



Several livestock producers in Mendocino and Lake Counties are getting into direct sales of their livestock. Some are even traveling into Glenn County to have their livestock slaughtered and processed at a federally inspected plant so they can sell meat to restaurants and at farmer's markets. The following article on direct marketing will help in understanding pricing and profitability strategies.

Direct Marketing Pricing & Profitability Strategies for Your Business

Hsu Ling Tan, B.S., MBA
Food Safety/Microbiology Specialist
Department of Food Science and Technology
University of California, Davis

Introduction

Setting the right price for your products determines profitability and the success of your business. A price too low may cause you to operate at a loss while a price too high drives away potential customers. In general, prices are set by operation costs at the lower limit and customer's willingness to pay at the upper limit. The first step in setting your product's price is to determine your production costs. Production costs include both fixed and variable costs. Keeping track of these costs will help you assess the profitability of each your products.

Variable Costs

Variable costs are costs that are directly associated with producing a product. Variable costs are incurred only if an item is produced. It is dependent on the volume produced and increases with production levels. Variable costs may include: field preparation, fertilizer, seeds, harvesting, seasonal labor, packaging, feed, utilities, and shipping.

Fixed Costs

Fixed or overhead costs are costs incurred even when no products are produced. Fixed costs generally include loan payments, property taxes, rents, depreciation, land or building maintenance, employee salaries, marketing, and insurance. Fixed costs are generally difficult to allocate or trace to a single item produced. Here are two commonly used methods to allocate fixed costs:

- Allocating fixed cost or overhead as a percentage of total production or total acreage

For example, if 10% of your land was used to grow corn, then 10% of your total overhead (fixed costs) will be allocated to the cost to produce the corn.

- Predetermined production overhead rate (PPOR)
$$PPOR = \frac{\text{Est. production overhead}}{\text{Est. activity level (e.g., labor hours)}}$$

Example, $PPOR = \frac{\$100,000}{50,000 \text{ labor hours}} = \$2 \text{ per direct labor hour}$

Therefore, \$2 of overhead is allocated for every hour of labor used to produce a product.

Revenues

Revenue is the amount generated from the total quantity of products sold at the sales price.

$$\text{Revenue} = \text{Sales Price} \times \text{Quantity Sold}$$

Example, $\text{Revenue} = \$5 \text{ per lb meat} \times 10,000 \text{ lbs} = \$50,000$



Contribution Margin

Contribution margin (CM) is the selling price per unit less the variable costs per unit. This value is the amount that can be used towards covering your fixed costs.

$$\text{CM per unit} = \text{Selling price per unit} - \text{Variable Costs per unit (VC)}$$

$$\begin{aligned} \text{Example, CM} &= \$5 \text{ per lb of sold} - \$3.00 \text{ per lb} \\ &\text{produced} \\ &= \$2 \text{ contributed toward covering} \\ &\text{fixed costs} \end{aligned}$$

$$\text{Total CM} = \text{Revenues} - (\text{VC per unit} \times \text{Quantity})$$

$$\begin{aligned} \text{Example, Total CM} &= (\$5 \text{ per lb} \times 10,000) \\ &\quad - (\$2 \text{ per lb} \times 10,000) \\ &= \$20,000 \end{aligned}$$

Contribution Margin Ratio

$$\text{CM ratio} = \frac{(\text{Selling price per unit} - \text{VC per unit})}{\text{Selling price}}$$

$$\begin{aligned} \text{Example, CM ratio} &= (\$5 - \$3) / \$5 \\ &= 0.4 \end{aligned}$$

Break-Even Point

Break-even point refers to the price and quantity sold that will cover all costs (fixed and variable) leaving zero profits.

$$\text{Break-even sales volume} = \frac{\text{Fixed costs}}{\text{CM per unit}}$$

$$\begin{aligned} \text{Example, BE volume} &= \frac{\$100,000}{\$2 \text{ per unit}} \\ &= 50,000 \text{ lbs of meat} \end{aligned}$$

$$\text{Break-even sales dollars} = \frac{\text{Fixed costs}}{\text{CM ratio}}$$

$$\begin{aligned} \text{Example, BE sales dollars} &= \$100,000 / 0.4 \\ &= \$250,000 \end{aligned}$$

If your fixed costs were \$100,000, to break even you would need to sell 50,000 lbs of meat or generate \$250,000 in revenues.

