

## When Is It Cost Effective To Limit-Feed Hay?

J. S. Rook, D.V.M.

MSU Extension & Ag Experiment Station

The availability (or unavailability) of reasonably priced hay, along with cheaply priced corn should influence winter feeding decisions. Regional droughty conditions have reduced hay supplies in some areas of the state, therefore, *shelled corn remains a cheap alternative for replacing a portion of the hay in the ewe's diet.* However, before producers begin substituting shelled corn for hay, be aware of some important nutritional, economic and labor considerations. Also, remember that *we are strictly talking about feeding adult ewes that have attained their mature size - not replacement ewe lambs that are both pregnant and growing.*

***How much hay will one pound of corn replace?:*** *As a rule, one pound of shelled corn can be substituted for two pounds of medium quality first-cutting grass or mixed type hay typically fed during early gestation.* Thus, commercial ewes (150- 160 lbs) that would normally receive 4 lbs of hay/hd/day during early pregnancy could be maintained on roughly 2 lbs of hay and 1 lb of shelled corn. This would reduce hay usage by 50% during early gestation - saving hay you don't have and, perhaps, saving money. While one pound of shelled corn (89% TDN) has roughly the similar amount of energy (calories) as two pounds of grass hay (50% TDN), protein levels can be quite different. Shelled corn usually tests at about 9%CP and doesn't vary a great deal. However, protein levels measured in hay can range from 6%-24% CP - depending upon maturity and type. During early pregnancy the crude protein (CP) requirements for the ewe are quite low (8%-9%CP) and usually met by any reasonable quality hay and shelled corn diet. *Sufficient energy in the early gestation diet is usually more critical to the ewe and her fetuses than is the protein level of the ration - making early gestation a good time to conserve hay.* This last statement assumes that you are feeding reasonable quality hay, not first cutting reed canary grass baled in August. Interestingly, protein requirements cited for early gestation are so low (8-9% CP) that feeding all hay diets consisting of good quality legume or mixed hays actually "wastes" (over feeds) the high protein levels contained in these more expensive hays. Reducing hay availability by limit feeding hay and replacing a portion of the hay with some shelled corn helps reduce CP "waste". Iowa producers, blessed with an abundance of cheap corn and limited amounts of more expensive alfalfa hay typically feed reduced hay diets to their flocks.

***How little hay can I safely feed?:*** Energy, protein, other nutrients and a reasonable amount of hay are all needed to support proper rumen function. *Reduced hay rations should include a minimum of 2 lbs of hay/hd/day.* Less hay and more corn often leads to acidosis and other associated digestive problems. As the ewe flock enters late pregnancy, reduced rumen capacity (due to fetal size) normally dictates a higher concentrate and lower roughage type diet. *The relatively short duration, grain dense, late gestation diet is not a good time to conserve hay.* Late pregnant ewes with digestive upsets often go "off feed" inducing pregnancy toxemia. Too often producers recognize a hay shortage during late pregnancy, when conservation is difficult to accomplish. Plan ahead so that sudden hay shortages don't force reduced hay diets during late pregnancy. Try to stay at or above the 2 lb hay/hd/day level critical for rumen function.

Generally, legume and mixed hays are more likely (than grass hays) to provide adequate protein and Ca needed to offset the lower levels found in the corn substitution. Save as much hay as possible during early pregnancy and feed a more normal ration during late gestation and lactation. If corn must be fed at higher than suggested rates, feed grain twice daily.

