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EXTENSION POULTRY SCIENCE
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Some economic stability returned to the poultry business. Broiler and turkey producers began to show a profit in 1975. Egg producers so far have failed to make the necessary adjustments for profitable production even though they have been informed of the necessary adjustments. Their situation can be summarized, perhaps, by saying that wishful thinking prevails over economic realism.

Several poultry firms were forced into bankruptcy so far this year. This resulted in many broiler and turkey houses becoming vacant, are now vacant and probably will remain vacant.

Northeastern North Carolina is blossoming into a full-fledged broiler producing area due to Perdue Foods, Inc., Salisbury, Maryland. Perdue is investing millions of dollars in a feed mill, hatchery, and processing plant. Producers are investing millions in houses and equipment. So far about 110 houses (16,000 bird capacity) are in operation.

We continue to conduct efficiency studies and training programs for poultry firms requesting this information. In one feed delivery study a profit drain of over \$50,000 yearly was discovered. Other recommendation should save this company about \$100,000 in profit.

Much effort has been devoted to waste handling and management and in working with individual producers on serious fly and waste problems. Work was begun on a television educational film on waste handling and management.

We have publicized and responded to many requests for information on fertilizer value of poultry waste, and its usage in North Carolina has helped

relieve the short supply of chemical fertilizers. We have assisted with planning flush-out systems for both the existing and new houses. These do not make maximum use of waste but do reduce waste management costs and control fly problems when adequately planned and operated. We have assisted with high-rise housing construction and management plans as a means of minimizing waste management costs while retaining its availability as needed for crop production.

We have worked with county personnel and company service personnel in preparing plans to eliminate specific fly control problems that have disrupted community tranquility. We are cooperating with entomology specialists, Zoecon Corporation, and poultrymen in field trials of an experimental feed-through fly control compound.

An interdisciplinary team completed a comprehensive survey of hatchability problems in broiler hatcheries in North Carolina. Preliminary recommendations were made as glaring problems were encountered, general performance level data and recommendations were prepared for participants, and an industry committee was consulted on plans and methods for launching an extensive extension program for breeder flock and hatchery interests. Program preparation is in progress.

In response to severe economic stress in the industry, we received enthusiastic attendance of and participation in discussions of company policies that would be necessary to restore order and profitability to pullet production by most of the companies with extensive pullet sales in the Mid-South Atlantic area. There was evidence that group plans were being activated through the winter and early spring. Present evidence is that some of the growers have reverted to placing all the pullets that they can get and are currently in position to completely break the market late this year. A few pullet producers have held the line in placing only pullets on sale contract and should be able to retain

economic stability if most of their customers remain solvent. We are working with some growers on house plans where replacement or new housing is needed.

Most managers of layer operations have been reluctant to reduce flock size to a level that permits profitability with existing feed prices - many have no previous experience with high and greatly fluctuating feed prices and cannot envision the total impact on the industry. The great discrepancy between number of birds completing a year in the flock and the number of birds marketed indicates a larger flock of recycled layers than is generally reported. We have emphasized the hazard of oversupply of eggs at every opportunity and have received generally disappointing interest and response. We find it difficult to understand the egg industry's apparent satisfaction in the quick sand of unprofitable production.

We completed and fully reported the 15th laying test; completed the surgical alteration research, gave a seminar on preliminary analysis, and have full analysis for publication in progress. (Roughly, dewinging helped one white egg stock in 7-bird cages but was detrimental to other stocks in this housing and to all stocks in other housing - largely through increased mortality from all causes detoing increased egg production by 21.9 eggs per bird housed in 7-bird cages but had little effect in other housing; and neither procedure had a significant effect on salvage value of the fowl.) We have 7 cage size-shape combinations with a range of crowding and 4 floor crowding levels in an experiment that is in progress. Pullets are being grown for feed density trials.

Two major areas of applied disease research have developed. The development of an antigen to test the status of infectious bursal disease in broiler breeder hens and its effect on their progeny in the broiler house has been completed. This testing has shown that hens without antibodies for IBD produce chicks without antibodies; and if these chicks are placed in broiler houses where the IBD virus

is present, the disease can develop producing high mortality and secondary bacterial infections leading to gangrenous dermatitis. We are encouraging poultry companies to have their breeder pullets tested; and if negative, they should be vaccinated between 10-12 weeks of age with a commercial vaccine. We are the only facility in the State that has developed the antigen and techniques for this test.

A large scale use and testing of an experimental hemorrhagic enteritis vaccine in turkeys has been underway. This has been done with permission and cooperation from the North Carolina State Veterinarian and federal officials and members of the Virginia Polytechnic Institute's Department of Veterinary Science who developed the vaccine. This experimental vaccine has been given to 250,000 turkeys to prevent this costly disease. Results appear to be favorable and the judicious use of this vaccine can reduce this disease in North Carolina.

