SOCIO-ECONOMIC IMPACT OF RECENT WATER QUALITY LEGISLATION ON CONFINED ANIMAL FEEDING OPERATORS

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In a project designed to examine the economic effect of the Oklahoma Feed Yards Act as it applies to confined animal feeding, 59 feedlot operators across the state were interviewed. Preliminary results indicate that several different methods of waste handling are used, with size of operation, type of animal fed, and type of housing determining the waste handling system. Operators, generally, are complying with the environmental quality standards. At present, no major environmental problem appears to be attributable to these feeding operations.

The beef feeding operator today is not only concerned with goals of efficient and profitable production, but he must also consider the implications of his production methods and practices on others and be certain that the quality of his product is safe for human consumption.

Part of the problem facing the feedlot operator, in controlling the potential pollutants which may enter streams from his operation, stems from the disassociation of many of the benefits and the costs of pollution control. Economic theory emphasizes that resources should be applied, in any given process, until the last unit of resource produces just enough revenue to cover the cost of that unit of resource. The feedlot operator, relying on the private marketing system, can see little reason to invest large amounts in controlling the *potential* pollution from his operation. Recent laws require these operators to make certain that potential pollution does not become *actual* pollution. Since they receive most of the benefits, the citizens of the community downstream would like to see the feedlot operator pay all the costs of keeping pollutants out of the water.

The beef cattle feeding industry has experienced a phenomenal increase in the number of large-scale feedlots, *i.e.*, those with a capacity of 1,000 head or more. In Texas and Oklahoma, the number of large-scale feedlots increased 35.5% and 40.0%, respectively, between 1964 and 1968 (1, pp. 7-8). Large-sized operations, some with 35,000 to 40,000 head capacity, are now predominant in the beef feeding industry. At least ten new lots with 30,000 to 50,000 head capacity have been constructed in the Oklahoma and Texas Panhandle areas during 1969 and 1970. This changing structure in the cattle feeding industry, in an attempt to become more efficient, has magnified the potential pollutant problem by increasing the size and number of feedlot operations within relatively small geographic areas.

The waste handling methods of feedyards have recently been questioned by individuals and organizations concerned with water quality. In an attempt to overcome the resulting criticism, the Oklahoma Feed Yards Act was passed and became effective in July, 1969. This act establishes the powers and duties of the State Board of Agriculture in licensing and setting standards for handling wastes and runoff from livestock feeding operations.

The act pertains to those "livestock feeding areas or pens which are used for feeding for slaughter . . . having more than two hundred-fifty head at one time during the licensed year."

> "Owners and operators who are granted a feed yards license shall: (1) provide reasonable methods for disposal of animal excrement; . . . (3) provide adequate drainage from feed yards premises of surface waters falling upon the area occupied by such feed yards; take such action as may be necessary to avoid pollution of any stream, lake, river or creek; . . ."[2]

Animal registration permits, ranging in cost from $25 to $150, are based on the feeding operation's one-time capacity, not on actual numbers of animals fed throughout the year. At present beef cattle, hogs, feeder lambs, and horses are included under the act.

METHODS

The Department of Agricultural Economics at Oklahoma State University initi-

ated a study, in the summer of 1970, to obtain information on volumes of solid waste and liquid manures produced from animal feeding operations in Oklahoma, and on present methods of use and/or disposal of these wastes. This information will be used to make economic analyses of current and proposed methods of handling animal wastes from confined feeding operations to determine the most economical means of handling such wastes.

A sample of confined animal feeding operators was selected for personal interviews. Thirty-two beef feeding operators and 27 hog producers cooperated in the study. A questionnaire was utilized to secure the information desired.

In the study, budgeting, linear programming, and benefit-cost analyses are being used to determine costs and returns of current and proposed methods of handling animal wastes.

The operations are being analyzed by size of operation, by classes of animals, and by geographic location. Different-sized operations are using different methods of waste handling. Wastes from different classes of animals have consistency differences which lead to different handling methods. The rainfall across Oklahoma varies from 15 inches in the western panhandle to 50 inches in the southeast. Therefore, the analyses are considering geographical location, as well as specific site location with reference to slope of land and drainage to specific watersheds. The waste of all classes of animals has been converted to BOD equivalents of human waste to determine the pollutant potential for every stream.

RESULTS

Several preliminary conclusions have been reached as a result of the work done to date. Beef feedlots in Oklahoma are primarily in the western part of the state. Oklahoma feedlots in Texas and Cimarron counties, had a one-time capacity of 151,000 cattle, as of December 1970.

These large lots are capital intensive, where capital is substituted for labor. Therefore, they have expensive, large equipment for waste handling. This large physical size necessitates extensive retention capacity for liquid runoff. Several lots mix runoff water with irrigation water and apply it to crops. Smaller sized beef feedlots, in general, use a scoop on a tractor and load the wastes into a manure spreader, and the wastes are hauled to the fields.

Hog operations fall into several subcategories. Pigs may be on dirt, concrete, or slats. In the dirt systems, the lot is not cleaned but rather left empty for a period of time and the pen is disced during the time it is empty. The houses with concrete floors either have a lagoon, or the operator may clean the house with a shovel and wheel barrow. The slatted floor houses have a pipe to a lagoon or a tank which holds a few months' wastes. If the tank is used, it is emptied by a liquid manure spreader.

DISCUSSION

Several implications for the future are indicated by the preliminary results of this research project. The total quantity of animal products demanded will continue to increase and because of economies of size, the average size of animal feeding operations will expand. This means that proper waste disposal will become even more important in the future.

Recent lawsuits, utilizing the nuisance doctrine in some cases and various legal statutes relating to environmental quality in others, indicate that beef cattle operators must be more careful in site planning, spend more money for construction, and manage the operation more effectively to prevent adverse environmental effects.

Maintenance of good public relations with neighbors will become increasingly important. Increased use of zoning to separate agricultural production operations and urban or suburban subdivisions, *i.e.*, a green span (open space) or other type of buffer zone, may be necessary. A decision needs to be made regarding the rate of tradeoff society wishes to make between efficiency of production and the quality of environment. If the latter is chosen, a decision must be made on how much of the cost of control is to be borne by the producer, how much by the consumer, and how much by society in general. This is a key question that needs to be answered.

REFERENCES

1. R. A. DIETRICH, *The Texas-Oklahoma Cattle Feeding Industry: Structure and Operational Characteristics*. Texas A & M Univ., B-1079, December, 1968.
2. 2 O.S. Supp., §9-201 to §9-215 (House Bill No. 1341).