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Stretching Limited Hay Supplies: Wet Cows Fed Low Quality Hay

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Many producers are facing low hay supplies and looking for alternative hay sources and ways to stretch limited supplies. This factsheet will provide some supplementation options and considerations when feeding varying amounts of hay similar in quality to the hay described below. These examples assume cattle will be in a sacrifice pasture or drylot situation. They would apply to producers across the state as long as cattle are not experiencing extreme cold stress. If cows are in good condition prior to calving it is appropriate to let them lose some weight during lactation; the goal is to control weight loss so that cows do not lose more than 1 body condition score (BCS) during any 100 day period. Additionally, cows should not drop below a BCS of 4 during lactation. These examples are designed so that the cows will not lose more than 1 body condition score during the first 100 days after calving. They are appropriate for most beef breeds of cattle with moderate milk production.

Assumptions used in these examples:

Cow description:

- Physiological status: wet, nursing a calf
- Level of milk production: moderate milking cow
- Cow weight: 1,350 lb
- Cow BCS at calving: ≥5
- Cow age: ≥4 years
- Calf age: <100 days

Hay description (dry-matter basis):

- Crude protein (CP): 5%
- Total digestible nutrients (TDN): 45%

Feeding goals:

- Hay use: reduce hay from full consumption to either 12 or 20 pounds per day
- Cow condition: control weight loss, so that the cow does not lose more than 1 BCS during the first 100 days after calving

Specific comments for this scenario:

- These supplementation guidelines should be appropriate for any hay that is similar in quality to the 5% CP, 45% TDN hay used in this example when fed to the cow described above.
- The feed amounts in the examples below do not account for any consumption by the calf. As calves start to consume feed, the amounts can be increased by 10 – 20% to allow for some consumption by calves while still providing enough for the cow. This increase does not apply to the feed grade limestone. Additionally, calves will eat very little low quality hay.

    - If a creep feeder is used for the calves, it is critical to start providing feed by 3 weeks of age and never let the feeder run out. Letting the feeder run out can lead to overconsumption when it is refilled. Rapid overconsumption can cause acidosis, bloat, founder, and foot abscesses. There have been situations when calves have died from acidosis due to overconsumption of creep feed.
    - Feed conversion (pounds of feed per pound of weight gain) can vary tremendously with creep feeding programs. The economics of creep feeding should be carefully considered. In many situations, creep feeding can cost more than the additional weight gain is worth.
    - If adequate bunk space is provided, calves may eat alongside their dams better than they will out of a creep feeder.
    - Calves cannot eat a 7/8" cube because it is too large. A 1/4" or 3/8" pellet is better suited for calves.
- Milk production will likely be reduced in this scenario. Due to reduced milk production and the lack of available grazing calf growth may be reduced.
- When hay or forages supplies are limited or if cows are in poor body condition (i.e. less than a BCS of 4), weaning calves earlier than the traditional 6 – 8 months of age should be considered. It is more economic to feed cows and calves separately. Weaning reduces the nutrient requirements of the cows because they are no longer milking.
    - In less severe cases, calves could be weaned at 4 or 5 months of age depending on the conditions and desired animal performance. These calves can be sold or fed to a heavier weight if desired. This approach will reduce cow feed requirements.
    - In more severe cases, calves can be weaned as early as 40 – 60 days of age to help get thin cows bred. In order to maintain a yearly calving interval cows must get bred within about 80 days of calving. Weaning at 40 – 60 days of age will help get cows to cycle and bred in a timely manner. Visit with a nutritionist about appropriate rations for these young calves.
- Whole cottonseed and cottonseed meal should not be fed to pre-ruminating calves because of the potential for gossypol toxicity. Since calves will consume some feed alongside their dams whole cottonseed and cottonseed meal were not used in any of these examples.
- A high-calcium (≥15%), low-phosphorus (≤7.5%) cow-calf mineral should be provided free choice. These examples assume a consumption of at least 0.25 lb/day. The supplements used in these examples provide added phosphorus to the diet, because of this a lower phosphorus mineral is desired. This helps balance the calcium:phosphorus ratio and reduce the cost of the free choice mineral supplement.
- Feed-grade limestone is included in some examples to help balance the calcium:phosphorus ratio. In some cases, the feed-grade limestone can be mixed or fed along with soybean or cottonseed meal. In other situations, a small amount of a sticking agent like molasses or liquid feed can used to help stick the limestone to one or more of the concentrate feeds. With some feeds the limestone can be put directly in the feed bunk on top of the other ingredients; if this is done check to make sure the cattle eat it.

- Cows consuming the examples with 12 lb of hay may act hungry. However, the supplements provided would be expected to control weight loss, so that they do not lose more than 1 BCS during the first 100 days after calving.
- Cows consuming the examples with 20 lb of hay will be close to their maximum daily intake and would be expected to appear full and satisfied.

Example 1: whole corn and soybean meal

	Example 1a	Example 1b
Feed Ingredient	lb/cow/day (as-fed)	lb/cow/day (as-fed)
Hay	12	20
Whole corn	10	7
Soybean meal (≥46 crude protein)	5	5
Feed-grade limestone	0.20	0.20

*It is important to use whole corn (88% TDN) and not cracked corn (90% TDN) or steam flaked corn (93% TDN). Whole corn is more desirable from a rumen health standpoint. In many situations it will also be cheaper per pound of TDN.

