# *Leverage Points in Stocker Programs*

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Stocker programs are opportunistic, margin-based enterprises. Opportunistic from the standpoints of utilizing excess grazing capacity not allocated to cow/calf production, utilizing forage seasonally to capitalize on forage quality or achieve other management objectives, adding value to ranch-raised or purchased calves prior to finishing for beef, or adding a revenue stream from custom grazing. Annually allocating a portion of the ranch carrying capacity to stocker cattle, whether as purchased calves, custom grazing, or retained ownership of ranch-raised calves, adds flexibility to grazing plans and serves as a buffer against climate and forage production risk.

**Margin Influencers**

***Value of weight gain*** The relationship of purchase price and sale price determine the amount of gross margin available to cover production costs. To paraphrase an old adage, "the first cost is the most important cost". Value of weight gain across a period of time is calculated by dividing the buy/sell margin by the total weight gain. For instance, if a 450 lb steer is purchased for $230/cwt, or $1035, and is projected to market at 750 lb for $190/cwt, or $1425, then steer weight increased 300 lbs while steer value increased $390. Value of weight gain is $130/cwt gain. Total cost of gain must remain below this in order to profit. Value of weight gain can vary seasonally and at times among different weight classes of cattle.

$$\text{Value of weight gain (\$/lb gained)} = \frac{\text{(Sale Wt*Sale Price) - (Purchase Wt * Purchase Price)}}{\text{(Sale Wt - Purchase Wt)}}$$

***Value of added weight*** reflects the value difference among different weight classes of cattle on a given market and can vary across times of the year. The value of added weight may be a decision point determining the weight class to purchase initially. For instance, assume the following steer calves are offered: 400 lb @ $240/cwt ($960), 450 lb @ $230/cwt ($1035) and 500 lb @ $220 ($1100). The first 50 lb weight from 400 to 450 lb adds $75/hd (or $1.50/lb added weight) and the second 50 lb from 450 to 500 adds $65 (or $1.30/lb added weight), and the entire 100 lb increase adds $140 ($1.40/lb added weight). The differences in value of the added weight may affect the decision of which weight class of calves to purchase. What is the relationship between the value of the added weight and the cost of putting the weight on the calves back at the ranch?

The value of added weight should be a decision point when considering whether to apply management practices (such as supplemental feeding) to increase sale weight. For instance assume the market is applying a $10.00/cwt slide on feeder cattle and projected steer market is $195/cwt @ 700 lb ($1365/hd). A producer is considering a management practice that will add

30 lb of sale weight; the projected value for the 730 lb strs would be $192.00 ($1401/hd). The added 30 lb of market weight is worth $1401 - $1365 = $36 or $1.20/lb. The $1.20/lb value of added weight provides the benchmark to evaluate the cost and efficacy of the management practice. Is the cost of adding weight with the management practice less than value of the added weight (in this case $1.20/lb)?

*Value of added weight gain ($/lb added wt) =*

$$\frac{\text{(Enhanced Sale Wt * Sale Price) - (Base Sale Wt*Sale Price)}}{\text{(Enhanced Sale Wt - Base Sale Wt)}}$$

***Health management for incoming calves*** Health management for calves is the first management challenge in a stocker program. Morbidity and mortality rates vary and are dependent on many factors ranging from the background history of the calves to the procurement and transportation process to the conditions, labor, and management after arrival. The cost of morbidity in calves is the sum of antibiotic therapy, death loss, chronics, and reduced performance by the calves that were sick and recovered.

In order to provide an estimate of the cost of morbidity, a sensitivity analysis was conducted with varied morbidity rates and the following inputs: purchase 450 lb calves @ $230/cwt, market value of $205/cwt at 675 with a $10 slide, 285 lb base weight gain over 165 day preconditioning and winter small grains grazing with healthy calves, 12% reduction in gain for morbid calves, 8% case fatality rate for morbid calves, 45% retreatment rate for morbid calves, $17 antibiotic cost per treatment. Pasture costs were priced on about $0.50/gain. Other feed, labor and equipment costs for a 165 day period were were not varied by morbidity rate.

Using this approach in this scenario, each 1% of morbidity reduced profit by $1.42/head. Sawyer (2006) estimated losses at $0.8772/hd for each 1% of morbidity based on 2006 markets and calves on a summer grazing program. The difference in Sawyer's estimate and the current reflect the difference in calf prices and value of gain between 2006 and today. Independent of associated treatment costs and reduced performance, Sawyer (2006) estimated that 1% mortality reduced profit by $6.64/hd while in the current analysis 1% mortality reduced profit by $10.58/hd.

Breaking down the $1.42/head/% morbidity loss in the current analysis, 59% is attributed to calf mortality, 24% to reduced performance of morbid calves, and 17% to treatment costs. The greatest impact of sickness on profit is death loss. Managing the purchase and managing the calves to reduce the incidence of sickness is a first objective. But managing to reduce the severity of disease and reduce case the fatality rate (% of calves that were sick that died) is the next priority. In the analysis above, at 30% morbidity each 1% decrease in case fatality rate increased profit/hd by about $3.17. Adequate labor and time to identify and treat calves, prudent and timely use of metaphylaxis, providing palatable feed and water, and low stress handling procedures and management processes are important.