Profit

Profit is the excess of revenues after all costs or expenses have been subtracted.

$$\text{Profit} = (\text{Sales price} \times \text{Quantity sold}) - (\text{Variable cost} \times \text{Quantity sold}) - \text{Fixed cost}$$

$$\begin{aligned} \text{Example, Profit} &= (\$5 \times 60,000) - (\$3 \times \\ &\quad 60,000) - \$100,000 \\ &= \$20,000 \text{ profit} \end{aligned}$$

Note: Positive value denotes profit while negative value a loss.

Pricing Strategies

Understanding the concepts above will allow you to experiment with different combinations of prices and quantities to make your pricing decisions. Here are some common pricing strategies used in setting prices and maximizing profitability.

Sell at market price

This method uses your competitors as a guide to determine your price. Set your price at what your competitors are selling their products at. If you are selling at a farmers' market, take a quick walk around the farmers' market before the market starts. Note the prices and the quality of the products your competitors have. If your product is equal in quality, you should set a similar price. If your product has added value or is better, you can set a slightly higher price. For example, if you are the only vendor selling organic fruits, you can set your prices about 10% higher because you are selling an added-value product.

Cost-plus pricing (Markup Pricing)

Cost-plus pricing adds a percentage of unit variable cost to determine the price. The percentage used should be able to cover fixed costs and the desired profit. Generally, a 40% markup is about average for direct marketing.

$$\begin{aligned} \text{Example, if your variable cost is } \$3 \text{ per lb of meat} \\ \text{produced, using a 40\% markup will set your selling} \\ \text{price at } \$4.20 \text{ per lb of meat sold.} \end{aligned}$$

Using costs and target profits

This method takes the most time as it requires that you accurately keep track of all your costs. When you set your target profit, you need to make sure it is realistic and reasonable. A target profit set too high causes your selling price to be high. A selling price set too high leads to loss of sales.

Selling price = Target profit + Fixed cost + Variable cost

For example, for a \$1 profit per lb of meat sold with \$2 fixed costs, and \$3 variable cost, Selling price = \$1 + \$2 + \$3 = \$6

To have a profit of \$1, you will need to sell your meat at \$6 per lb. Before you set your selling price, ask yourself, is \$6 dollars a reasonable price? If you think it is too high, then your potential customers will also think it is too high and may not buy from you.

Sound Selling Advice

- Compete fairly on quality and service, never undercut
- Do not badmouth other growers or sellers
- Produce a good product and ask for a good price

Early Weaned Heifer Calves Had Improved Reproduction

(Reprinted from Beef Cattle Research Update Summer 1994 by Harlan Ritchie, Steven Rust and Daniel Buskirk, Beef Cattle Specialists, Michigan State University)

University of Illinois researchers used 64 Simmental x Angus heifer calves to evaluate the effects of weaning age and creep feed protein levels on performance, reproduction, and milk production of replacement heifers. Weaning ages were either 89 or 232 days of age. Creep diets were either 12 or 17% crude protein (CP). All calves were provided free access to the 12% CP diet until their dietary treatments started, which occurred 57 days after early weaning (146 days). Calves remained on their respective dietary treatments until one month after normal weaning (262 days). **Early weaned (EW) heifers fed the 17% diet gained faster (2.78 vs. 2.60 lb/d) and weighed more at normal weaning (NW) age than those receiving the 12% diet.** Feeding the 17% diet to NW heifers decreased

their performance from 3.02 to 2.69 lb/d. The EW heifers were lighter than NW heifers from puberty through breeding. Nevertheless, **more EW heifers than NW heifers were pubertal at 8 mos. of age (81.3% vs. 59.4%)**, but there was no difference at either 10 or 12 mos. of age. **Pregnancy rates were higher for EW than NW heifers (90.0 vs. 74.2%)**. There were no significant differences between the 12 and 17% diets in body weight at puberty, percent of heifers pubertal by 8, 10, or 12 mos. of age, or reproductive rate. Neither weaning age nor creep protein level influenced heifer milk production or performance of their calves. **These results indicated that early weaning improved heifer reproduction without affecting milk production.** Also, it appears that providing additional protein in the diet of EW heifers can improve post-weaning weight gain.

