# Deer Feed Labels Discussed; Mostly High Energy Product

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SAN ANTONIO — Understanding the label on a feed tag, more specifically, understanding what is in the feed and what one is getting for the money paid can be challenging.

At the recent Caesar Kleberg Wildlife Research Institute's (CKWRI) annual deer associates gathering, Dr. Dave Hewitt, head of CKWRI's program, offered some insight on that topic. In preparing for the presentation, one of the first things learned was that feed labels are actually managed by the office of the Texas State Chemist and the Association of American Feed Control Officials.

"There's a whole manual that specifies how these feed labels need to be put together," he told participants. "That's so there's some consistency."

He added that the labels should have enough information to help meet the purchaser's production needs. Also, it should provide enough information so that the purchaser knows what it is they're buying.

The label has to have a product name and a brand name. It has to have a purpose type statement, for example, it may say something to the effect that this feed is to be used for exotic game and deer in a natural environment. Additionally, the label has a list of guaranteed analyses, and an ingredient list of specific nutrients that are in the feed.

There is also some feeding instructions and finally some cautions and warnings. As an example, he found that some of the feed labels said if running sheep then do not feed this product. That's largely due to high levels of copper, said Hewitt. Most of the deer feed listed copper in at 25 to 50 parts per million. The deer do fine with it; it will kill the sheep, said Hewitt. Finally, there is the name of the manufacturer/distributor and the weight listed as bulk or in pounds.

Hewitt said that there are really two parts to the feed label that the purchaser needs to pay attention to. Those are the guaranteed analyses and the ingredient list.

He focused mostly on the guaranteed analyses. Again, in preparation of the presentation, he found 18 different feeds manufactured in Texas and compared the guaranteed analyses across labels.

He broke several of them down by ingredients, some of which were typically listed with a maximum or a minimum. For example, across the 18 feeds manufactured in Texas, the average crude protein was 18 percent though it ranged from 16 to 20 percent.

Once in a while specific amino acids were listed along with the amount within though in all the 18 feeds he only found lysine mentioned on all 18 of the bags.

Crude fat was also listed and can be important to know, said Hewitt. However, what he learned is that the manufacturer really can't go to a very high level of fat in a pellet and still make a pellet. The average was 3.4 percent, though it ranged from 1.8 to six percent.

Additionally crude fiber, a measurement of what is indigestible in the feed, was included. All 18 bags listed it, and as an average it was 14 percent though the range was from seven to 20 percent.

There were a whole variety of minerals listed on the feed tag. The most common were calcium, phosphorus and salt listed often with a minimum and a maximum. Calcium and phosphorus were listed on all 18 feed tags. The amount in the feed was typically over what is suggested necessary in the research literature for white-tailed deer, he told the group. He also pointed out that some calcium and phosphorus is more available and depends on the source in the feed.

There were several other minerals often listed though they didn't show up in the guaranteed analysis. Some included selenium, iron, manganese, magnesium, zinc iodine, cobalt and potassium.

"You'd never know those were in there unless you looked at the ingredient list," said Hewitt.

Specific to selenium, he noted that it serves a valuable purpose in that it helps with cell functioning and cell membrane integrity and can help make deer less stressed during a capture, for example. However, it's only needed in a small amount. He also noted that selenium toxicity is often a problem in some western states; that's not the case for most of Texas.

Additionally, he pointed out that the chelated minerals tend to have a higher absorption rate and may be handled differently in the body than some of the inorganic mineral forms. If it's the chelated form it might have "amino acid" included as part of the description or "complex" so it may say complex lysine or zinc amino acid, for example.

Finally, there were the vitamins. Vitamin A and E were often shown, but not always, he said. Unlike the minerals, which were listed typically in parts per million, vitamins were shown using an international unit of measurement. Hewitt explained that vitamin A, for example, comes in many different forms and using the international unit standardizes it. The ranges from these two vitamins was large.

Specific to vitamin A, Hewitt said there's not a lot of danger of having too much. However, the active form of vitamin A can be toxic, and the problem he found was that the feed tag didn't typically say what form was in the feed. Most often it was listed as "vitamin A supplement."

