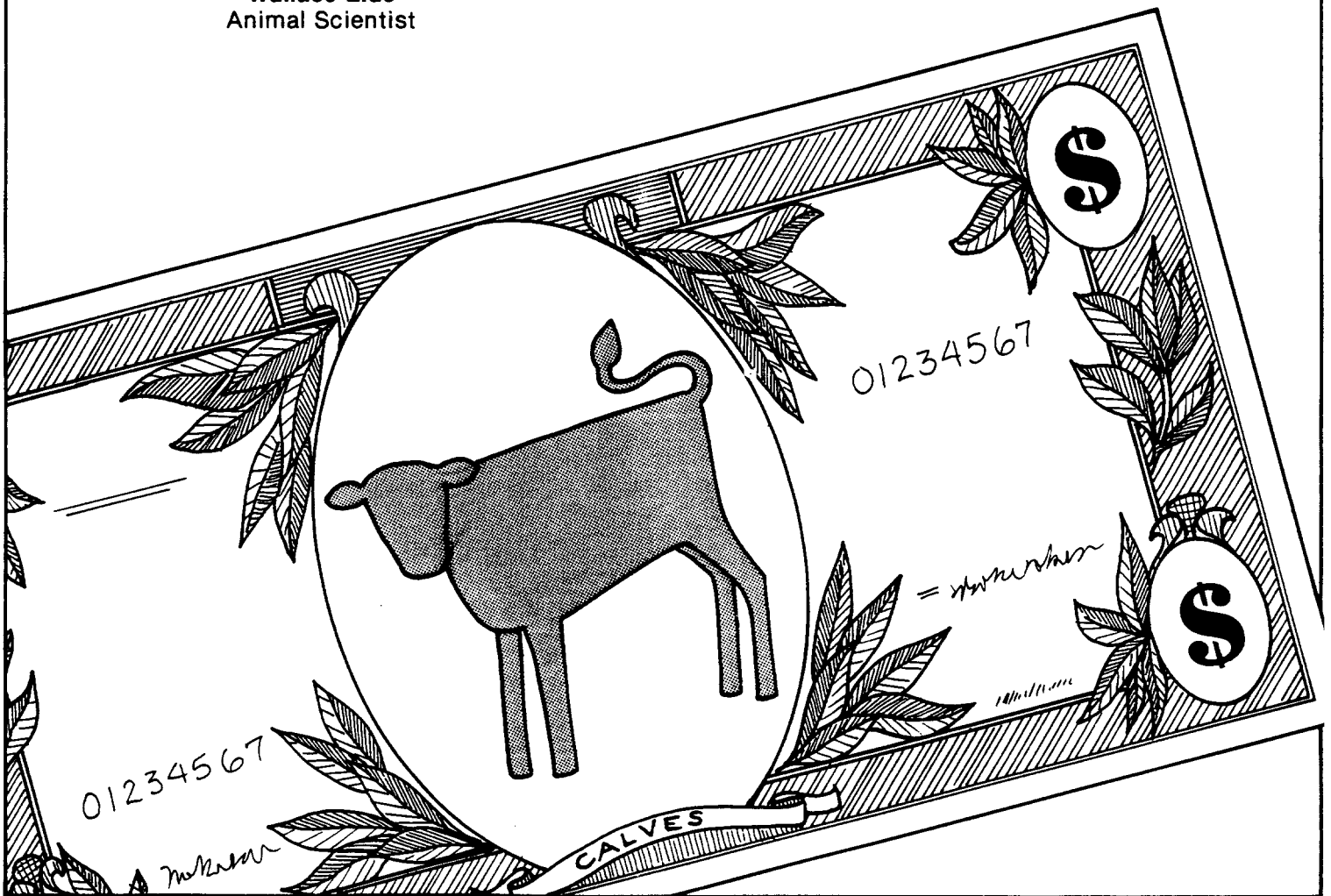
Breakeven Prices for Backgrounding Calves

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Seasonal price patterns suggest that fall calf prices are often not the optimum for the marketing year. A common marketing alternative involves backgrounding (or wintering) calves for sale as yearlings the following spring. However, while spring prices and total returns are often higher, net returns may be lower. The use of budgeting can aid decision-making by indicating the **potential** for increasing net returns through backgrounding.

A distinction is often made between wintering and backgrounding, with the primary difference being type of ration fed. A wintering program emphasizes slower gains and cheaper **total** cost of gain with the intent that the calf go to a pasture program in the spring. Backgrounding emphasizes a faster rate of gain, with relatively more grain and less roughage, to prepare the calf for feedlot placement. **Total** costs of gain may be higher in the faster-gain program but costs **per hundredweight** of gain may be less.

