

Consider Non-Protein Nitrogen For Lactating Cows

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With soybean prices skyrocketing to a 15-year-high, it may be time for dairy farmers to consider alternative protein supplements such as non-protein nitrogen (NPN) for their lactating cows.

Considerable debate exists over the value of NPN compounds such as urea and ammonia in dairy diets, but, when properly managed, these compounds can be an effective source of low-cost protein.

Although some producers feel the potential problems outweigh the benefits, many others are using NPN with great success. In 1973, when the price of soybean meal exceeded \$300 per ton, more than one million tons of urea were used in ruminant diets, saving producers an estimated \$600 million.

NPN compounds work by providing nitrogen used for protein synthesis by microorganisms in the cow's rumen. These microorganisms ultimately pass to the lower digestive tract where they supply the cow with true protein.

Depending on the situation and need, NPN may be beneficial or detrimental. A common feeding fault is using it in cases where rumen degradable protein was probably sufficient already. In fact, many ensiled feeds contribute NPN to the diet and should be considered in calculating the overall NPN load.

It's common to hear negative comments about NPN compounds in the field. Urea, specifically, has been shown to reduce feed intake and cause many health-related problems when mismanaged. Excessive urea certainly can be detrimental, but, when fed within recommended limits and according to suggested guidelines, the health of dairy cattle is not adversely affected.

I often hear producers complain about NPN interfering with reproduction. Again, that's the result of poor management. A study at Michigan State University over a five-year period failed to correlate NPN feeding with poor reproductive performance. That study involved records from 1,400 DHIA herds with more than 85,000 individual cow records. Other university studies showed that 300 cows fed diets with or without NPN had similar services/conception, days open, number of cows settled first service and similar number of cows settled.

Some researchers have suggested that high-producing cows in early lactation should be fed diets supplemented only with natural protein (no NPN). However, these researchers overlooked the fact that many ensiled forages contain high levels of naturally occurring NPN.

When I was at Michigan State University, we proposed the feeding of NPN with protein of low rumen degradability (bypass protein such as heated or extruded soy, dried brewers grain or corn gluten meal) for maximum production and profit in early lactation. Cows in early lactation were fed ammonia-treated corn silage with heated soybean meal in diets containing 14.4 percent to 17.7 percent crude protein.

On these diets, milk production throughout the first 14 weeks of lactation averaged about 75 pounds per day, and many animals had peak milk in excess of 110 pounds per day. Results from that study showed milk production from cows fed diets with NPN and bypass protein was equal to or

superior to that on diets containing soybean meal or heated soybean meal without NPN.

Utah workers reported similar findings in a study with high-producing cows (averaging more than 80 pounds of milk per day) fed extruded cottonseeds and urea. Performance was compared to that of cows fed diets containing no NPN and all extruded cottonseeds, and diets with and without NPN and normal cottonseeds. In both the Michigan and Utah studies, diets containing NPN were most productive and economical in return over feed costs.

Another misconception is that feeding NPN compounds increases the chances for nitrate poisoning. However, research data confirms that there is no relationship between NPN and nitrate toxicity.

Unfortunately, most NPN compounds are instantaneously available in the rumen and may be inefficiently utilized by rumen microorganisms. Traditional methods of incorporating urea into a grain mixture fed once or twice a day are probably the least efficient ways to use NPN. Studies have shown that animals perform better when urea is offered in multiple feedings or incorporated into a total mixed ration.

Urea should not exceed 1 percent to 1.2 percent (dry matter basis) in a complete diet or 1.5 percent to 1.75 percent in a concentrate. A 1,400-pound cow should not consume more than .4 to .5 pound of urea per day. To avoid drops in intake and production, cows should be adapted to urea diets over a two- to three-week period. If the diet is mainly fermented feeds, urea is probably not needed. Urea may also cause problems if mixed with other high-moisture feeds because it may break down to ammonia before it is consumed by the animal.

Do not feed NPN from more than one source. For example, do not use urea in your concentrate if you area already feeding NPN-treated corn silage.

NPN can best be incorporated into corn silage during ensiling and will increase protein from about 8 percent to 12 percent (dry matter base). Urea can be added to corn silage during ensiling at the rate of 10 to 12 pounds per ton of wet (65 percent moisture) forage, but it should not be used if forage moisture is much below 58 percent to 60 percent. Anhydrous ammonia (6 to 7 pounds per ton wet forage) or aqua-ammonia mixes (20 percent to 30 percent nitrogen at a rate of 20 to 30 pounds per ton) are even more beneficial since they also prolong bunk life during feed-out and increase the true protein content of corn silage.

