# Poultry Feed Can Be Modified To Reduce Manure Nitrogen, Phosphorous

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feed additives to help poultry improve the digestibility and utilization of food. He spoke on Monday afternoon at the Poultry Management and Health Seminar at Kreider Farms Restaurant.

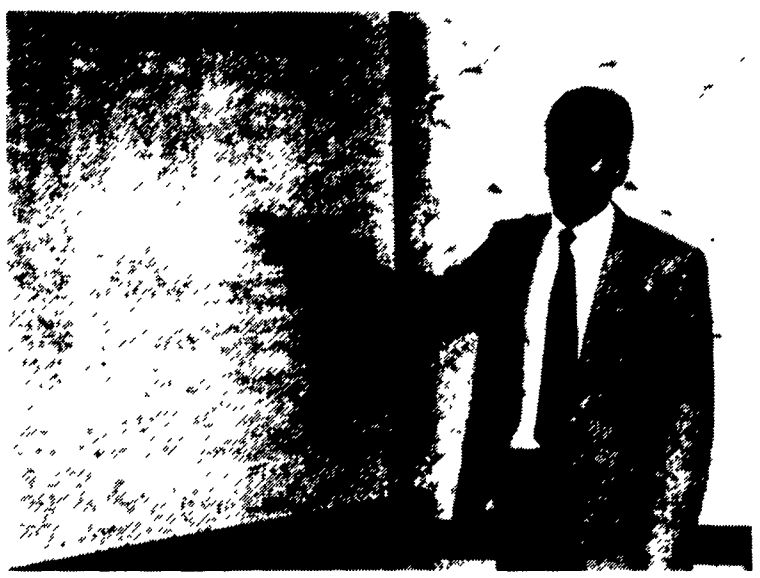
The enzymes, often atomized (sprayed) onto pellets, include amylase-containing enzymes, and the enzymes called beta-galactosidase and hemicellulases.

"All of these products free up nutrients in these feeds that are bound in the seed coats, nitrogen and carbohydrates, and make them more available" to the birds, he said. The more of these nutrients birds can utilize, the less end up in the manure.

The hemicellulases are enzymes that break up the cell walls of the plant to help in starch digestion and energy utilization. But they also release some nitrogen and make them more absorbable and more readily digested by birds, according to Patterson.

Enzymes are often used in combination, depending on the nutrient goals established by the nutritionist and producer.

Enzymes for nitrogen and phosphorous use provide one method to ensure that fewer of these components end up as animal waste. Other factors include overall feed and bird health management.



**Dr. Paul H. Patterson, of the department of poultry science at Penn State, noted that commercially available enzymes are useful as additives to help poultry improve the utilization of nitrogen and phosphorous in feed. He spoke on Monday afternoon at the Poultry Management and Health Seminar at Kreider Farms Restaurant.**

Patterson told the 40 producers and industry representatives at the meeting that one of the things producers can do is "maybe do a better job of formulating, with the goals in mind to reduce nitrogen and phosphorous in the manure.

"We can get by with lower protein diets, perhaps, using some new ingredients and some synthetic amino acids," he said.

Using amino acids in place of extra protein additives may help the birds utilize the nutrients available. The most readily available amino acids are cystine and lysine, but methionine, tryptophan, threonine, and arginine are also available.

Also, proteins in different feeds are utilized differently by birds. The proteins are utilized more readily in an alfalfa feed a lot better than in corn. So the type of additive will vary with the type of diet the bird is on.

Producers can adjust the formulation accordingly, depending on nutrient requirements of the bird.

"Another thing you can do is lower the protein level in the diet," said Patterson. He told producers that addressing the amino acid needs of birds rather than worrying about the protein requirements may aid in nutrient utilization.

The bottom line, according to the poultry specialist, is to obtain equal production with lower protein diets using the amino acid additives.

"There is an economic incentive in some instances to formulate with lower protein and add some amino acids," he said.

The type of diet can also determine how much phosphorous is excreted in the manure. A type of phosphorous called phytate is "very unavailable" to birds — and there is quite a bit of it in corn.

"We were seeing very high levels (of phosphorous) in broiler and turkey litter," said Patterson.

"Some of these meals and things we don't commonly use, like rice bran, wheat bran, and sesame meal, have a terrific amount of this phytate phosphorous," he said. The phosphorous is not absorbed by the birds — it passes right through the bird and is accumulated in the manure, according to Patterson.

Modifying phosphorous excretions in the litter is possible by modifying the level of calcium that producers include in layer diets — using more Vitamin D can help modify phosphorous excretions. Producers can also use an enzyme to reduce phosphorous output in the manure, such as phytase, which helps make the phosphorous more available to the birds.

Recycling of phosphorous from the manure is on the future horizon, according to the poultry specialist. Patterson spoke about work out of Auburn, Ala. on re-using phosphorous from a lagoon-type system.

Patterson also spoke about experiments with special housing, particularly from a Dutch system, which reduces ammonia by circulating dry air under a trampoline-type floor. By drying the manure, ammonia levels are reduced.