

- To reduce dust and odor**
- Avoid dietary excesses of protein; feed ingredients high in degradable fiber and sulfur-containing mineral sources.
 - Add fat to the diet, and prevent free-fall of feed.

Nutritional Interventions Specifically Targeting Odor and Dust

Odors are produced when organic material is fermented. Carbohydrates yield volatile fatty acids such as butyric acid. Proteins yield volatile fatty acids, phenolics such as para-cresol and skatole, mercaptans such as hydrogen sulfide and ethyl-mercaptan, and amines such as putrescine and cadaverine. A solution to decreasing odor is thus to decrease the availability of fermentable material, particularly protein. As outlined earlier, highly digestible ingredients and low-protein diets are key solutions for reducing odor (Mackie et al. 1998).

The dietary sulfur content is another factor affecting odor. Sulfur can be used to form mercaptans, compounds that are very malodorous and have a very low odor threshold (thus a very low concentration is detectable by the human nose). Sulfur is contained in amino acids such as cysteine, methionine, and taurine, and excesses of these amino acids should be avoided. Many minerals are provided as sulfur salts; such salts are typically inexpensive and of acceptable availability. The sulfur, however, does contribute to odor, and alternative sources of those minerals should be considered where odor is of concern (Shurson et al. 1999).

Dust is derived from animal skin, feed, and manure. Skin health is strongly affected by nutrition, although typically no nutritional problems are present that would increase such skin problems. Dietary fat content and composition can be expected to affect skin dust as well, although practical recommendations to prevent such problems are lacking.

Feed dust can be reduced through pelleting and through the addition of fat to the diet. In addition, feed should be handled such that dust is minimized. For example, feed should not be allowed to drop over a large distance in the feeder. Also, presenting feed in wet form or in a wet-dry feeder reduces dust.

Fecal material, once it dries, can lead to dust as well. Fecal material can be made wetter and stickier simply by adding nonstarch polysaccharides to the diet, such as xylans and beta-glucans (commonly found in cereal grains such as wheat and barley). Such a strategy, simply to reduce dust, however, is not recommended because it will decrease protein digestion and likely increase odor.

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