Diminishing Returns

Managing shrink to maximize revenue.

by ***Heather Smith Thomas***

Shrink is a significant and often overlooked cost when marketing cattle. For example, 30 minutes spent gathering cattle into the corral may result in 1% shrink. Loading, hauling (less than 100 miles), unloading and weighing will generally create an additional 2.5% shrink. Sorting or waiting an extra hour before weighing will mean another 1%; 12 or more hours without feed or water before weighing will be an additional 2.5%, etc. The number of actual pounds involved may be more important than the price received for cattle. You often don't have much control over the price you get for your calves, but you can usually control the amount of shrink loss.

Types of shrink

There are two types of shrink — excretory shrink, which is loss of belly fill, and tissue shrink. Animals that don't eat or drink for up to 12 hours usually experience just excretory shrink. A small amount of excretory shrink (2-6%) is not detrimental to the long-term performance of the animal. A short time on feed and water will refill the gut and bring the weight back to normal.

Tissue shrink involves a decrease in carcass weight (actual muscle loss). This happens when an animal's digestive tract and bladder are empty, and their body becomes dehydrated. Tissue shrink can occur on a long truck haul or during long periods without feed. It takes longer for the animal to recover from this type of weight loss, and it can be detrimental to the health of the animal. One reason why cattle, and especially calves, may have a hard time recovering from tissue shrink is that within 24 hours of being held off feed, some of the important microbes in the rumen die off, making it difficult for the animal to digest feed when it does start eating again. The stress involved with this type of shrink also has a negative effect on the immune system.

Group variation

Shrink can vary greatly from one group of cattle to another, but a general rule of thumb is that cattle will lose at least 2% of their body weight overnight. Young calves shrink more than older, weaned calves. Cull cows sold right after weaning their calves may not eat much because they are stressed over losing their calves — and the gut will be relatively empty when you weigh them. Cull bulls sold and weighed directly off the ranch don't shrink as much as bulls hauled to sales. In new surroundings and held overnight, some bulls may spend more time fighting, socializing or walking the fence than eating, and any extra activity results in more shrink.

Any emotionally upset animal will shrink. Due to the social nature of cattle, it is very stressful for them to be mixed with unfamiliar animals, and you can expect shrink to double when you mix groups of cattle during marketing.

Range cattle unaccustomed to being in a corral will often shrink more than 5% when held in a dry lot overnight, since they are more nervous and upset. Calves sorted off their mothers and corralled for the first time will also shrink excessively. Cattle put into a strange pen shrink more than if they are in familiar surroundings.

Handle with care

One of the biggest factors in shrink, especially in feeder cattle, is how they are handled. Calves that are poorly handled — with a lot of stress caused by the way they are moved — may lose 3% of their body weight while being sorted. An Iowa study involving 4,685 feeder cattle found that cattle purchased from ranchers averaged a 7.2% shrink, compared with a 9.1% shrink on cattle purchased from sale yards. The cattle in the study were shipped varying distances (from 150 to 1,130 miles), and there was a 0.61% shrink for each 100 miles in transit.

Cattle buyers at the ranch often walk among a group of calves on sale day to look at them, evaluate and sort them — stirring and moving the cattle around. Thus, they shrink more before being weighed, costing the seller money. Some buyers may insist that cattle be held in a corral overnight without feed before weighing or be gathered from pasture early in the morning before they have a chance to graze and drink. If cattle are brought off pasture, the buyer may insist on a certain amount of shrink being subtracted from their weights, before the price per pound is calculated. This is called pencil shrink and is deducted from the actual weight.

Because they won't eat much during the first 18-24 hours after weaning, calves sold directly off their mothers are best sold at home rather than after a truck haul to a sale. The worst shrinks occur if the cattle are gathered, and the calves are sorted off the cows and penned a day before being weighed and sold. Even if those calves have feed and water in front of them, they shrink as much as if they were being held off feed and water because they are too stressed to eat or drink much.

Calves sell better if weaned a few weeks ahead of selling, giving

them time to adjust to weaning — especially if they are held long enough to start gaining weight again. Selling them only a week or two after weaning may result in a loss of actual body weight, depending on the way they were weaned. Groups that experienced low stress weaning methods, like two-step weaning with nose flaps, often keep gaining weight through the weaning process because they are not stressed much and never quit eating forage.

But if they were weaned cold turkey in a corral, they may lose weight for a while during the weaning process, and it takes a few weeks to regain it. If those calves are sold after being fully weaned, however, they're not stressed and will shrink less if they have to be in a corral very long or hauled before weighing. Calves that are weaned and shipped at the same time always shrink more than those already weaned and accustomed to eating hay. Other stresses increasing shrink include hot or stormy wet weather, high humidity, etc. since cattle won't eat well during these times.

Diet effects

Diet also affects shrink. In general, the drier the feed, the less the shrink. Cattle on lush green feed, silage, wet beet pulp or high protein alfalfa hay shrink more than cattle on drier grass pasture, grass hay or other low moisture feeds. The lush, high moisture feed or high-quality alfalfa goes through the tract faster and causes feces to be looser and runnier. One study showed that cattle from dry pasture had a 3.5% shrink after a 2-hour haul, compared to a 5.3% shrink for cattle off lush green forage. Another study showed that cattle on wet feeds shrink about 4% after an overnight or 12-hour fast, while fat cattle on concentrates shrink about 2.5-3% during a 12-hour fast.

