Handle Round Bales Faster with Less Storage Loss

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Background:

Efficiency and productivity have always played a role in the success of any feeding operation. Whether feeding Dairy Cattle or Feeder Cattle, the trick to truly becoming more productive lies in not only doing tasks faster, but also doing them better. The net effect of increased productivity is the reduction of operating costs and increase in profits.

For the Dairy or Cattle producer the most costly item is nutrition. This makes activity associated with nutrition a good target for productivity enhancement. When looking for improvements it is critical to consider all aspects of the associated costs. Nutritional costs consist of several elements including the feed itself, storage losses and the expense of handling the material. One way to become more productive is to handle more, in less time, but also do so in a more effective way.

Storage Loss related to weathering.

Material Handling might seem like an easy target but care must be taken to consider the complete cycle of activities connected with it. Speeding up one step only to create a bottleneck for the next step is not a real productivity improvement. Neither is performing steps that damage or leave behind material.

When addressing material handling productivity, a good focal point for consideration is choosing a proper storage method. Find a method that minimizes storage losses while allowing for tools that maximize material handling and you will be more productive.

Large Round Bales are a popular format for the packaging of livestock feed. Their advantages over other methods are greater availability of balers and handling equipment. This provides options for maximizing the equipment. Round Bales also have a better ability to shed water which helps reduce weathering which is caused by water penetrating the bale. This helps minimize storage losses.

The downside of round bales is their shape, which is not very efficient for handling or storage. While round bales do shed water they too are subject to two types of storage losses. The easiest to see and the one that has been measured in many experiments is the total dry matter loss. This represents the weight loss between the beginning of storage and the time the hay is fed.

The second type of loss is the loss in digestibility of the weathered portion of the hay. Just because the cattle eat most of this portion does not mean that it is as high in feeding value as the un-weathered part. In fact, the loss of feeding value in the weathered portion of the hay usually is a greater source of loss than that from total dry matter loss.

Choose a proper storage method to reduce storage losses and handling time and it will positively affect your bottom line.

The current situation:

Experts agree that providing adequate ventilation spacing between rows of round bales can help you minimize storage losses. If bales are too close together water/snow can gather where the bales touch. This can cause rotting due to moisture penetration.

Stacking bales in a pyramid, one on top of two might seem like a good solution. However a University of Minnesota study showed: Round bales on top of the pile did shed water better, but water simply ran off the upper bales onto the lower bales causing similar damage. In addition, during winter bales can freeze together causing one bale to tear apart another when it is transported.

One of the more optimal arrangements consists of long rows of similar sized bales placed (tightly) end to end. Each row would be separated with at least 2' of a ventilation space. However this placement strategy does not lend itself to handling multiple bales at a time.

Enter an innovator:

As a third generation operator, with more than a couple of decades under his belt, Joel Schuiteman understands the value of becoming more productive.

When Joel took over the operation (located just outside Sioux Center, IA) it was already a sizable 1000 head operation. Over the years it has grown and today he feeds some 6000 head of cattle. Central to the operation is the feeding process and the handling of the 100 round bales per week. To become more productive meant spending less time handling the bales while reducing storage losses.

The concept:

Joel had the notion of using his Wheel Loader to handle 2 bales at a time but do so in a more efficient way. The problem was when bales showed up on the truck they were packed tightly in order to maximize the trailer load. However, it was Joel's experience that by separating bales when placing them for storage it provided for a better "shelf life" for the hay.

What was needed was a way to move the bales and position them without requiring multiple steps. Joel's basic idea was a dual bale spear that provided for one spear to move relative to the other. This way you could pick up two tightly packed bales off the truck and separate them before you dropped them off for storage. With the separation distance the same from load to load you could very cleanly create rows of bales with ventilation space. In addition when it came time to process the bales in the grinder the same single unit could pick up two bales and dump them.

In looking around it became obvious no such attachment was available. Joel even sketched up what he wanted. While it looked simple enough on a notepad the basic idea for a Dual Bale Positioner had a major challenge. The unit needed to be stiff enough (with 2 bales hanging on it) so that it would not bind as it slid one bale from side to side. It also needed to deal with the stresses, wear and tear of associated with everyday real world use.

The Solution:

Things began to move once Joel was put in contact with Agile Manufacturing, the manufactures of Miller Loaders and GrabTec grapples. Agile understood the benefits that Joel stood to gain if they could design an appropriate product. As long time manufactures of Wheel Loader attachments they also understood the design challenges.

Using experience from manufacturing hydraulic cylinders, as well as greaseless bushing design, chief design engineer Tim Miller developed a patent pending method of parallel sliding guides. In addition Tim created a framework that provided the required strength and stiffness. The result was the GrabTec Dual Bale Positioner.

The unit arrived in August of 2008 ready for action. Joel recalls not really knowing what to expect when it showed up. However, his first reaction when he saw it was “wow is that heavily built”. It worked so well, one month after it arrived, Joel ordered another unit for one of his other wheel loaders. Its use also caught the eye of Gaylon Jansma of Trans Ova Genetics, one of the leaders in bovine genetics. Gaylon also understood the benefits generated which lead Trans Ova to also acquire a unit.

Now, with almost a year of real world operation under its belt the facts are clear that the GrabTec Dual Bale Positioner is what it was designed to be. As Joel notes, “It is at least twice as fast as the previous method and does minimize storage losses as expected. Truckers are amazed at how fast we can unload them”. With its heavy duty maintenance free greaseless design it has proven to be rugged enough to handle the rigors of heavy use.

For more information on the Dual Bale Positioner you can:

Contact your local GrabTec dealer
Visit the GrabTec web site at http://www.GrabTec.com
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