RESEARCH NOTES

INDOOR WATER PITS WITH CAGES FOR CHICKEN MANURE DISPOSAL

Water lagoons are used as a means of manure disposal on animal-production farms, mostly of the outdoor type. Previously indoor tanks had been used experimentally with laying hens in the United States, but not here in Puerto Rico. Theoretically, the microbial activity that decomposes the waste products in lagoons is more rapid and efficient in tropical climates because of the higher external temperature and sunlight intensity. Manure is not utilized as fertilizer by most farmers, and fecal accumulations become a nuisance in nearby urban localities, especially with the use of cages, because they are excellent fly-breeding places.

A house to be used for laying tests was divided into four sections, and three water pits 12 by 3 feet and 15 inches deep were made in each section. Individually caged birds were kept above the pits, which were filled with water in two of the house sections, and with dirt in the other two to serve as controls. These sections were isolated from each other by a wooden wall, which were half open. There were practically no differences in temperature among the four sections.

During the first 2 years of use the water tanks worked well enough, with no ill effects on the hens either as to their health or production, nor were the odors too obnoxious.

At the end of the second year the water was well saturated, with three distinct zones: At the bottom a sludge with 10 to 15 percent of dry matter; at the surface an accumulation of solid material, partly composed of feathers, with over 30 percent of dry matter, and so thick (about 5 inches) that it resisted the weight of fresh droppings; and an intermediate zone, about 5 inches thick containing from 5 to 10 percent of dry matter, which still tolerated more fecal accumulation, but with a highly reduced rate of decomposition. When the tanks were cleaned a whitish ash powder appeared on the cement floor.

The laying performance during the pullet year (336 days), eight lines included, is shown in the following tabulation:

Criteria	*Water pits*	*Dirt pits*
Survival egg production	228.7	222.9
Percentage mortality	10.4	13.1
Henhouse egg production	211.8	208.0
Egg weight (ounces/dozen)	24.3	24.2

The pullets with water pits had a slightly better egg production and lower mortality, but not enough to be statistically significant. Similar

results were obtained during the second laying year, again slightly better results for the water pits, but without significance: 146.0 against 135.5 eggs in survival production, 127 *vs.* 119.2 eggs in henhoused averages, and 18.3 *vs.* 18.4 percentage mortality.

The most important conclusions derived from this work up to now are that indoor lagoons have definite feasibility as a means of disposal of feces in laying houses without too much work or too many complications, and that their use is good practice to prevent the proliferation of flies that too often become a nuisance to nearby dwellers. More information will be obtained from other trials.

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THE SUPPRESSION OF THE SENSE OF HEARING IN LAYING HENS

Because most commercial poultry laying strains are based on the Leghorn breed, the hens have a highly nervous temperament. It is generally accepted that nervous hens are easily upset by noises, which constitute a stress factor that depresses production in the laying flock. Several practices have been used to control the behavior of layers—music and tranquilizers for example, to improve their productive performance. The practice of induced deafness has been suggested, but not tried in a controlled experiment to our knowledge.

Looking into the possibilities posed by this problem, a small experiment was conducted by this Station, using De Kalb pullets maintained in individual cages. Twenty-four pullets with perforated tympana were compared with 48 normal pullets under a randomized block design. An accepted managment for individual cage systems was used during a 336-day period, from September 1965 to August 1966. The following results were obtained:

Performance factors	*Deaf birds*	*Normal birds*
Survival egg production	237.6	242.1
Henhoused egg production	232.5	212.9
Henhoused production, 2-ounce adjusted	250.4[1]	216.3
Percentage mortality	12.4	18.8
Egg weight (ounces per dozen)	25.2	24.9

Even though the treated birds had a lower rate of laying, they had a lower mortality that resulted in a higher henhoused average, and they laid larger eggs also. But the differences were not significant until the three characteristics, egg size, egg number, and mortality, were combined in

[1] Superior at a 5-percent probability level of statistical significance.

2-ounce, egg-adjusted, henhoused averages. This suggests that the better viability and egg size of the deaf birds combined to counteract the disadvantage in egg number. No significance was obtained in feed consumption and feed conversion.

Even though no definite conclusions can be derived from this work, and it must be considered as preliminary in scope, there remains the possibility that wider differences might be obtained under conditions of greater stress as to noise effects than those of this trial, with multiple numbers of hens per pen in colony cages or on the floor, for example.

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