Cattle have a large digestive tract, holding many gallons of feed and fluid. The body weight of any given individual may vary, depending on whether the tract is full or relatively empty. This will depend on time of day, how much the animal has eaten or how much it has exercised or how far it has been hauled. Morning weights, when cattle are relatively empty because they've been resting during the night instead of eating, are generally less than mid-day or evening weights when the gut is full, unless the cattle were held off feed before weighing. Morning weights, when cattle have feed and water available free choice, are usually about 2% less than evening weights.

Mature cattle may carry nearly 30% of their weight in the gut (and bladder) and may lose a lot of weight quickly if held off feed and water for 24 hours or if they pass a lot of manure and urine in a short time, as when exercising or excited. You can figure a loss of 8-10 pounds per defecation or urination; a gallon of fluid weighs about 8 pounds. With this excretory shrink, losses of up to 10% of body weight are not uncommon in cattle held off feed and water for 24 hours, and in some circumstances shrinks of up to 18% can occur. Research has shown that about 60% of total excretory shrink loss during marketing procedures is due to manure passage and about 40% is due to urine secretion.

Preventing shrink

You may not be able to do much about the price you get for your cattle, but you can minimize shrink. Sorting, loading, hauling to a sale and standing without feed and water can result in body weight loss of 15% or more. Check weather forecasts and try not to sell during hot, humid or stormy weather. Avoid rough handling, poor feed and dirty water in a corral where cattle are held before selling — since cattle may refuse to drink. Also prevent delays in transport or weighing after cattle are gathered, overloading or under-loading trucks, etc. Crowded cattle are more stressed and nervous and will urinate and defecate more. Under-loading can also increase shrink since it allows cattle to move around a lot during transport. Any time cattle are moving they tend to urinate and defecate more often.

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One of the biggest factors affecting shrink is proper cattle handling. Cattle can shrink 0.5-1% for every 30 minutes being moved and sorted.

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Load trucks carefully and make sure the cattle can all fit on the truck comfortably. Overcrowding not only increases stress and nervousness but increases the risk of animals getting pushed down on the floor, unable to get up — which may result in bruising, crippling or occasionally death of an animal from being trampled or smothered. Jamming those last few calves onto the truck may cost you more in shrink than the cost of hauling those yourself. Also, it pays to have all your paperwork done ahead of time so that once the truck is loaded, it can leave.

One of the biggest mistakes people make is hurrying — not handling cattle quietly and slowly on sale day. Wild roundups, ramming and jamming the cattle while sorting or loading, etc., can dramatically increase shrink. It pays to have good facilities where cattle can be worked through and loaded easily. While well-designed facilities are a big help, the way you handle the cattle is most important. Forcing cattle to do something unnatural to them will also raise their stress level and increase shrink. Take whatever time is needed to sort and load the cattle slowly and gently. Gathering should be done calmly, such as luring cattle into the corral with feed rather than chasing them in.

Cattle shrink every time they are moved. They can easily shrink 0.5-1% for every 30 minutes they are moved around a corral. The more quickly and quietly they can be sorted, the less shrink, so it pays to plan and do your sorting before sale day. Reducing the number of sorts and the time spent handling cattle on sale day pays in less shrink. If calves are already weaned and sorted (separating steers and heifers, sorting by size, etc.) or if your cull cows are already in a separate pen or pasture from the rest of the herd, they will have regained their temporary shrink from the sort and can be moved quietly onto the scales or the truck with a minimum of shrink.

If you are taking cattle to a sale, keep in mind that hauling time and conditions affect shrink. Usually, the first few miles are the worst, but if the truck is properly loaded and conditions are ideal for hauling, the shrink rate per mile after that will be less, as the cattle adjust to the trip and settle down.

If you are receiving cattle, keep them separate from others for the first few days to minimize stress. Stress and shrink are cumulative, and the more stress factors, the more the shrink. If cattle must be hauled long distances to market or to a feedyard, it often pays to give them a rest stop where they can be fed. This may cut the shrink to about 7.5% instead of 9-10% or higher. Giving cattle time to fill up again pays off most for cattle that must be hauled for more than 10 hours.

Make sure incoming cattle have a chance to rest and regain shrink loss before you mix them with others. Calves that are not allowed to rest (in their familiar group) may have shrink levels 15-25% higher than rested animals. Any advantage you might have had from compensatory gain can be lost due to poor performance and increased sickness or mortality if the calves experience a high rate of shrink. **BA**

Shrink by the Numbers

Studies confirm that shrink is an immediate subtraction from your profit.

A study at the University of Wyoming showed that feeder steers standing for eight hours in a dry lot shrank 3.3%, a 16-hour stand resulted in 6.2% shrink and a 24-hour dry lot stand resulted in 6.6% shrink. Feeder steers spending eight hours in a moving truck shrank 5.5%, 16 hours on the truck resulted in 7.9% shrink and traveling for 24 hours produced 8.9% shrink. It's easy to see that standing in a corral overnight and then shipping the calves to market can result in a huge amount of shrink.

A study in Iowa looked at the time it takes for calves and yearlings to regain in-transit weight loss after arriving at a feedlot. The cattle were purchased in seven states and hauled an average of 660 miles. At the point of departure the yearlings averaged 673 pounds, and the calves averaged 504 pounds. During shipment, the yearlings lost 9.62% of pre-shipment weight and the calves lost 9.46%. The yearlings required 16 days and the calves 13 days to recover the weight loss.

In another study, yearlings were trucked from Texas to Iowa, with in-transit weight loss of 8.83%. About 47% of this loss was excretory shrink and 53% was carcass (tissue) weight shrink. **BA**

Load trucks carefully; overcrowding results in more stress and shrink.