

## OPTIONS FOR FEEDING THE BEEF COW HERD WHEN HAY SUPPLIES ARE SHORT- 2013 version

*Updated from an original fact sheet prepared in 2003 by Dr. Jeff Lehmkuhler, UW Extension Beef Specialist and Bill Halfman, UW Extension Agriculture Agent*

Some Wisconsin beef cow-calf producers may be looking at short hay supplies this year. At this time it appears that hay prices will be high and grain prices have softened up. Following are some options for limit feeding corn silage and substituting corn for some of the hay in the ration to stretch hay supplies by utilizing corn silage or corn grain at higher rates normal to get through a hay shortage.

### **Limit Feeding Hay**

The first consideration that needs to be addressed when deciding to limit feed the beef cow herd is cow behavior. Physical fill (gut fill) is believed to be one controlling factor of intake for ruminants. Forages due to their slower rates of fermentation and digestion makes the cows feel full for a longer period of time than will a feedstuff that is rapidly fermented such as corn or fibrous co-products.

A beef cow will typically eat about 2.0-2.5% of her body weight in dry matter a day [ex. 1400 lb  $\times$  (2.5/100) = 35 lbs of dry matter]. If we allow free choice feed hay to a cow, she typically will consume hay until she meets this physical fill limitation. Limit feeding will reduce the "full feeling" a cow tries to obtain and behavior may change to more aggressive at the hay ring or feed trough. Facilities should be designed to handle this behavioral change.

A major consideration often overlooked is the need for adequate bunk space. Limiting the amount of forage will result in reduced rumen fill several hours after the forage is consumed. This will lead to a rapid consumption of hay and increased competition the next time access is provided. If bunk space is not adequate the smaller

and/or more timid cows may not get enough to eat.

The general recommendation of 13-14 linear inches per cow for full feed or self-fed management should be increased to at least 26-30 inches and such that all animals have access to hay at the same time. A good management practice to follow even in times of ample forage would be to put the first calf heifers in a separate group so they get plenty to eat since they require a higher plane of nutrition as they are still growing. Hungry feeling cows will also challenge fences more than full cows, so fences need to be in good repair.

### **Limit Feeding Corn Silage**

Limit feeding corn silage can be a good option for over-wintering the beef cow herd. Corn silage provides about 40 to 50% grain and 50 to 60% roughage on a dry matter basis. 15 pounds of corn silage (dry matter basis) will provide approximately 7 pounds of grain and 8 pounds of roughage on a dry matter basis, and should provide all of an 1100 pound beef cows energy needs when environmental stress is not a factor.

Because corn silage is higher in energy than typical beef quality hay, the cow's energy needs will be met with less total dry matter. Some protein supplementation may be required. If feeding corn silage from drought stressed corn, more silage may be needed per cow due to lower energy from a lower grain content. Additionally, nitrate levels may be of concern if the drought conditions have been severe.

If we value corn silage at \$45 per ton as-fed it costs \$0.94 a day to feed the cow. If we compare

that with \$150 per ton hay it would cost \$2.06 a day to feed the cow hay, assuming an 1100-pound cow will eat 27.5 pounds of hay. Additionally, there is very little loss or waste when limit feeding corn silage. However, not everyone may have access to corn silage or the facilities to effectively use it.

### Grain Feeding

Another option to look at is substituting some of a cow's hay in the ration with corn grain. Because corn grain is higher in energy than hay, a rule of thumb is that 1 pound of corn can replace 2 pounds of medium quality hay on a Total Digestible Nutrient (TDN) basis. Here are two general scenarios for substituting corn for hay:

#### ***Stretching the hay supply with some corn grain***

Under conditions where the hay supply is limited and the goal is to stretch the available forage supply, the following scenario may be considered. Feed the cows at least one pound of hay per 100 pounds of body weight, and use the 1 lb corn to 2 lb hay substitution guideline for replacing the remainder of the hay. Cows will act less hungry if they get between 10 and 15 pounds of hay compared to reducing the hay more than that.

Using an 1100 pound beef cow as an example when hay is plentiful we feed her about 2.5% of her body weight in hay which would be about 27.5 pounds of hay a day to meet her energy needs. If we cut her back to 1 pound of hay per 100 pounds of body weight she would get 11 pounds of hay and we would feed her 8 pounds of corn to make up the energy needs difference. If we compare the economics of the two rations with \$150 per ton hay and \$4.50 corn we would compare the all hay ration at \$2.06 per day to the hay and corn ration at \$1.47 per day, or a savings of \$0.59 cents per head per day. Table 1 demonstrates the relationship between hay quality and value based upon the price of corn and may be useful to decide the economic trade off between feeding hay alone or a combination of hay plus corn. Beef producers should inventory their current hay on hand and determine how much hay they could feed the cows per day if

they have to purchase corn grain to stretch the hay supply.

### **Severe hay shortage**

Under conditions when hay supplies are extremely short feed the cows only 4 pounds of hay and 12 pounds of whole shell corn per day. These cows should also be fed a protein and mineral supplement similar to what is fed to feedlot cattle on high grain finishing rations.

The Ohio State University research has demonstrated that cows can be maintained on this diet with no detrimental effects and in instances with high forage and low grain prices may be more economical. Cows fed this ration are expected to act hungry even though their nutritional needs are being met so it is extremely important to have good fences and plenty of bunk space.

### Summary

Producers need to inventory their feedstuffs to determine which is the best option for them to use for over-wintering the cowherd. Farmers should also utilize crop residue after harvest to help stretch harvested feed supplies. Remember to be flexible and pencil out the economics to determine how much substitution you make for hay to best fit your situation. Also, it is always recommended that your forages be sampled and analyzed for nutrient content to assist in developing a supplementation strategy if needed.

**Table 1.** Comparative value for hay (\$/ton) based on the Total Digestible Nutrients (TDN) level of a hay sample for a range of corn prices (\$/bu) assuming similar dry matter percentages and corn having 88% TDN.

| TDN % | \$3.90  | \$4.10   | \$4.30   | \$4.50   |
|-------|---------|----------|----------|----------|
| 50    | \$79.12 | \$83.17  | \$87.23  | \$91.29  |
| 54    | \$85.45 | \$89.83  | \$94.21  | \$98.59  |
| 58    | \$91.78 | \$96.48  | \$101.19 | \$105.89 |
| 62    | \$98.11 | \$103.14 | \$108.17 | \$113.20 |

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