"If it's in one of the forms that typically would come in a plant, it's not a problem because the deer convert to an active form as they need it. But again, if it's in the active form and the deer eat a lot of it, there's some potential for too much to build up in their body."

He offered a few other take-aways on vitamins. Vitamin E helps reduce oxidation of the fats. It essentially serves as an antioxidant for the deer. Also, vitamins A, D, E, and K are fat soluble, and A and E are abundant in green vegetation.

"If there's good forage and green stuff out there, I don't think there's any reason to expect there would be deficiency problems with vitamins A & E," Hewitt told the group. "Both can be stored in the liver so even if we get into a drouth, the deer are going to have access to some additional vitamin A and E over time."

He added that it doesn't hurt to put them in the feed. They may serve as a buffer and help in stressful situations.

Additionally, he noted that tocopherols is a term often associated with vitamin E. Carotenoids or retinoids may be associated with vitamin A.

Though vitamin A and E were most commonly listed on the feed tag, there were often others including vitamin B12, riboflavin, niacin, folic acid, thymine and biotin. He said these are not as critical as they are all made by the gut microbes and generally not limited.

Hewitt also noted some flexibility in the different ingredients in that sometimes of the year, corn may be more available and in other times sorghum, for example. Often the feed tag listed it simply as "grain products."

The amount of energy in the feed was not listed per se, though it is important and there are ways of getting an idea of the energy value in the feed, Hewitt told participants.

"The energy value is how much of that energy the deer can absorb into their body and use for its own metabolism," he explained. "One of the big factors that affects the energy value of a food to a deer is the digestibility."

Crude fiber, which is listed on the feed label, is the best estimate of the digestibility of the feed. The higher the fiber, the lower the digestibility. Also, the lower the digestibility the lower the digestible energy, said Hewitt.

He also explained that fat in the feed increases the gross energy, and it's highly digestible and so increases digestible energy. Minerals, on the other hand, have just the opposite effect.

Hewitt offered a couple of more tips noting, for example, that in the scientific literature calcium and phosphorus requirements vary tremendously depending on the sex of the animal, the age and the season of the year. On the feed label it is often depicted as 2:1, two parts calcium to one part phosphorus, which is typically considered the optimal ration.

"A one to one ratio is probably okay," he added. "However, if its less than one percent calcium or maybe six or eight parts calcium for one part phosphorus, the calcium can start competing for absorption of phosphorus and can cause some deficiency problems."

Vitamin D helps the animal regulate calcium in its body and is produced naturally by the body's exposure to sunshine. "Whether it'll be limiting in a free ranging deer it's hard to say," Hewitt said.

He showed some examples of different feed labels. One had 14 percent crude protein and 30 percent crude fat. On the latter, he noted that much over six percent crude fat and it's impossible to make it into a typical pelleted feed. That particular example was an extruded feed, something more like dog feed, he said. It also had seven percent crude fiber.

"It's going to be a very energy dense food," said Hewitt.

Another was 14 percent crude protein, two percent fat and 21 percent crude fiber making it essentially just a roughage product. He said he saw little use for that kind of product outside of research.

Hewitt told the group that the foods that deer eat in their native environment are high in fiber. Also, while the pelleted feed that so many feed these days is often referred to as protein pellets it's really a high energy diet.

In response to a question, he acknowledged that it's not really clear how much fat a deer needs in its diet. Acorns, for example, have a fair amount of oil in them, which is high fat.

"The rumen has a hard time handling high levels of fat," Hewitt told the group. "They'll back off naturally by mixing other things in, but at what level that is I don't really know."

He opined that the amount of fat in most of the pelleted feed is not likely to pose a problem. The concern might be the extruded feeds. Hewitt did some work years ago with a 40 percent cottonseed, 60 percent alfalfa ration and the deer seemed to limit themselves. The assumption was that it might possibly be a gossypol affect, but the deer may have also been limited by the high amount of fat in whole cottonseed.

"The bottom line is we don't know, but as long as the deer have options, I think they can put together what they need. It's the pen situations where it can get tricky," he concluded.