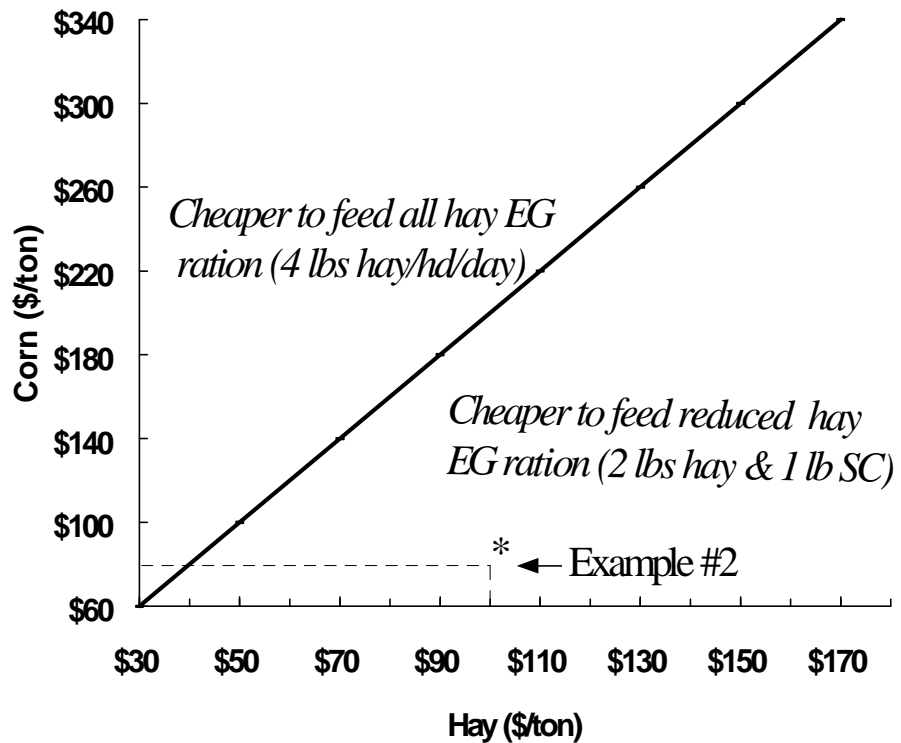
***How do I feed a reduced hay ration?:*** There are some unique labor and management issues associated with this type of feeding program. *If you hand feed small square bales*, calculate the average weight of the bales and feed accordingly. Just make sure there is enough bunk space (12" for shorn vs 18" for woolled) for all ewes to eat at the same time. If not, less aggressive ewes will be crowded out. *Big round bales are more of a logistical problem*. If feeding large round bales, weigh several bales to determine an average weight and unroll the appropriate amount of hay on a daily or every other day basis. *Unrolling allows equal access to both quantity and quality*. Ex. - A producer feeding 250 ewes 2 lbs of hay/hd/day should use a 1000 lb round bale every other day. If bales have been weathered and stored outside, add an additional 20% more hay than the calculated 2 lbs/hd. The 1 lb/hd per day of shelled corn can be hauled to the field and fed on the ground from a miniature gravity bed-type box built on the back of a four-wheeler, tractor, trailer, or even a horse drawn stone-boat. Drive fast and spread a long thin line of shelled corn so all ewes have equal access to the grain. Feed grain and hay in a different spot each day - you'll be surprised how little they will waste. *In snow country you will need to feed in the same general area so the snow pack prevents machinery from becoming stuck. In muddy areas you may need to designate a "sacrifice" paddock as a winter feeding area.*

*When feeding round bales in a ring-type feeder it is difficult, but not impossible, to regulate intake.* Unless you have ample ring space, some ewes will be crowded out. Feeding free-choice hay on an every other day basis can help allow equal access by timid ewes and regulate consumption to about a 2 lbs/hd/day average. Use hay quality (nothing too fancy) to regulate free-choice intake to about 4 lbs/ewe for the day they have access to the feeder. Then use grain to coax ewes to a new area and prevent access to the bales for the next day. Stand back when you open the gates! Baled straw, corn stalks and soybean straw residues can also be used for filler during the 24 hour no hay period.

***What problems or issues are associated with feeding reduced hay rations:*** In larger commercial operations the so-called "feeding frenzy" associated with feeding grain is often an issue - especially if ewes are lambing. Several larger flocks (especially those that pasture lamb) have gotten entirely away from feeding grain at lambing time. It is essential that these folks are able to walk pastures at lambing time without several hundred ewes leaving their newborn lambs every time they see the producer. Noise may also be of concern in more urban settings - especially in the late spring when neighbors' windows are open. To satisfy roughage hunger, wool picking by the ewes may also be an issue.

***When is it cheaper to feed a reduced hay ration?*** If we avoid placing a value on labor costs associated with feeding reduced hay rations or with associated flock behavioral issues, most producers can establish a break price where reduced hay rations become cost effective. The following graph can be used to calculate how shelled corn and hay prices can affect ration decisions for the early gestation diet (EG).

The economic advantages or disadvantages of feeding an all hay, or a reduced hay early gestation (EG) ration to an adult commercial ewe can be calculated using this simple graph. The all hay EG ration assumes 4 lbs of hay/hd/day. In contrast, the EG reduced hay ration assumes 2 lbs of hay/hd/day & 1 lb of shelled corn/hd/day. The bold center line indicates the break-even point for changing from an all hay to a reduced hay EG ration.



**Example of break even decisions:** If your hay cost \$80.00/ton then shelled corn would have to cost \$160/ton before it would be cheaper for you to feed an all hay EG diet to the commercial flock. When determining individual scenarios, producers should use farm-delivered prices.

**1998 Example from a southern MI producer:** Second cutting legume hay @ \$100/ton and corn delivered @ \$80/ton. When corn and hay prices are plotted the intersection of the dashed lines (\*) is below the dark break even line, suggesting that significant savings could be generated by choosing a reduced hay ration. Cost would be \$0.20/hd/day for an all hay EG ration vs \$0.14/hd/day for a reduced hay ration. For a 500 ewe flock, this amounts to a \$3000.00 savings over a 100 day early gestation feeding period. In addition, 50 tons of hay are conserved for the winter!

Producers faced with a hay shortage should seriously consider feeding a reduced hay ration during early gestation if corn and hay prices indicate an advantage and if the feeding system addresses previously discussed issues. Winter feed costs often directly influence profitability. Know what your ration costs!