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Progress Report

AGRICULTURAL WASTE MANAGEMENT

The major thrust of the agricultural waste management activities has been to keep producers updated on the current regulatory criteria for animal waste management and to implement research findings to provide practical solutions for acceptable waste management for individual producers. In-service training sessions on animal waste management were held in each extension district to review current and pending regulatory criteria and demonstrate the application and use of the animal waste management alternative bulletins for swine, poultry, dairy, and beef animals. These sessions were conducted by specialist in biological and agricultural engineering, soil science, and economics to provide interdisciplinary expertise for consideration and evaluation of the total production-waste management system design, operation, and economics. These sessions were attended by extension personnel from each county and representatives from FHA, county and state board of health, state and regional offices of the North Carolina Water Quality Division, and SCS. The highest attendance of about 100 was in the western district where the regional SCS meeting was held in conjunction with the Animal Waste Management In-Service Training Session. These meetings, along with the publications and individual contacts, have had a positive educational impact.

Extension Leaflet 191, "Regulatory Criteria for Animal Waste Management," was prepared to critique the final effluent guidelines and limitations for the feedlot industry promulgated by EPA and published in the February 14, 1974, Federal Register. This leaflet, along with permit information for the National Pollutant Discharge Elimination System (NPDES), has been distributed to all county extension chairmen and other appropriate agencies and personnel.

A workshop on the land disposal of wastewaters was conducted in association with the Water Resources Research Institute to acquaint officials of the North Carolina

Department of Natural and Economic Resources, Office of Water and Air Resources, with the current state-of-the-art of technical and economic considerations for land disposal systems. Extension specialists from the Departments of Biological and Agricultural Engineering, Soil Science, and Economics participated in this program.

Supplemental research grants for work on agricultural waste management have been awarded by the Environmental Protection Agency for work on (1) swine waste state-of-the-art and runoff research and (2) pollution from rural land runoff. These studies will direct attention to non-point source discharges from agricultural lands and areas used for the terminal application of animal waste which is currently gaining increased attention since regulations on point source discharges have been finalized. It is anticipated that these research projects will accrue information to better assess the magnitude of waste inputs or potential pollution associated with non-point source rainfall runoff from agricultural lands to more competently direct regulatory direction and decisions. Cost benefit considerations of controlling, restricting, or completely treating runoff from agricultural lands will play a major role in the development of final conclusions and recommendations.

Research results on unit processes and systems for agricultural waste management have been implemented in the field to help producers upgrade existing systems or secure permit approval for new treatment systems. Although the research on methane generation from swine waste with a solar reactor has gained national attention, this work is not to the point that practical recommendations can be made and systems designed for actual units. However, a complete waste management system was designed and installed for a swine producer whose single unaerated lagoon was odorous and overflowing into a creek that lead to a recreational lake. This total waste management system consists of an aerated lagoon followed by the original unaerated lagoon with excess water being irrigated to land. In addition, the irrigation system conveys wastewater to an overland flow treatment plot and also to the underfloor manure storage pits for precharge and positive cleaning after pit dumping. Waste

treatment systems have also been designed for a hatchery and packing house which consist of pretreatment, solids or grease removal, followed by an aerated unit and a storage pond with excess water being irrigated to combined fescue and coastal bermuda grass pastures.

Animal producers whose waste treatment systems do not involve a point source discharge are not required to obtain a permit in North Carolina, but industries such as hatcheries or packing houses must obtain a permit regardless of the waste treatment strategy. Therefore, considerable effort continues to be directed to working with regulatory agencies to clarify particulars required for the design, construction, and operation of a waste treatment system that meets federal criteria and complies with requirements for a state permit. For the demonstration waste treatment systems being developed in concert with extension assistance will be monitored to evaluate effectiveness so that this actual performance information can be used to determine the validity of current design strategies and thus lead to more routine design and permitting in the future.