



# CATTLE SENSE

Information that makes sense helping you make cents

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## Consistency Counts

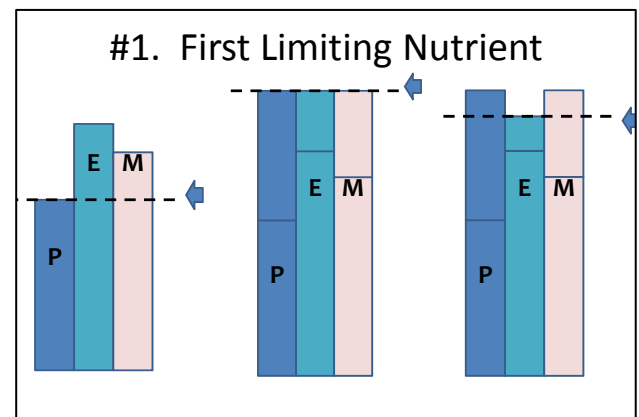
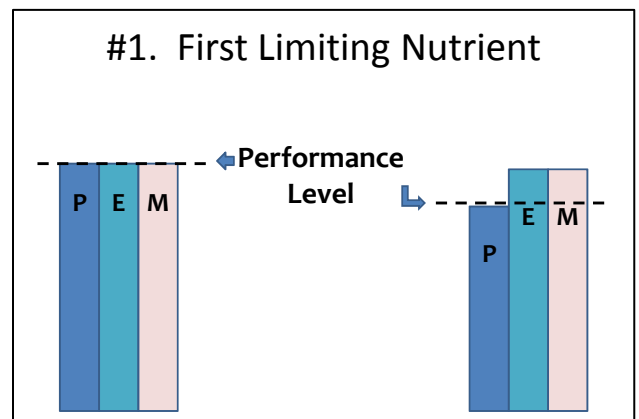
One of the t-shirts that rotates through my laundry room reads “CONSISTENCY: It’s only a virtue if you’re not a screwup.” (Think about that one a minute!) But when it comes to feeding cattle, success does hinge on being able to consistently deliver the nutrition each animal needs.

Earlier this month I was asked to speak at the AFIA Liquid Feed Symposium on the potential nutritional implications of ingredient variation. That particular presentation approached the topic from the feed industry perspective, but the basic principles apply equally to individual operations. When the composition of feedstuffs doesn’t consistently match our expectations, animal health and performance can suffer.

Many of the nutritional concerns relative to feed variation can be illustrated with four basic nutritional concepts:

First Limiting Nutrient. Metabolic processes require a combination of nutrients. Each unit of production, be it for milk, muscle, or fat reserves, utilizes a specific volume of every needed input, i.e., energy, protein, and specific minerals. This is shown graphically to the right, where the “P,” “E,” and “M” columns are identical in height. However, if any essential nutrient is present at lesser amounts (chart to the right), then performance – shown as a dotted line – will drop to the level supported by this ‘limiting nutrient.’

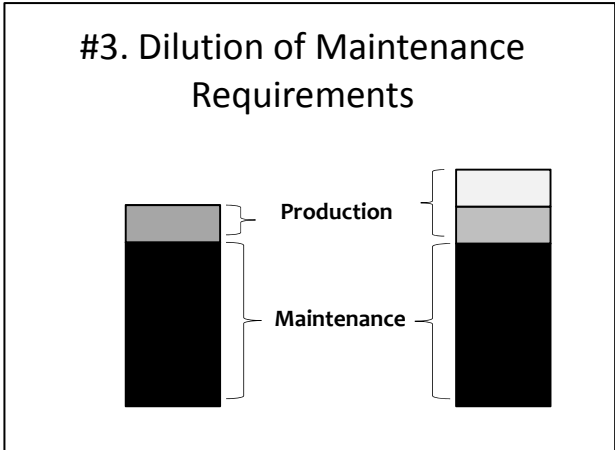
An applied example is shown in the second figure. The chart to the left can represent the unsupplemented diet, where “P” is the first limiting nutrient, and performance level is indicated with the dotted line. The middle chart exemplifies addition of a well-balanced supplement, which increases the supply of all three nutrients in the correct proportions to support the boost in performance. The potential role of ingredient variability comes into play in the third chart. In this case, the supplement did not contain as much “E” as expected, so animal production becomes limited by that shortfall – even though that is the only nutrient affected.



**Dry-Matter vs. As-Fed Composition.** While this can certainly have an impact on the precision of balancing diets with dry feed, in many cases its application is largely academic. Differences in the weight of hay bales, amount of waste, or accuracy of on-farm measuring can easily cause bigger discrepancies than not accounting for moisture levels. However, in the case of liquid feeds and byproducts, the potential variation in dry matter can make a meaningful difference in nutrition supplied to animals. In the example shown in the table, both samples contain the same protein, fat, phosphorus and TDN levels on a dry-matter basis, but differ in the amount of moisture present. Since feeds delivered to cattle are going to be measured with as-fed weights (or maybe even volume), the significant differences shown in the Actual columns would be directly reflected in the composition of the actual diet fed.

	Sample 1		Sample 2	
	DMB	Actual	DMB	Actual
Dry Matter	45	--	30	--
Protein	25	11.25	25	7.5
Fat	10	4.5	10	3
Phosphorus	1	.45	1	.3
TDN	90	40.5	90	27

**Dilution of Maintenance Requirements.** Cattle, by necessity, will funnel all dietary nutrients towards maintenance (things like breathing, pumping blood, maintaining body temperature, replacing cells, the act of digestion, etc.) until those needs are met. But once that level of intake is reached, 100% of all additional nutrition goes for production—growth, milk, pregnancy, body reserves. Figure 3 illustrates this point. The chart on the left represents the base diet, and to the right, the base plus supplement. Note that the relatively small amount of additional feed actually doubled the level of inputs available for production. The take-home message is that, once we are feeding above maintenance, a little bit of supplemental feeding can make a big difference. In turn, the nutrient density of that additional feed takes on greater significance – along with the potential impact of variability on what the supplementation program delivers.



This principle also directly impacts feed efficiency. When nutrient intake and daily gains are increased, feed cost per lb of gain is reduced.

**Additive Effects.** When dealing with ruminant animals, the impact of a dietary change on rumen populations and activity can often cause a more dramatic response than the level of supplementation would directly support. I have written extensively on this in earlier newsletters. Variation in feed quality and composition directly impacts our ability to promote positive microbial responses, and to prevent negative interactions.

**Direct Concerns**

Beyond the potential impact of ingredient/feed variability on our ability to balance cattle diets, inconsistencies in feedstuffs can provide several reasons for direct concerns. We will talk about those next month.