

POULTRY RESEARCH ADVISORY COMMITTEE

PRELIMINARY PROPOSAL FOR A NEW PROJECT

1. Title: The optimum production cycle of laying hens.
2. Controlling Unit: Animal Research Institute, Werribee.
3. Objectives:
 1. To obtain information on the biological responses of hens kept in lay for various periods following induced rest.
 2. To study the physiological changes in hens during and after an induced rest.
 3. To develop a computerised planning model to identify the production cycle, from among several alternatives, that would lead to maximum return on capital invested.

4. Background:

The objective of the egg producer is to maximise the profit of his unit over a given interval of time. The problem to the producer therefore is to find the level of inputs which will maximise the difference between the value of the outputs and the cost of the inputs.

Most egg producers replace their laying flocks after 48 to 52 weeks of continuous lay regardless of the flock's rate of production, egg grades and quality, feed cost, pullets cost, hen depreciation, price of eggs and culled hens, and interest rate; all of which are basic variables which must have considerable influence on the optimum length of the production cycle.

The reasons for the traditional 50-week laying period are firstly, a lack of technical and economical information on production variables and how they interact to affect the performance of the whole production system, and secondly, a lack of a simple and effective means by which the effect of ageing on performance and egg quality could be reduced, and, thus, extend the profitable life of laying hens beyond the 50-week cycle mark.

Recently, we, in this institute, succeeded in effecting a significant improvement in laying performance and egg quality of aged laying hens by allowing the birds to rest for a short period after one year of continuous lay. The method involves the feeding of whole-grain barley and nothing else. The hens cease laying, and on the resumption of normal laying diet, they begin egg production at a rate which increases progressively until it exceeds, and continue to exceed for at least 4 months, the rate of production of hens not subjected to a pause and given a normal laying diet. Hens given the whole-grain barley also lay eggs of better albumen and shell qualities in the post-treatment period than those given the normal diet. This method, because of its simplicity and effectiveness, fills the gap in the process of developing a number of production plans from which a producer can pick out the strategy which is best suited to his individual circumstances in a given economical situation.

The experimental programme will include a study of the physiological processes involved in induced rest. This study is necessary to optimise the effectiveness of the technique as a means of extending the productive life of laying hens.

5. Research Plan:

First and second year:

Collecting data on performance and physiology of hens under a normal replacement cycle and other cycles which include induced rest.

Third year:

Development of a computer programme which will predict the best flock replacement option in a specific situation.

6. Cost:

	<u>1983/84</u>	<u>1984/85</u>	<u>1985/86</u>
	\$	\$	\$
Salaries & Wages	1,500	1,650	
Operating	8,300	8,370	2,500
Capital	1,200	-	-
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Total	11,000	10,020	2,500
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7. Staff involved:

S. Abu-Serewa, M.Sc.
(Livestock Research Officer)

D.H. White, Ph.D.
(Section Leader, Production Systems)

L. Cahill, Ph.D.
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(Chemist)