Example 2: cubes

	Example 3a	Example 3b
Feed Ingredient	lb/cow/day (as-fed)	lb/cow/day (as-fed)
Hay	12	20
20% crude protein cube	16.5	13.5

*Make sure the cubes have a higher calcium content than phosphorus. If not, then add feed-grade limestone to balance the calcium:phosphorus ratio.

**Some feed companies make multiple versions of cubes with the same or similar crude protein content. For example, they may have 4 different 20% crude protein cubes. These cubes will vary in TDN content and type of crude protein (natural protein or equivalent crude protein from non-protein nitrogen). The TDN content is not on the feed tag, but some companies will provide TDN content of cubes on their website. Crude fiber is listed on the feed tag and can be an indicator of TDN content. In general, TDN content decreases as crude fiber content goes up. The cubes used in these examples would be representative of cubes with 10% or less crude fiber and no non-protein nitrogen. If cubes have more than 10% cube fiber the amount of cubes fed will need to be increased. Although they may cost more per bag, buying cubes with a higher TDN content (less crude fiber) will almost always result in lower total feed costs.

Example 3: 50:50 blend of soybean hulls and corn gluten feed

	Example 2a	Example 2b
Feed Ingredient	lb/cow/day (as-fed)	lb/cow/day (as-fed)
Hay	12	20
Soybean hull pellets	8	7
Corn gluten feed pellets	8	7
Feed-grade limestone	0.10	0.10

*These pellets mix well and complement each other nutritionally.

Example 4: 3-way blend of soybean hulls, corn gluten feed, and dry distillers grains

	Example 4a	Example 4b
Feed Ingredient	lb/cow/day (as-fed)	lb/cow/day (as-fed)
Hay	12	20
Soybean hull pellets	5	4
Corn gluten feed pellets	5	4
Dry distillers grains	5	4
Feed-grade limestone	0.20	0.20

*Depending on the handling and storage conditions, the dried distillers grains may settle out some; this should be monitored to make sure the supplement stays fairly consistent.

General comments:

- <u>These examples do not guarantee cattle performance. Actual performance may be higher or lower depending on the given situation; diets should be adjusted according to actual performance.</u>
- To help avoid metabolic and digestive problems…
    - Gradually increase the amount of rapidly fermentable feeds in the diet (e.g. corn, soybean hull pellets, cubes, etc.) over 1 - 3 weeks depending on the amount.
    - If more than 0.75% of the cow's body weight in supplement is required, consider splitting the amount in half and feeding twice a day. For a 1,350 lb cow this would be 10.1 lb (1350 x 0.0075 = 10.1).
- Protein sources
    - Crude protein can be divided into 2 fractions. The fraction that is degraded in the rumen (ruminally degradable protein = RDP) and fraction that is degraded in the abomasum and small intestine (ruminally undegradable protein = RUP).
    - Rumen microbes need a supply of RDP to grow and help digest forage and other feedstuffs. The amount of RDP that rumen microbes require varies depending on the feed ingredients in the diet.
    - <u>The protein sources in these examples were selected based on RDP and RUP needs for each example diet. Other sources of protein should not be substituted without visiting with a nutritionist.</u>
- Hay testing considerations
    - A good hay test can help prevent over or under supplementing cattle.
    - Hay should be tested by a reputable forage lab that accounts for ash content and neutral detergent fiber (NDF) digestibility when calculating TDN content. The labs below are examples of labs that account for these variables when calculating TDN content.
        - Dairy One Forage Lab in Ithaca, NY; www.dairyone.com
        - Cumberland Valley Analytical Services in Waynesboro, PA; www.foragelab.com
    - <u>Warning</u>: Many forage labs greatly over estimate TDN values of corn stalks, sorghum stubble, and other crop residues because they don't account for the ash content when calculating TDN. Many of row crop residue samples are testing

between 12 and 20% ash. This is often due to soil contamination when fields are raked during hay production.
    - Nitrates: Corn stalks, sorghum stubble, and other forages known to accumulate nitrates should be tested to determine nitrate levels and safe feeding amounts.
- Vitamin A
    - Vitamin A requirements are generally met from green growing forages. During extended periods with no green grass it is important to make sure supplements provide adequate levels of vitamin A. For vitamin A requirements and strategies to increase levels see "Vitamin A Requirements and Considerations for Beef Cattle" which can be found at beef.tamu.edu.
- Aflatoxins
    - At times aflatoxins can be a problem in corn, distiller grains, whole cottonseed, and other grains infected by certain molds. If purchasing ingredients directly from a producer considering testing for aflatoxins prior to purchase and feeding. For current regulations on aflatoxins and feeding limits visit the Office Of The Texas State Chemist website: otscweb.tamu.edu.
- Weather stress
    - If cold stress is only expected to last for a few days, then provide free choice hay during these periods. Heat is produced during the digestion of hay that will help keep cows warmer. More heat is produced from the digestion of hay than the digestion of concentrate feeds. Do not suddenly increase the amount of rapidly fermentable feeds in the diet (e.g. corn, soybean hull pellets, cubes, etc.) because this can lead to subacute acidosis and other problems.
    - The diets in these examples do not account for cold stress that lasts for more than a few days or extreme cold stress. In these situations, the amount of feed would need to be increased based on expected conditions. Visit with a ruminant nutritionist about appropriate adjustments.
- This factsheet is meant to provide general guidelines and does not cover all factors that can impact the success or failure of a program designed to stretch limited hay supplies. For specific questions or unique situations visiting with a ruminant nutritionist is highly recommended.