Comparing Returns

When considering alternatives to fall calf sales, it may be useful to make a three-way comparison: fall sale versus wintering versus backgrounding. One method of evaluating these alternatives is through comparison of "breakeven" prices. The "breakeven" price for wintering or backgrounding calves is the projected sales price necessary to cover the cost of the feeding program.

The examples shown in this guide are based on the data indicated in Table 1. These data provide an example of four hypothetical feeding programs based on steer calves initially weighing 425 pounds and backgrounded for 150 days.

The example budgets compare the costs and breakeven sales prices for feeding programs based on four different rates of gain. Costs of the programs are about the same except for feed costs. The initial feeder cost is considered an opportunity cost, representing income foregone by not selling the calves in the fall.

All rations were developed using the AGNET (agricultural computer network) "FEEDMIX" program. Calves fed to higher rates of gain are fed a greater proportion of grain and less roughage. Calves fed to gain 2.0 pounds per day were assumed to be larger framed (later maturing) than in the other three examples.

The costs used in the table and in the example budgets are intended for example purposes only and may not be an accurate representation of cost for any individual operator. Each producer should compute and use his own data in the budgeting process.

In these examples, the backgrounding programs show a better potential for increased returns than the wintering program (Table 2). Even though total costs are higher for the faster-gain programs, the cost per pound gained is less, resulting in lower breakeven sales prices. However, even the slower gain program may be a useful alternative to fall sales if it provides a market for feed that might otherwise be difficult to sell (such as loose-stacked hay). Also, if the calves are to be retained for a pasture program, pasture gains may compensate for the reduced returns of the wintering program.

Table 2. Comparison of Example Feeding Programs.[1]

| | Feeding Program | | | |
| | Wintering | Backgrounding | | |
	1.0	1.25	1.7	2.0
Average daily gain (lbs)	1.0	1.25	1.7	2.0
Feeder cost	$289.00	$289.00	$289.00	$289.00
Feed costs	56.81	60.72	69.09	73.72
Other variable costs	29.41	29.51	29.72	29.84
Fixed cost	5.00	5.00	5.00	5.00
Total Cost	380.22	384.23	392.81	397.56
Breakeven per cwt. (over all costs)	67.41	64.04	58.98	55.92
Projected selling price (per cwt.)	67.00	66.00	65.00	64.00
Returns to labor and management (per head)	-2.31	11.76	40.09	57.45
Cost per pound gained	61¢	51¢	41¢	36¢

[1]These comparisons were developed using the "Cattle-Feeding Worksheet." See example budget, page 6.

In reviewing these examples, several factors should be considered:

1) These are examples of a budgeting process. Non-feed costs used may be higher or lower than many operators are currently experiencing. Each operator should prepare his own budget and base cost estimates on his own records and experience.

2) A higher feed cost would increase the breakeven price. Feed prices may be higher or lower than those indicated, higher or lower in some areas than in others, or a different ration might be used. Or, the local market for hay may be limited, reducing the opportunity cost of using roughages for backgrounding.

Table 1. Data Used To Compute Breakeven Prices.

| | Feeding Program | | | |
| | Wintering | Backgrounding | | |
	1.0	1.25	1.7	2.0
Intended average daily gain (lbs)	1.0	1.25	1.7	2.0
Number of days feeding	150	150	150	150
Initial weight	425	425	425	425
Sale weight (after 2 percent shrink)	564	600	666	711
Death loss (percent)	1	1	1	1
Interest rate (percent)	12.5	12.5	12.5	12.5
Per head costs (vet., medical, operating & misc.)	$10	$10	$10	$10
Feed per head:				
Barley (at $1.90/bu.)	1 bu.	5 bu.	14 bu.	20 bu.
Alfalfa (at $45/ton)	.58 ton	.48 ton	.28 ton	.18 ton
Corn silage (at $20/ton)	1.4 ton	1.4 ton	1.4 ton	1.3 ton
Mineral (at 18 cents/lb.)	4.5 lbs.	9 lbs.	10.5 lbs.	9 lbs.

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3) No cost was assumed for labor. If the operator has an alternate value for his time, then there would also be an opportunity cost for labor.

4) Estimated sales prices may be too conservative. The purpose of the budget is to assess the potential of a backgrounding program. Once the operator has determined his own breakeven price, the task of assessing potential for gain versus risk of loss is a bit easier.

5) The sales price differential between wintered versus backgrounded calves may be greater or less than that indicated in the examples. The differential depends, to some extent, on the level of feedlot demand relative to the demand for pasture calves.

