

Animal Agriculture in South Carolina: A Fact Book

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Problems and Solutions

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What Can Be Done?⁵⁴

Historical Context

The problems arising from the growth in concentrated animal agriculture are not unique when considered in historical context. Over the years problems have arisen and solutions to the problems have followed. For example, in the 1930's the problem was loss of topsoil to erosion by wind and water. The Soil Conservation Service was formed to find solutions to the problem. As a result of improved farming techniques, erosion is much less of a problem. This is typical. Changes in agriculture lead to problems, and then solutions are found. Private and public researchers are working hard to find the answers. The next problem to be considered will likely be air pollution (not just odor) caused by the volatilization of chemicals in manure. Researchers are already tackling this problem. Anticipation of problems can help reduce the lag between the perception of the problem and the finding of solutions. There is also a lag between finding the solutions and implementing them.

Farmers may feel that they are being singled out for environmental scrutiny. Industry probably felt the same way 25 years ago. The combination of reduced industrial pollution and increased concentration of animal agriculture has pushed agriculture into the spotlight. As progress in cleaning up agriculture is being made, other sources of nonpoint pollution such as septic tanks and pet wastes are also coming to the forefront. It may be that household pollution is the next big thrust in environmental improvement. But in striving to clean up the planet, all sectors will be held responsible. Those that do not cooperate voluntarily will likely find themselves forced to comply with growing regulations.

The problems of nonpoint pollution from agriculture do not lend themselves to a “one size fits all” solution. Regulators should keep in mind that flexibility is important if goals are to be reached at the least possible cost to farmers and society. Individual farmers may be able to use several incremental changes to reach an overall solution to their particular problems.

Possible Solutions—Good Neighbors

Being a good neighbor is important. Willingness to work with neighbors to avoid problems to consider new solutions will lessen the likelihood of resistance. Everyone resents being presented with a “fait accompli” when it has a major impact on them. Consideration in the timing of manure application and keeping neighbors informed of plans will help to avoid problems.

Site selection is the first key to successful animal agriculture which doesn't pollute and doesn't offend the neighbors. Factors relating to odor control are *prevailing wind direction*, *separation distance*, and *farmstead visibility and condition*. Separation distances are included in state regulations. Use of visual barriers such as trees can reduce odor as well as reducing the perception of odor.⁵⁵

Odor control is a major concern, but the migration of odor off the farm is not the inevitable result of animal agriculture. Being a good manager and a good neighbor can eliminate or reduce odor problems. Keeping hogs and hog barns clean and dry will help. Spilled or moldy feed should be cleaned up and dust should be kept to a minimum. Chemical and biological agents have been tried for odor control, but are not very effective. High efficiency particle air filters can keep odors from reaching the air outside of animal buildings.

Lagoons can be another source of odors. Lagoon loading should take place on a regular schedule, at least weekly or even daily. Add hydrated lime or caustic soda if the pH level falls below 6.7. Never allow a lagoon to overflow. Consider a cover. Covers can be expensive, but as concerns over odor grow they may be worthwhile. Just floating straw on the top has been shown to reduce odors by 50 percent or more. It may be possible to get lagoons to

crust over by changing feed rations. Tree windbreaks can break up the odor plume and even remove particulate matter.

Land application of manure is a major source of odor complaints. Lower gun pressure can increase droplet size and reduce odors. Injection below the soil surface is the best way to reduce odor. Applying manure early in the morning or on cloudy days helps. Be considerate of neighbors by applying manure when the winds are blowing away from them. Weekday applications are more likely to find the neighbors away from home. Check to make sure the neighbors aren't planning outdoor activities, especially around holidays.⁵⁶

Possible Solutions—New Technologies

Researchers are attacking the problems of too many nutrients from animal waste reaching improper places from many angles. Below are a few areas that have been in the news in the last several months.