When feeding NPN-treated corn silage, special attention should be given to dietary sulfur. Corn silage contains only about .08 percent sulfur, and diets for milking cows should contain at least .25 percent sulfur. Diets of milking cows should also contain 12 to 15 times as much nitrogen as sulfur. When NPN is added to corn silage, 3 pounds of calcium sulfate (gypsum with 18 percent sulfur) per ton of silage improves the nitrogen/sulfur ratio.

As with all chemicals, certain precautions should be taken when handling ammonia-type compounds. Wear eye protection and have water for washing available when making connections to pressurized tanks.

In summary, NPN has been successfully used in diets for high-

producing dairy cows. For best results, producers must follow recommended management guidelines and feed NPN with proteins that are less degradable in the rumen. Indiscriminate use of NPN in all dairy rations is not recommended.

Recent advances in the understanding of protein nutrition for dairy cattle take into account the rumen-degradable and undegradable concept, and some feed companies and analytical labs will provide estimates of these in formulating diets for your lactating herd.

Greencastle Livestock

Greencastle, Pa.
Thursday, July 7

Report supplied by Auction

CATTLE: 314. Cows uneven, steady to 1.50 lower. One Select sl. steer 60.50; one Select holstein steer 57.50; Breaking Utility & Commercial cows 46.00-50.00, Cutter & Boning Utility 45.75-50.50, Carner & low Cutter 41.00-45.00, Shells down to 38.00; YG 1 1200-2000 lb. bulls 57.50-64.00, few No. 2 1200-1350 lbs. 52.00-54.00.

CALVES: 646. Choice Vealers 83.00-95.00, few Good 75.00-80.00; Standard & Good 70-100 lbs. 85.00-93.00; Utility 60-90 lbs. 76.00-86.00. Farm calves hol. bulls 90-125 lbs. 94.00-154.00; heifers 95-130 lbs. 95.00-106.00.

HOGS: 35. US 1-3 one lot 240 lbs. at 44.00; US 1-3 295-635 lb. sows 24.75-30.00; few Boars 23.00-28.75.

FEEDER PIGS: 4. No market test. SHEEP: 8. Few Choice 65-110 lb. spring lambs 48.50-54.00.

GOATS: 21. Large 25.00-46.00 per head.



(Continued from Page A3)

spreads were unwound on weakness in early trade in the grain pits. The July contract was up 50 points on professional frying spured by ideas slaughter levels will moderate because of hot weather. Bellies settled sharply lower to limit-down on continued bearishness over last Thursday's USDA Hog Inventory Report.

ACRES NEXT DAY OUT-LOOK: cash - steady futures - steady.

Peoria Sheep

Peoria, Illinois

Tuesday, July 5, 1988

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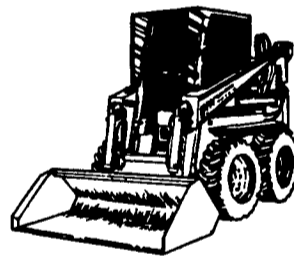
SHORN SLAUGHTER LAMBS: CPL LOTS CHOICE & PRIME WITH #1 PELTS 105-120 LBS. 55.50-56.00 SPRING SLAUGHTER LAMBS: CHOICE AND PRIME 90-130 LBS 54.00-55.00 6.00-10.00.

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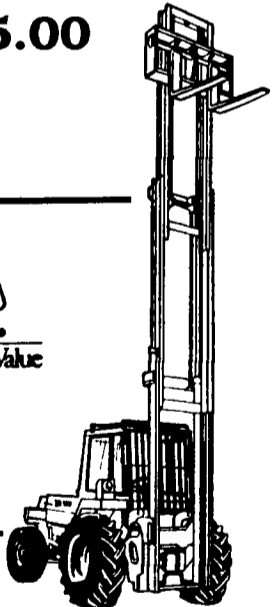
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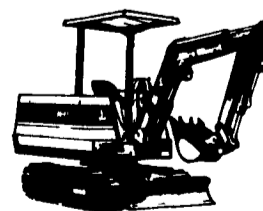


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