



The Value of NPN in the Feedlot Diet

Fed cattle depend on rumen microbes to break down starch and fiber into Volatile Fatty Acids which are used by cattle as an energy source.

These rumen microbes then become a protein source (microbial crude protein) for cattle when they leave the rumen and reach the true stomach (abomasum).

Energy and nitrogen is required for bacterial growth in the rumen. In a feedlot diet, energy most commonly comes in the form of corn and corn by products. Nitrogen can come from either natural proteins or Non Protein Nitrogen (NPN, most commonly urea).

These rumen microbes can only utilize rumen degradable protein (RDP) – a portion of natural proteins are rumen degradable, while all of NPN is rumen degradable.

Nitrogen from urea is readily available to the rumen microbes while nitrogen from natural proteins must be broken down prior to utilization by rumen microbes. The process of breaking down natural protein takes time, potentially allowing the rumen ammonia N content to drop below critical levels resulting in inefficient rumen fermentation and potential reductions in microbial protein production.

Rapidly degradable feeds, such as wheat, barley and high moisture corn, require even greater levels of rumen degradable protein in order to maintain critical rumen ammonia N levels to ensure efficient microbial activity and production.

When rumen degradable protein requirements are met, dry matter intakes will be optimized.

Distiller's grains are relatively high in by-pass protein and low in rumen degradable protein.

Quality Liquid Feed supplements can be an excellent source of NPN in your diets.

NPN can help improve rumen efficiency and improve dry matter intakes; as a result many University research studies have also shown an improvement in performance of cattle when NPN is included to the ration.

University	Year	Average % improvement from added NPN			Comments
		DMI	ADG	DM F/G	
Kansas State	1997	-3.6%	5.9%	9.0%	Dry Rolled Corn Diets
Nebraska-Lincoln	1998	1.4%	6.9%	5.2%	Dry Rolled Corn Diets
California-Davis	1998	9.3%	10%	.8%	NPN replaced fish meal and soy meal
Arizona	2002	.4%	3.2%	2.8%	Steam flaked sorghum diets
Nebraska-Lincoln	2002	-1.4%	5.8%	6.8%	High moisture corn diets
California-Davis	2003	6.5%	8%	1.4%	Steam flaked barley diets
New Mexico St.	2004	-.1%	4.3%	4.2%	NPN replaced cottonseed meal
Arizona	2004	4.0%	--	--	NPN replaced soybean meal
Kansas State	2008	2.9%	4.0%	1.5%	NPN replaced distillers grains

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