Preparing The Budget

The first step in budgeting marketing alternatives for calves is to determine the production feasibility of each alternative to be considered. Each alternative must reflect a realistic rate of gain for the type and amount of feed used in the ration. The ration examples used in this guide were developed using the AGNET FEEDMIX program. This program determines a least-cost, balanced ration for selected rates of gain. Another AGNET program, BEEF GROWER, was used to test ration efficiency in a simulated feeding program to determine the actual feasibility of the selected ration to produce the desired rate of gain. This program accounts for variation in rate of gain due to variation in average daily temperatures. The examples used in this guide reflect an average Bismarck, North Dakota winter.

Once the ration and desired rate of gain are selected, the enclosed budget, "Cattle Feeding Worksheet," can be used to determine a breakeven sales price. Steps in completing the budget are as follows:

1) **Feeder Cost** — Enter the number of hundredweights and the animal's value per hundredweight at the start of the feeding period.

If the feeder is owned, the initial value is considered an opportunity cost, representing income foregone by not selling the feeder on the current market. If the feeder is to be purchased, the initial value is the expected purchase cost.

2) **Feed Cost** — Enter projected feed quantity and current price.

Owned feed to be used in the feeding enterprise represents an opportunity cost and should be priced at its market value.

3) **Other Variable Cost**

a. Veterinary, medical, operating and miscellaneous. Enter projected out-of-pocket expenses.

b. Interest expense on feeder. Enter total cost of feeder, multiply by appropriate interest rate, and multiply that product by the portion of the year on feed.

The interest rate chosen should consider the operator's investment alternatives to the feeding program (opportunity cost). If, for example, the calves were sold in the fall, rather than placed in a feeding program, the proceeds would be available for investment elsewhere. If the operator's highest valued alternative is to pay down an operating loan at 12.5 percent interest, then that rate would be appropriate to use as an opportunity cost of capital in the feeding program.

c. Interest expense on feed and operating costs. Enter feed cost plus operating cost. Multipy that sum by ½ (the factor ½ assumes that not all of these expenses would be incurred at the start of the feeding period, but spread throughout). Multiply that product by the interest rate and that result by the portion of the year on feed.

d. Labor cost. Enter hours of labor and multiply by rate per hour.

The examples shown do not include a labor charge as a cost, but show potential returns partly as a return to labor. If the feeding enterprise were to include hired labor, or if the operator were to give up work income from another source (opportunity cost) in order to have the time to feed calves, then a labor charge should be included as a cost.

e. Death loss. Computed as a percent of initial feeder value.

A 1 percent rate was used in the examples shown, assuming the feeders were owned rather than purchased and would not be exposed to shipping and marketing stress. Operator experience may indicate a higher rate should be used. The rate selected should also reflect the number of animals being fed. A 1 percent rate reflects an expectation of one death per 100 animals, while one death out of 50 animals would be a 2 percent death rate.

f. Marketing costs. Enter total costs for trucking, commission, yardage, etc.

The examples shown do not include marketing costs. Since these examples assume the calves are owned rather than purchased, the intent of the budgets is to show the additional cost of retaining ownership. Not including marketing costs in the examples assumes that these costs would be the same at the end of the feeding period as they would have been with fall sales. An alternative method would be to reduce the initial feeder value by estimated marketing costs, then include ending marketing costs in the budget.

4) **Total Variable Cost** — Sum of the initial feeder value, feed costs and other variable costs.

These are the costs that are incurred only if production takes place (retaining the calves rather than fall sales).

5) **Total Fixed Costs** — Total fixed cost of the enterprise divided by the number of head in the feeding program.

These are costs that will be incurred even if production (retaining the calves) does not take place.

6) **Total Of All Costs** — Add fixed and variable costs.

7) **Breakeven Over Variable Costs** — Divide total variable cost by the expected sales weight, then multiply the result by 100. The result is the breakeven sales price per hundredweight that will cover all variable cost.

8) **Breakeven Over All Costs** — Divide total of fixed and variable cost by the expected sales weight, then multiply the result by 100. The result is the breakeven sales price per hundredweight that will cover all costs.

9) **Projected Selling Price Per Hundredweight** — Enter the price per hundredweight that is currently being forecast for the type and weight of feeder to be sold at the end of the feeding period.

10) **Estimated Returns Per Hundredweight** — Subtract breakeven price from projected sales price.

11) **Estimated Returns Per Head** — Multiply the number of hundredweights sold by the estimated returns per hundredweight.

