Can Animal Feeding Practices Influence Nutrient Runoff?

Fact Sheet FS1191

Cooperative Extension

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Balanced diets are good for the animal and good for the environment. When diets are out of balance, excess nutrients will be wasted. This is most important when feeding protein (contains nitrogen) and phosphorous. It is impossible for all nutrients to be in a perfect balance in commercial or mixed diets, but it is important to come close to meeting an animal's nutrient needs. If the diet is balanced except for one underfed nutrient, then the entire production of the animal will be limited to the level of this "limiting nutrient," and other nutrients may be wasted. If protein is overfed, then excess nitrogen will be excreted, but if protein is underfed, then other nutrients that are in excess will be excreted. Phosphorus is required in the diet of animals, but if overfed or wasted, can contaminate the environment and water supplies. Phosphorous should be fed in a form more available for animal production since excesses will be lost. Research has shown that the proper feeding of nitrogen and phosphorus can result in a reduction of nutrients released into the environment.

Wasteful feeding practices can also result in nutrient losses. It is common for animals to spill or waste feed. Some species will waste up to 20% of their diet while eating. This wasted feed is often wet and covered with saliva, so it will spoil and rot if left, and the animals will not consume it. Silage, fed to dairy and beef cows, if left in the feed bunk and not consumed quickly, will spoil and not be eaten.

Therefore, animal feeding areas or feed bunks should be designed to reduce wasted feed by spillage or by feeding on the ground. Feeders should be cleaned on a regular basis to reduce spoiled or rotten feed. On some farms, it is common for animals to be fed on the ground; there is no greater source of waste than feeding an animal on the ground. Although this might be acceptable with beef cows or sheep in the Northeast, it is not acceptable to feed animals on the ground near a stream or wetland. Feeding animals on the ground in dirt lots can result in mud accumulation and erosion and could be a surface water runoff risk; ground feeding can also result in increased parasite infection in horses, and sand ingestion by horses can lead to health problems. Even if a diet is perfectly balanced, feeding animals near a stream can result in nutrients from wasted feed (hay, grain, etc.) entering the stream. It is wise to ensure adequate distance between these outside feeding sites and streams and/or wetlands.

Check with your Natural Resources Conservation Service to determine minimum setback distances when feeding; locales may differ.

Wasted feed will also increase the amount of feed required for a given level of animal production and as a result will be more expensive. Wasted feed should not be left to rot in bunks or contribute to mud accumulation in lots or near streams, but should be placed in the manure or compost pile and allowed to decompose. When composted, it can be reapplied to land as a fertilizer.

Healthy animals fed balanced diets and provided with abundant supplies of fresh water will not only be the most productive animals, but they will also be the most efficient users of nutrients in the diet, and will be more profitable to the farmer.

Guidelines

1. Diets should be balanced to prevent nutrient waste caused by overfeeding. Seek the services of a professional nutritionist or contact your local county extension service office for assistance.
2. Bunks and feeders should be designed to reduce wasted feed. Animals should be allowed to eat comfortably, while making it difficult for them to spill feed. Feeder design can vary from species to species. The use of round bale feeders in

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outdoor feeding areas can reduce feed wastage or contamination; however these feeders should be moved on a regular basis to prevent accumulation of feed or mud around the feeder area. Any remaining feed should be removed to a manure or compost pile.

3. Bunks and feeders should be cleaned on a regular basis so that clean feed is not contaminated with spoiled or rotten feed. Wasted feed should be disposed by putting it in the manure or compost pile.
4. Feed processing can also have an influence on feed consumption and feed wastage. Dairy cows fed total mixed rations will waste less feed than those fed individual components. Animals fed pelleted feeds will waste less than when fed ground or mashed feeds.
5. Do not feed animals on the ground. This practice encourages loitering around feeding areas and when located near a stream, can lead to destruction of vegetation near the stream, a higher level of manure deposition, and can increase the risk of stream contamination. This sort of waste also contributes to the creation of mud in pastures and paddocks.

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