***Rate of gain and total gain*** Stating the obvious, rate of gain and total gain are keys to profitability. Two dynamics of stocker operations are (1) many of the costs in a stocker operation are "front-end" or "sunk" costs that accumulate early in the stocker program, and (2) there is a limited time frame to achieve the desired weight gain on calves. So, total weight gain and rate of gain are important drivers of profit. More weight gained during the management period dilutes the production costs over more pounds of marketable weight. The more rapidly calves gain weight, the more rapidly the sunk, front-end costs are recouped and more time is available to produce weight with a higher marginal value.

Some factors that affect weight gain are not directly manageable; genetic potential for gain in purchased calves, and seasonal and annual variation in forage quality are a couple. Morbidity can reduce weight gain (12% reduction was used above based on published data from Pinchak (2005)) and can be influenced by management. Other means of altering weight gain, such as stocking rate/forage availability, use of growth implants and feed additives, and provision of supplemental feeds, are under direct managerial control.

*Forage allocation* Supplements, additives, and growth promoting implants can be used to enhance weight gains but the primary factor setting the base for performance is the amount and nutritional value of forage available to the cattle. Stocker performance is closely related to forage availability and although the amount and quality of forage produced annually is basically beyond the control of the manager, forage allocation via grazing management practices is under managerial control.

As stocking pressure (lb/ac or head/ac) increases, gain/hd declines because nutrient intake is limited and energy expended to harvest nutrients increases. As a rule of thumb, following stocking guidelines for moderate grazing will ensure the higher weight gains possible by stockers. However, this may not be the economically ($/ac) optimum stocking rate.

*Supplemental feeding* Although supplemental feeding of stocker cattle is common to maintain thriftiness and health while grazing dormant forages, providing protein or energy supplements to promote higher gains on small grains pasture in the winter and spring or on warm-season forages during the summer is less common. In addition to enhancing gain, supplemental feeding in may prove valuable by settling cattle and improving handling during gathering and shipping. This can reduce shrink and improve weighups.

The decision to provide protein or energy supplement to enhance gains should consider the relationship between marginal cost of gain from the supplement and the marginal value of the added weight resulting from the supplement. The value of added weight was discussed earlier - what is the increase in value of the stocker as a result of the supplemental feed?

The cost of the marginal gain (added weight) can be estimated from supplement efficiency. Supplement efficiency is the lb of supplement/lb of added gain. For instance, on warm-season forages where forage quality declines in the late summer/early fall, feeding the equivalent of 1 lb of a high protein supplement such as 38% crude protein range cubes (with an ionophore) has

been shown to increase daily gain about 0.3-0.4 lb/hd/d. The supplement efficiency in this case is 1 lb supplement/0.35 lb added gain or 2.8 lb:1 lb added wt. Cost of the added gain is the $ cost per lb of supplement multiplied by the supplement efficiency. So, if the supplement in the previous example cost $400/ton (or $0.20/lb) then the cost of the added gain is $0.56/lb added gain. If the value of added gain is greater than the cost, then supplementation may be considered.
Supplement efficiency varies from 2:1 to over 10:1 depending on forage quality, type of supplement, and the quantity of supplement offered.

*Supplement efficiency, lb supplement/lb added gain =*

$$\frac{\text{Daily supplement lb./ d}}{\text{Gain with supplement - Gain w/o supplement}}$$

*Cost of added gain from supplement, $/lb = Supplement efficiency * Supplement cost, $/lb*

With the value of added gain in today's markets, supplementation to enhance gains and market weights may be more attractive than in the past when value of added gain hovered in the $0.50 to 0.65/lb range.

*Ionophores* Monensin (Rumensin) and lasalocid (Bovatec) are feed additives that can improve weight gain in grazing calves. These additives have a different mode of action than implants (see below) and their effects are additive with implants. Based on numerous studies with grazing calves, ionophores are expected to increase gains about 8-12%. These are delivered to cattle in approved self-fed supplements (most commonly a mineral supplement) or can be included in hand-fed supplements such as cubes or a loose feed. Comparison pricing of mineral supplements with and without ionophores may cause some to avoid the mineral supplements that contain ionophores. However, the cost of the additives are about $0.02-0.03/hd/d; the cost of the ionophore-containing mineral supplement appears high because the $0.02-0.03 is being delivered in 0.2-0.25 lb of supplement.

*Implants* Numerous studies over the past 40 years have demonstrated the efficacy of growth-promoting implants in stocker cattle. Across varied conditions and basal rates of gain, implants have increased weight gains about 14% on average. At higher rates of gain, the absolute response (lb/d) is greater than at lower rates of gain. However, this response has been demonstrated at basal rates of gain as low as 0.5 lb/d. At a basal gain of 0.5 lb/d, the expected gain with an implant would be about 0.57 lb/d. This response would add about 6.5 lb gain/hd over the life of the implant, or between $6.50 and $8/hd (depending on value of added weight) for an implant cost $1.00-1.30. At basal gains of 1.5 lb/d, the expected gain with the implant would be about 1.7 lb/d or a difference of about 18 lb/hd ($18-23/hd) over the life of the implant. Used appropriately, implants for grazing cattle will not hinder performance once the cattle enter a finishing program.

**Summary**

Key factors affecting the profitability of stocker cattle enterprises are value of weight gain - the margin between the purchase value and sale value, managing morbidity and mortality in the calves, and promoting gains to dilute the costs of production.