INFO SHEET

Aggressive Behaviour in Turkeys

As Affected by Feed Nutrition and Formulation

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Aggressive behavior in commercial or parent-stock turkeys at any age can be caused by several factors such as lighting, ventilation, floor space, feeder or drinker space, litter quality, gender, feed nutrition and feed formulation.

Improper feed nutrition is often the prime suspect when aggressive behavior occurs and may be the only factor considered even though several factors can simultaneously cause the occurrence of this problem. The key to solving aggressive behavior problems is to address all causative factors when this problem is at its earliest stages. Allowing this behavior to continue in a flock unchecked instead of addressing it immediately will result in greater difficulty in finding a solution.

When aggressive behavior in turkeys occurs and feed is properly considered a causative factor, most nutritionists will have sodium at the top of their list of suspected nutrients. Sodium levels in feeds less than 0.15% will cause aggressiveness to varying degrees. The reason why low sodium diets cause aggressive behavior is not clear, but it may be due to the role of sodium in neural conductance and electrolyte balance. The effect of low sodium diets on aggressive behavior may be acute in that it is noticed quickly after a suspect feed is fed; or progressive in that the degree of aggressiveness continually increases over time until it is noticed as a problem requiring immediate attention.

Formulating diets to total sodium concentrations greater than 0.15% may worry some nutritionists because of excessive litter-moisture concerns, but supplying a portion of added sodium as sodium bicarbonate and having total chloride in feed at 0.20–0.23% should result in dry litter conditions. Litter conditions should remain dry at total sodium levels of 0.16–0.18% in commercial and parentstock feeds. These sodium levels should also help reduce the overall incidence of aggressive behavior. Because total chloride concentration in feed could affect the incidence of aggressive behavior, its concentration in feed should not be less than 0.18% although the suggested level is 0.20–0.23%.

Magnesium is a mineral often considered by nutritionists to reduce ongoing aggressive behavior. Typically, this mineral is added as magnesium oxide to supply 0.05–0.10% additional magnesium to complete feed. Magnesium may reduce aggressive behavior by competing with calcium ions, the latter which are involved in neural synaptic transmission. Magnesium has been routinely used in the swine industry to decrease aggressive behavior of sows and commercial-market swine. Results however, from the use of excess magnesium in swine or poultry feeds have been inconsistent in decreasing aggression probably because of the complex etiology of this behavior.

Amino-acid and protein concentration of feed can affect aggressive behavior in turkeys. Diets deficient in certain amino-acids such as methionine or tryptophan may result in increased aggression. When diets are not deficient in these amino-acids, nutritionists may add excess quantities of either of these amino acids, to decrease aggressive behavior. Typical quantities of the amino-acids added to decrease aggressive behavior 0.05–0.10% as DL-methionine or 2-hydroxy-4-(methylthio) butanoic acid; or 0.1–0.3% excess total tryptophan as L-tryptophan. Similar to the effect of additional magnesium, excess methionine or tryptophan have been inconsistent in decreasing livestock aggressive behavior. Supplementing methionine may increase its level in the brain or the levels of its metabolites. This may result in the occurrence of feed-intake satiety which could result in decreased competition for feed and less social interaction between turkeys. Tryptophan supplementation of feed could result in increased brain-serotonin production from this precursor amino-acid resulting in less aggressive behavior. Protein deficient diets may result in amino-acid deficiencies that may increase aggression. These diets may be deficient in tryptophan, valine and isoleucine; which are aminoacids not normally available or supplied as synthetic amino-acids in commercial feeds.

Vitamin amounts added to feed, particularly B-complex vitamins, should be considered when solving the problem of aggression. For instance, adding 200 mg extra niacin per kg complete feed has been done to reduce the severity of aggressive behavior; probably because of it sparing tryptophan as a precursor for serotonin synthesis. Other Bcomplex vitamins to consider if adequate in diets to prevent the occurrence of aggressive behavior are pantothenic acid, pyridoxine and thiamine as these vitamins are involved in neural function and development.

The composition of feed can affect aggressive behavior. Poor quality added fat or meat meal which often contains peroxides and fatty-acids, can destroy added vitamins in feed and delay digestive system development in young poults. Over-abundance in the feed of indigestible components, non-starch polysaccharides, and mycotoxins

can compromise the health and integrity of the digestive system resulting in the occurrence of aggressive behavior. Over-processing of feed during pelleting or expanding can result in destruction of nutrients and an increase in indigestible nutrients that can result in aggressive behavior. A cause of aggressive behavior often overlooked is water quality. Mineral and bacteriological testing should be done on water obtained from the drinker to eliminate this as a causative factor.

Summary

Aggressive behavior in turkeys is a complex problem that can be simultaneously due to several factors. Early detection of the problem and a logical approach to solving this problem is essential to its reduction in commercial and parent-stock flocks. Feed is usually considered the primary reason for aggressive behavior; which could be correct or incorrect depending on the etiology of the aggressive behavior occurring on-farm. When feed is considered to be part of the problem of aggressive behavior, nutritionists should not overlook any components of the feed during their assessment. Sodium, chloride, amino-acid, protein and B-vitamin levels should be considered as potential causative factors in feed and corrective action taken if required.

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