Near the end of most winters, diagnosticians at both the Murray State University – Breathitt Veterinary Center and the UK Veterinary Diagnostic Laboratory frequently receive diagnostic submissions of aged beef cows – often broken-mouthed or toothless – that are heavily pregnant or are in their peak lactational period, 1-3 months post-partum. These older cows are frequently in poor body condition – BCS 2-3 – with depletion of all body fat stores, and frequently have a rumen distended with forage material(hay) and may be described as “bloated” by the producer. Despite having had access to hay, these old girls have just ‘run out of gas’ with green grass just around the corner – with a belly full of hay. However, this winter, we have been encountering these ‘malnutrition’ cases on a much more frequent basis, at a much earlier date, and are seeing what should be sound young cows and pre-weaning/weaning age calves also affected, with some of the first cases fitting this description arriving at MSU-BVC in late December, and the UKVDL in February and continuing through the present time.

From a temperature/weather standpoint, the winter of 2013-14 has presented colder temperatures for more extended time periods, with greater snow/ice cover than most Kentucky beef producers have encountered in the past 15-20 years. Increased submissions and telephone consultations with veterinarians and producers who are experiencing animals losing excessive body condition and/or dying of apparent malnutrition are indicative that winter feeding programs on many farms have not been adequate for pregnant/lactating cows – or growing calves – in light of recent environmental conditions.

Numerous university studies have demonstrated that the lower critical temperature for cows with dry, heavy winter coat is 18F. If cows are wet, the lower critical temperature is surprisingly high, at 59F. For every degree that the environmental temperature drops below the low critical temperature, a cow must expend 2% more calories in order to maintain body heat and condition. Wind-chill effects due to wind speeds will further increase energy expenditure. (See detailed information here: http://www.omafra.gov.on.ca/english/livestock/beef/facts/07-001.htm) During extended periods of low ambient temperature, if producers are not supplementing cattle with adequate energy and protein sources, hay of unknown nutritional quality may not provide sufficient nutrition to meet the animals’ needs, resulting in depletion of body fat stores, catabolism of muscle protein, etc., and, in some instances, death due to insufficient nutrition.

Spring/Summer of 2013 presented good growing conditions and seems to have allowed for extended periods of forage growth, with greater hay production than has been the case in recent years. However, poor cow performance in herds where winter feeding consists of hay only, suggests that the hay produced was of poor nutritional content. Although hay may look good, unless a producer has had their hay tested for nutritional content, they do not know what the true feed value of that harvested forage really is. It is often difficult for producers to bring themselves to the realization that cattle can actually ‘starve to death’ while consuming all the hay they can eat – especially if crude protein levels are in the 3-4% range, and TDN is <30 – as is not uncommon in some late-cut overmature hay – sometimes referred to as ‘holiday hay’ or ‘CRP residue’. Remember, in the last 60 days of gestation, an adult cow (1200 pounds eating 2% of her body weight) requires at least 54-56%TDN and 8-
9% available crude protein while an adult beef cow in the first 60 days of gestation requires 59-60% TDN and 9-10.5% available crude protein.

Following closely behind cases of apparent malnutrition in adult cattle and growing calves, we have received numerous calls and diagnostic submissions associated with ‘weak calf syndrome’ or full-term calves which were presumed to have been born dead. Almost without exception, these calves have been born alive, but never stood or nursed, and there have been no gross or microscopic lesions or pathogens identified in fetal tissues or placenta, which would indicate an infectious etiology as a cause of mortality.

Maternal nutrition during the last trimester of pregnancy – particularly with regard to dietary protein levels – has been well-documented to play an important role in calf survivability. Calves born to protein-deficient dams are less able to generate body heat and are slower to stand and nurse, compared to calves whose dams had received adequate dietary protein during the last 100 days of pregnancy. (See detailed information here: http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1151&context=rangebeefcowsymp ) Calves born during unseasonably cold weather, with ice or snow on the ground, are at risk of chilling and death if they do not gain their feet and nurse soon after birth; inadequate energy and protein nutrition in the dam may lead to higher calf mortality in these conditions. Additionally, colostrum quality and quantity from protein and energy-deficient dams may be less than optimal for best calf survival and performance.

It is evident that some producers in Kentucky have not provided adequate mineral supplementation to their cattle this winter, as copper and selenium levels in liver samples analyzed from a number of animals which have died or malnutrition and/or herd-wide outbreaks of respiratory disease have been far below acceptable levels. Additionally, we have seen a number of grass tetany/hypomagnesemia cases in early-lactation beef cattle consuming only hay, with no access to fresh grass – suggesting that 2013 hay supplies may also be low in magnesium content.