(Backgrounding, 1.7 Pound Average Daily Gain)

CATTLE-FEEDING WORK SHEET

VARIABLE COSTS

1. Feeder cost _4.25_ cwt pay weight @$_68.00_ per cwt $289 (1)

2. Feed Cost:

		Quantity	Unit			
Feed 1	Barley	14	bu.	@$ 1.90 /unit =	$26.60	
Feed 2	Alfalfa	.28	ton	@$ 45.00 /unit =	$12.60	
Feed 3	Corn silage	1.4	ton	@$ 20.00 /unit =	$28.00	
Feed 4	Mineral	10.5	lbs.	@$ 0.18 /unit =	$ 1.89	

Total Feed Costs $ 69.09 (2)

3. Other Variable Costs

(a) Vet, medical, operating cost of facilities and equipment and miscellaneous costs $10.00

Interest on costs of feeder, feed and operating cost

(b) Feeder cost (1)_289_ × _.125_ (%/100) interest rate × _.41_ portion of year on feed   = $14.81

(c) Feed and operating cost: Feed cost (2)_69.09_ + operating (3.a) $10.00 = $79.09 × ½ = $39.54 × .125 (%/100) interest rate = $4.94 × _.41_ portion of year on feed   = $ 2.02

(d) Labor cost: Hours (3 to 5)_____ @$_____ per hour   = $_____

(e) Death loss[1] Feeder cost (1) $289 × _.01_ (%/100)   = $ 2.89

(f) Marketing costs including hauling and commission   = $_____

Total of Other Variable Costs $ 29.72 (3)

4. TOTAL VARIABLE COSTS (1 + 2 + 3) $387.81 (4)

5. TOTAL FIXED COSTS

Depreciation, insurance, taxes and interest on building and equipment $ 5.00 (5)

6. TOTAL OF ALL COSTS (4 + 5) $392.81 (6)

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7. Necessary selling price per 100 lb to cover cost of feeder, feed and other variable costs (4) ÷ market weight × 100 EX: (387.81 ÷ 666) × 100 $ 58.23 (7)

8. Necessary selling price per 100 lb to cover total cost of finishing animal (6) ÷ market weight × 100[2] EX: (392.81 ÷ 666) × 100 $ 58.98 (8)

9. Estimated selling price per 100 lb $ 65.00 (9)

10. Estimated profit and return to management per 100 lb (9-8) $ 6.02 (10)

11. Estimated profit and return to management per head (10) × _6.66_ selling weight (cwt) $ 40.09 (11)

[1]Approximately 1 percent for yearlings, 2 percent for calves.
[2]Does not include a return to mangement or profit.

CATTLE-FEEDING WORK SHEET

VARIABLE COSTS

1. Feeder cost____cwt pay weight @$____per cwt $_____(1)

2. Feed Cost:

                  Quantity Unit

     Feed 1 _____ _____ _____ @$_____ /unit = $_____

     Feed 2 _____ _____ _____ @$_____ /unit = $_____

     Feed 3 _____ _____ _____ @$_____ /unit = $_____

     Feed 4 _____ _____ _____ @$_____ /unit = $_____

     Total Feed Costs $_____(2)

3. Other Variable Costs

     (a) Vet, medical, operating cost of facilities and equipment $_____
         and miscellaneous costs

     Interest on costs of feeder, feed and operating cost

     (b) Feeder cost (1)____×____(%/100) interest rate
         ×.___portion of year on feed   = $_____

     (c) Feed and operating cost: Feed cost (2)_____+ operating (3.a)
         $____= $____× ½ = $____×.___(%/100) interest rate = $____
         ×.___portion of year on feed   = $_____

     (d) Labor cost: Hours (3 to 5)_____@$_____ per hour   = $_____

     (e) Death loss[1] Feeder cost (1) $___×.___(%/100)   = $_____

     (f) Marketing costs including hauling and commission   = $_____

     Total of Other Variable Costs $_____(3)

4. TOTAL VARIABLE COSTS (1 + 2 + 3) $_____(4)

5. TOTAL FIXED COSTS

     Depreciation, insurance, taxes and interest on building and
     equipment $_____(5)

6. TOTAL OF ALL COSTS (4 + 5) $_____(6)

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7. Necessary selling price per 100 lb to cover cost of feeder, feed and
    other variable costs (4) ÷ market weight × 100 $_____(7)

8. Necessary selling price per 100 lb to cover total cost of finishing
    animal (6) ÷ market weight × 100[2] $_____(8)

9. Estimated selling price per 100 lb $_____(9)

10. Estimated profit and return to management per 100 lb (9-8) $_____(10)

11. Estimated profit and return to management per head (10) ×_____
     selling weight (cwt) $_____(11)

[1]Approximately 1 percent for yearlings, 2 percent for calves.
[2]Does not include a return to mangement or profit.

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