New corn technology from the USDA can cut the amount of phosphorous in manure in half. The new hybrids will be available in 2000. Genetic engineering may produce animals that use nutrients more efficiently reducing costs as well as the amount of waste.^{57, 58}

Diversa Corp. of San Diego announced on May 18, 1998, that it has found an enzyme that both increases the amount of nutrients in grain that animals can use and reduces the amounts of nutrients (especially phosphorous) that end up in manure. As a feed additive, the phytase will reduce the costs of feeding animals and the cost of proper disposal of wastes. Tests have been conducted on both poultry and swine.⁵⁹

Researchers at Michigan Tech University are looking into the possibilities of using animal waste as part of a de-icing mixture that could replace road salt and eliminate the resulting corrosion of cars.⁶⁰ And UPI reported in September 1997, that officials in Harbor Springs, Michigan, were considering turning sewage into snow using equipment borrowed from ski resorts. They claim that the cold kills bacteria and that when the snow melts in the spring the waste is gone. (But the nutrients are still somewhere.)⁶¹

Constructed wetlands are under investigation as water purification systems. An experimental wetland has been set up at Purdue University's Baker Animal Science Farm near Lafayette, Indiana. "The purpose of this study is to evaluate whether unlined constructed wetlands are a practical alternative for animal waste management in Indiana."⁶²

In North Carolina, Sustainable Strategies is touting the use of bamboo forests to treat manure. Bamboo uses vast amounts of nitrogen in the production of protein. It can be used for building and construction materials, animal fodder, paper, fuel, and even food (bamboo shoots).⁶³ Clemson University is conducting experiments involving application of swine waste to pine forests.

High tech solutions are available from various companies. These systems concentrate nutrients and kill pathogens, producing a humus-like material that can be used as a soil enhancer.

Again, there is not likely to be one solution that works and is economically feasible for all situations. But progress is being made on many fronts and solutions will be found. The nutrients in manure are part of a closed system and will not disappear as if by magic. However, properly utilized, they can reduce the need to use chemical fertilizers which are outside additions to the system. A University of Minnesota soil scientist found that using hog slurry as fertilizer increased yields above those obtained with commercial nitrogen fertilizer in field trials.⁶⁴

Good News

In October 1997, the National Pork Producers Council announced their 1997 Environmental Stewards awards. All of the farmers who received the awards share a sense of duty to the environment. They are all proactive in their relations with their neighbors, demonstrating the benefits of sharing information and being open with neighbors.⁶⁵

One farm was selected from each of five regions in the country on the basis of manure management system, financial management, farm aesthetics/neighbor relations, wildlife management, and innovations. A farm in Ohio uses tons of local “wastepaper” as bedding. The shredded paper stays out of landfills and reduces odor. They also recycle stale bakery goods into feed for their animals.

An Arkansas farm pipes waste mixed with fresh water to fields over a mile away. The farmers participate in a wood duck box project and maintain old canals for quail, bullfrogs, fish, and turtles. They recycle products from a dairy operation in a liquid whey system for feed.

A California farm recovers methane from a covered lagoon. This removes nitrogen from the manure and keeps it from getting into the air and water. By burning the methane they produce about \$85,000 worth of electricity each year. They also recover heat from the generators to heat their weaner pig nurseries during the winter. In the process, odor is reduced by 90 percent, dust is eliminated, flies are controlled, and water to irrigate and fertilize crops is provided.

In Iowa, a farm’s use of an exploratory trench around lagoons to prevent problems with abandoned drainage tiles has been adopted as a protocol for all lagoons by the Iowa Department of Natural Resources. The farm has clay-lined (24 inches) lagoons with plastic liner skirts around the tops to prevent wave erosion of the berms. Lagoons are surveyed at least twice a week.

A Pennsylvania farmer has installed manure leak detection systems at all his new facilities. He works with the feed mill to maximize feed efficiency and reduce waste.

Again, all of these farms are dedicated to environmental stewardship and good neighbor relations.

Another good news report came in March 1998 from the American Farm Bureau Federation. This year’s survey of (296) young farmers, age 18-35, found high levels of optimism about the future of farming. They thought that government regulations were their biggest challenge (26.5 percent), but about 93 percent said they select farming practices based on both the environment and economics.⁶⁶

Bad News

It’s not often that farmers go to jail for not handling manure properly, but it can happen. Two Henderson County, NC, dairy farmers were imprisoned in November 1997 for failing to comply with a court order to install a new animal waste treatment system. After seven years of dumping waste into Mud Creek, James Sexton, Jr., and Charles E. Sexton were cited for contempt of court when they failed to follow the court order issued in September 1996. The farm was ordered shut in September 1997 and the cows were removed.⁶⁷

Reuters reported on May 8, 1998, that Tyson Foods will have to pay \$6 million for pollution caused by its newly acquired subsidiary, Hudson Foods. In addition to the \$4 million civil fine that Tyson will have to pay, it will also have to spend \$2 million to prevent further leakage of waste into the waters of Maryland, Virginia, Delaware, and Pennsylvania.⁶⁸