In a companion paper, the Illinois workers reported results of another study in which 136 NW heifers were fed creep diets containing either 12 or 17% CP. Results differed from the previous study in that milk production was depressed in heifers fed the 17% diet (10.8 vs. 12.3 lb/d). **It would appear that nothing is to be gained, and milk production could be reduced, by feeding a 17% CP creep diet to NW heifer calves destined to become herd replacements** (Sexten et al. Midwestern ASAS, Abstracts 283 and 284).

Differences in Performance of Hair Sheep Lambs and Meat Goat Kids Offered High Forage Diets with a Corn-Based Supplement

(Source: Wildeus, S., Turner, K.E., Greiner, S.P., Collins, J.R. 2004. Journal Of Animal Science Abstracts. 2004 Asas Southern Meeting. 82 (Supplement1):28.)

Hair sheep and meat goats are suited for similar production environments and generally are sold to ethnic niche markets. However, there is only limited information directly comparing the performance of these two species in the U.S. When animals were 3.5 mos. of age, 36 animals (equally representing Barbados Blackbelly, and Katahdin, and St. Croix intact ram lambs, and Boer cross, Myotonic, and Spanish intact buck kids) were allocated to 6 pens by species (3 pens/species) with pens balanced for breed. All animals were offered a moderate quality tall fescue (*Festuca arundinacea* Schreb.) hay (10.6% CP, 46.9%

IVOMD, 70.4% NDF, 39.5% ADF) ad libitum, and limit-fed a corn-whole cottonseed-soybean meal supplement (15.5% CP) at 2.0% BW during the 163 day trial. Intake of hay and supplement (pen basis), and individual BW were recorded on days 28, 84, and 154 of the trial. At the beginning of each intake period, blood samples were collected via jugular venipuncture to determine plasma metabolites. On day 156, ultrasonic backfat and rib eye area measurements were made and animals graded. Data were analyzed for the effects of species. Forage DM intake was higher in sheep than goats (1.49 vs 1.36 % BW; $P < .05$), and decreased ($P < .01$) overall from 1.66% BW to 1.26% BW during the course of the trial. Compared to goats, sheep had higher ($P < .001$) starting BW (21.7 vs 16.6 kg), final BW (45.3 vs 33.5 kg) and ADG (145 vs 107 g/d). Sheep also graded higher ($P < .01$), and had higher ($P < .001$) backfat (0.42 vs 0.18 cm) and ribeye area (11.4 vs 8.6 sqcm). Sheep had higher ($P < .01$) blood urea nitrogen (20.6 vs 16.6 mg/dL), glucose (75.1 vs. 67.5 mg/dL), and creatinine (0.619 vs 0.542 mg/dL) concentrations than goats. Results indicate that hair sheep lambs grew faster and consumed more forage than meat-type goats under the conditions of this experiment.

Will This Be A Bad Year For Grass Tetany?

John Maas, DVM, MS
Diplomate, ACVN & ACVIM
Extension Veterinarian
School of Veterinary Medicine

(Reprinted from UCD Vet Views California Cattlemen's Magazine January 2005)

The fall of 2004 started out great—early rains, warm temperatures, early grass growth and continued good prices for cattle. So what could go wrong? December has turned colder with significant fog in the valleys and sunshine in the foothills. So depending on future rainfall, temperatures and factors we can't always predict, cattle could be catastrophically affected by the condition known as grass tetany. This is a complex metabolic disease that usually affects lactating beef cattle in California; although, it can affect younger cattle on lush pastures, range, or wheat pastures. The underlying problem is a shortage of Magnesium (Mg) both in the cattle and in their diets. High levels of plant Potassium (K) and nitrogen (as ammonium NH_4^+) both interfere with Mg absorption by the animals. Therefore, fertilization with potash (K) and/or ammonium sulfate can increase plant

growth and also increase the risk of grass tetany. The demands of lactation deplete the cow of both Mg and Calcium (Ca) and the clinical signs are caused by the combined shortage of Mg and Ca in these cattle. In addition to low Mg intake combined with higher levels of potassium and ammonia, cattle that are consuming low levels of Ca, phosphorus, and salt are at greater risk of developing grass tetany.

What might happen if we have a bad grass tetany year?

The cattle on lush feed can often be found dead with evidence that they may have struggled. This is most commonly seen as grass and dirt moved away from their feet and head where they thrashed about. If the cattle are found alive, they can be observed to have convulsions (tetany). Also, they can exhibit weakness, disorientation, and can become belligerent and attack people or inanimate objects (pickups and four wheelers). Signs or symptoms of grass tetany can therefore be confused with rabies, Listeriosis, BSE, or a number of other conditions that affect the brain or can cause sudden death.

