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MANAGEMENT SCIENCE FOR POULTRY DECISIONS

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Traditionally, poultry management has dealt primarily with the husbandry aspects of raising poultry. Optimal decision making approaches, another aspect of management, have been made more available to poultry managers through the development of computers and software.

The discipline associated with optimal decision making is management science. Why haven't we heard of management science applications to poultry decisions?

Twenty to thirty years ago, the amount of investment in the poultry industry was generally not very large. For example, a one percent improvement in a \$10,000 business would yield only about \$100. Now companies involved in the poultry industry have sales in the millions and billions of dollars. A small percent improvement in a million (or billion) dollar business

can result in savings of hundreds of thousands of dollars.

Management science is also known as operations research and systems analysis. Management science is commonly used by Fortune 500 companies to make tactical and strategic business decisions.

Specifically, management science is concerned with providing decision makers a scientific approach to the analysis of problems and identification of solutions to those problems. Poultry

management problems are generally very complex, involving a number of alternatives and a number of uncertainties. Particularly unique to animal management is the variability associated with biological responses which must be considered in the decision-making process.

The management scientist approaches complexity and variability by structuring the problems with quantitative models. The modelling of the variables is fundamental to management science.

This represents the question to be asked and is crucial to obtaining an effective answer. This may seem self-evident, but defining the question is sometimes the most elusive part of the decision-making process. From the model, one or more solutions are generated which become candidates for the solution of the original problem. How effective these solutions are depends on the ability of the model to capture the important features of the problem. Ultimately the decision maker makes the final decision judgment based on his or

her ability to manage risk and uncertainty.

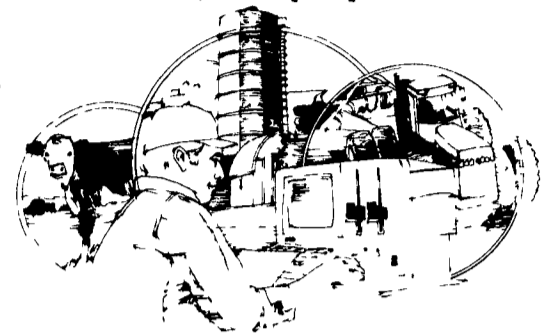
There are many decision tools for management science. The decision tool familiar to most poultry managers is linear programming for least-cost feed formulation. There are many other tools available in the Management Science "toolbox" which may have application to poultry optimization problems.

These tools include decision analysis, scheduling techniques, transportation algorithms, waiting line analysis, inventory control, and dynamic programming, to name a few. Some applications of decision tools to poultry problems made by researchers at Penn State

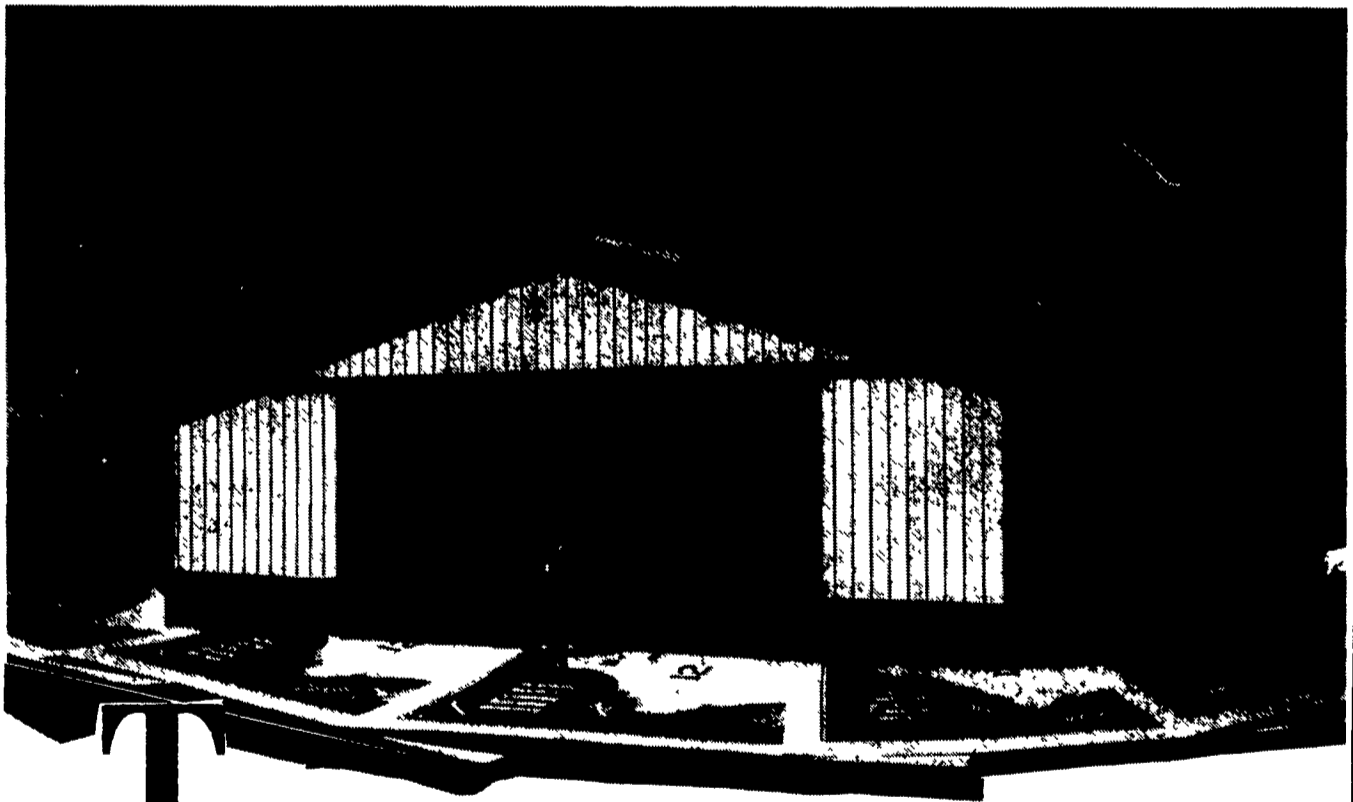
University have been mentioned in previous columns. These successful applications include decision analysis for caged laying hens (June 5, 1993) and stochastic non-linear programming for feed formulation (November 14, 1992 and November 20, 1993).

Opportunities for making optimal decisions in poultry management abound in such areas as processing facilities, control of animal environments, transportation of feed and products, nutritional database, quality control in feed mills, etc.

Management science is a discipline that offers the poultry manager an approach to solving these complex problems.



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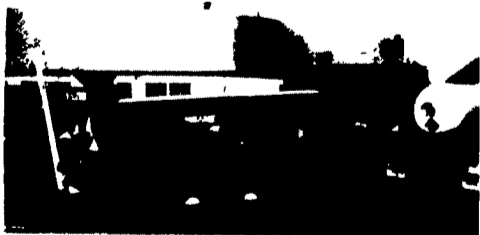
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