No significant changes have occurred in the nutrition area during the last six months. We continue to refine and modify the feed formulation process in an attempt to more adequately predict bird performance on certain planes of nutrition. This is desirable as it would enable the Integrator to more effectively evaluate changes in diet formulation indicated by changing ingredient prices.

More broiler integrators are making use of the regular broiler nutrition newsletter. By using the information in this letter, some integrators have been able to produce broilers cheaper.

Emphasis has been put on the necessity of obtaining an adequate analyses of feed ingredients and of finished feed. Only since September 1974 have the number of assays been kept, but the trend is toward an increase in one operation. Finished feed assays of this were: October - December 1974, 78; January - March 1975, 82; April - June 1975, 98.

The framework of an educational format was completed and initiated which is intended to involve district and county extension personnel in Quality Assurance

(control) educational programs. In addition to the above, a data retrieval and reference system was initiated, and some time was devoted to characterizing the feed manufacturing industry and the poultry industry in North Carolina, with respect to location, size, type enterprise, and key personnel.

A new monthly newsletter, "Chickenfeed", devoted to feed quality assurance was initiated. This publication will spotlight particular areas of quality concern, identify resources to assist in problem solving, and make recommendations to eliminate problems.

A program is being developed to minimize variation in the quality of finished feeds produced by several (42) of the State's largest poultry feed manufacturers. The program includes subscription to the Central Ingredient Analysis Service publication of the biannual ingredient variation report, and educational inputs to include dealing with ingredient variation, ingredient specification in purchasing, and in-plant controls to minimize finished feed variability. The program is projected for completion in two years. We hope for 50 percent of target client participation, and a reduction in variability of 50 percent in two years.

In cooperation with the Department of Dairy Science and Department of Agronomy, small manufacturers are being encouraged to participate in the county-based "Forage and Grain Analysis Program". The program has operated since 1969, and it offers good, low cost service to small feed manufacturers. It has additional advantages of providing for meaningful county agent participation and centralized reporting.

An attempt was made to determine interest in, and organizational support of a Quality Control School for feed manufacturers. A formal school was not supported, due mainly to a lack of consensus as to emphasis and content among the

Carolina Feed Industry Association programming people. However, a high level of interest was evidenced in Quality Control related subjects in the nutrition program meeting of the Association. The proposed program deals mainly with quality-related subjects.

Housing facilities for production of turkey hatching eggs were vastly improved during the reporting period. With one exception, all producers of turkey hatching eggs have moved to total and/or semi-confinement breeder facilities, as opposed to the traditional range or pasture system. Two firms constructed totally enclosed housing for turkey breeders and environmental control "dark out" houses for replacement breeders. Working with Extension personnel, one company, using environmental-controlled housing has artificially reversed day and night on turkey breeder hens in an attempt to increase production efficiency. These efforts have resulted in a better rate of egg production, cleaner eggs, improved fertility, and hatchability of turkey eggs.

In attempts to reach a greater degree of uniformity as relates to turkey production, management, feeding and disease prevention, meetings were held in multicounty and individual company situations. Program topics included daily management practices, disease prevention and control, renovation and construction of turkey housing and factors which affect feed conversion.

Hatchery management and sanitation programs were conducted on an individual hatchery basis. Improved hatchability and poult quality resulted from improved egg cleanliness, more rigid sanitation and monitoring programs.

During the year numerous studies in poultry management, nutrition, disease and waste management were conducted at the research units at Raleigh. Several of the studies combined various management programs in conjunction with either nutrition or disease studies.

Two studies in growing broiler breeder pullets involved water restriction and different levels of energy in the feed. Another study involved the use of a low level of an additive versus cocci-vac for coccidiosis control. This study is presently being continued in the laying period.

Two broiler trials in a control-environment house versus conventional housing involved nutrition and density. Two broiler studies involving 8 nutrition levels were completed and a third is being completed in early July. One broiler trial using a fine mist vaccine method and feed additives has been completed.

One turkey trial with 6 nutritional levels was completed and a similar second trial is now in progress. A density study with turkeys in the environmental house and conventional house is also in progress.

The cage layer house was utilized with a trial involving three sources of calcium, force molting, and a waste management trial in cooperation with the Agricultural Engineering Department.

Distribution of the recently published 4-H material has been completed. Although it is still too early to get an accurate response, as measured by participation in 4-H events, the responses of 4-H agents and leaders has been encouraging.

Dissemination of information, rules and entry forms for the Dressed Poultry Show in Kansas City in November is almost completed.

The brochure, Poultry Barbecue - Individual Demonstration, has been reworked, printed and distributed to the County 4-H Coordinators.