How can we be sure we are dealing with grass tetany?

The diagnosis of grass tetany has been made easier by research done in the past few years. A diagnostic problem existed for some time, because many cattle are simply found dead and tissue and serum Mg levels can return to normal at or near death. However, it has been shown that the Mg concentration of fluid within the eye does not fluctuate upwards near death, so this material can be collected for many hours after death and analyzed for Mg content. The Mg concentration of this fluid can be easily interpreted to determine if the cow died of grass tetany. Your veterinarian can also collect cerebrospinal fluid (fluid found inside the brain) in cases where the eyes are not available due to predation and these samples can also be analyzed for Mg content. If live cattle are thought to be at risk for grass tetany, serum samples can be collected and analyzed for Mg. However, if grass tetany is highly suspected, you and your veterinarian should plan carefully for the collection of these blood (serum) samples, as the simple act of running the cattle through a squeeze chute can precipitate life-threatening convulsions. By either method, appropriate samples can be collected, analyzed, and

accurately interpreted to decide if grass tetany is the cause of the problem.

What do I do in the face of an outbreak of grass tetany?

Immediately supplement the cattle with alfalfa hay. Alfalfa has high levels of Ca and also has quite a bit of Mg. Additionally, they will usually eat more salt when fed dry hay and this is important in an outbreak.

As soon as possible, move the cattle from the offending pastures or fields. Keep them on alfalfa hay and start to arrange for supplementation to prevent future grass tetany cases before turning them back onto the lush pastures.

What is the best treatment for grass tetany?

Treatment of grass tetany is usually accomplished by intravenous solutions of Mg and Ca. Treatment of sick animals can be very frustrating and recovery does not occur in all cases. In addition to intravenous therapy, 2 ounces of magnesium chloride or magnesium sulfate can be given in 200 ml warm water as an enema. Your veterinarian can prepare these materials for you ahead of time for use in an emergency. The blood Mg levels will increase 20 minutes after the enema. This can be particularly helpful in cows that are down and convulsing or belligerent—easier to deal with their rear ends than their heads when they are belligerent. To prevent relapses in cows treated under range conditions it has been recommended to give oral slurries of 3 ounces of magnesium oxide plus 3 ounces of dicalcium phosphate and 1 ounce of salt in 1-2 gallons of water. Usually it is best to move cattle that have had grass tetany into a corral or other area where they can be treated again if necessary. This can be difficult, because many of these cattle are not cooperative patients.

Relapses are common! Any treatment decisions should be carefully discussed with your veterinarian prior to implementation as individual products vary widely with respect to effectiveness and safety.

What are the keys to prevention?

The first aid is to know grass tetany might occur—this could be a bad year. Second, have a well-formulated supplement for the cattle prepared and in front of them when they are on lush feed. Measures

that help prevent grass tetany include: (1) extra Mg in their diet, (2) extra Ca in their diet, and (3) additional salt (sodium chloride) intake. There are a number of ways this can be accomplished. Salt-mineral mixes and molasses licks or blocks are the most common methods that are successful.

Two homemade recipes are listed below:

1:1 magnesium oxide:molasses
(free choice—should eat 2 ounces/head/day)

1:1:1:1 magnesium oxide:salt:dicalcium phosphate:corn meal (or soybean meal, Linseed meal, etc)

Consumption of this mixture should be 4 ounces per head per day, minimum, mix-add more cornmeal (soybean meal, etc.) if less.

The main dietary goal is to supplement 1-2 ounces of magnesium oxide (or magnesium sulfate) and 1-2 ounces of dicalcium phosphate or other calcium source (limestone) per animal per day and encourage salt consumption. Any method that will get this done is a good method. The statement that “an ounce of prevention is worth a pound of cure” certainly holds true for grass tetany.

Niche Livestock Marketing III

Mark your calendars for March 17, 18 and 19 for Niche Livestock Marketing III to be held at Chico State University.

More information is online at <http://ceplacer.ucdavis.edu/Custom%5FProgram366/>.

As always if you have questions about articles in this newsletter give me a call or drop me an email.

John M. Harper

John M. Harper
UCCE Livestock & Natural Resources Advisor