EFFECT OF WATER STRESS ON MEAT CHICKENS

By Melchior P. Ware*
Rural Development Officer, Wau, Morobe Province

INTRODUCTION

In Papua New Guinea, the broiler industry is facing management problems which affect the efficiency of production. One of the most important of these is that some farmers do not understand the importance of water to broiler performance. In areas where the water supply is not close to the chicken shed, farmers tend to provide water at below the required amount. This causes water stress in the chickens and they do not grow as well as when they have free access to water.

This work was carried out to measure the effect of water stress on meat chickens and to show the farmers how important water is.

Three groups of 45 one day old chickens were raised to two weeks of age under the same conditions. They were then given different levels of water for the following seven weeks. The details of the experiment and the results are given below.

EXPERIMENT

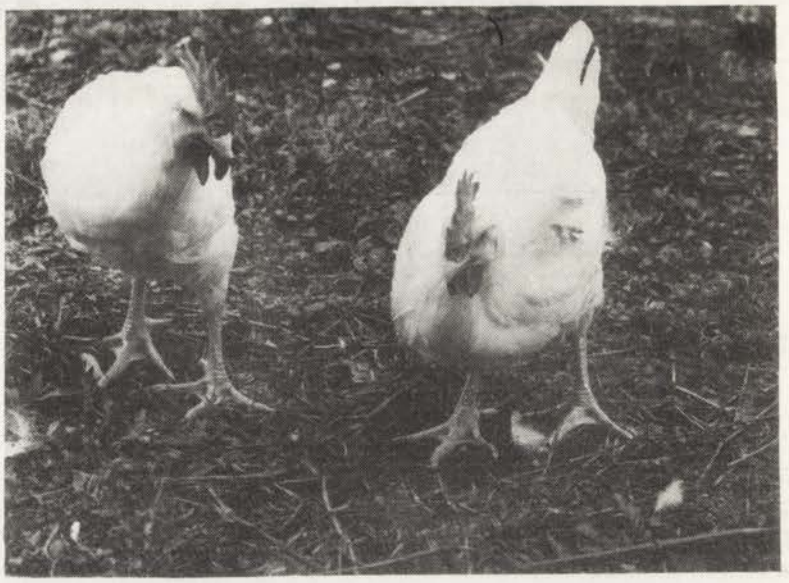
The three groups of chickens were raised separately in brooders. On the 14th day, the amount of water that the chickens had used over the whole 24 hours was measured. On the 15th day, group 1 was given more water than they had used on day 14. This was to make sure that they had plenty of water. Group 2 was only given 75% of the water they had used on day 14, and group 3 only got 50%. On each day for the following seven weeks, the amount of water used by group 1 was measured and groups 2 and 3 were given 75% and 50% of that level the next day.

Feed was supplied freely to all the groups from self feeders. It was weighed each week before the feeders were filled and extra feed was added if needed during the week. The total amount of feed used for each group was calculated at the end of the week.

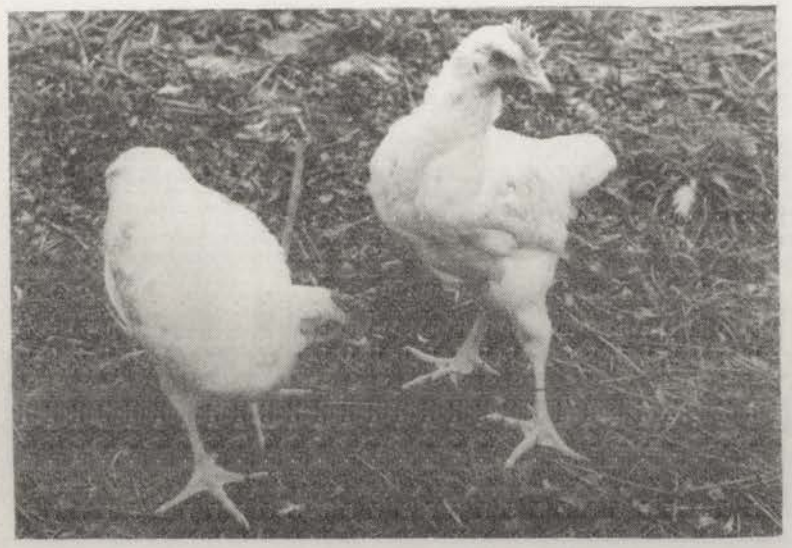
In all three groups, the floor, water and feed spacing were equal.

At the end of the experiment the birds were weighed and the total weight for each group was calculated. The feed conversion ratio for each group was also worked out. This gives a measure of how good the chickens are at turning feed into chicken meat. It is found by dividing the total feed used by the increase in weight of the chickens.

**This article is from Mr Ware's final year project at Vudal Agricultural College*



Birds to which water was supplied freely from week 2 to week 9



Birds to which water was supplied at the 75% level

Birds to which water was supplied at the 50% level

TABLE 1. EFFECT OF WATER STRESS ON FEED INTAKE, GROWTH RATE AND FEED CONVERSION RATIO

Group	% of water requirement supplied	Total water intake* (*l*)	Total feed intake+ (kg)	Total live weight (kg)	Feed conversion ratio
1	100	193	132	58	2.3
2	75	145	96	38	2.6
3	50	98	89	27	3.3

* *measured from second to ninth week.*
\+ *measured from day old to nine weeks.*

Table 1 shows the results from the experiment. Weight gains were much lower in groups 2 and 3 than in group 1 which had a higher growth rate.

Feed conversion ratio was also affected. The chickens in groups 2 and 3 did not turn feed into meat as efficiently as those in the control group (group 1) and so some feed was wasted.

During the experiment, no chickens died in group 1 but two died in group 2 and six in group 3. Post mortem examinations of the chickens which died showed that they had dry intestines and pale muscles. No disease symptoms were seen and it was concluded that the chickens had died of dehydration (thirst).

DISCUSSION

The results show that water intake in meat chickens is one of the most important factors affecting efficiency of production. Rate of feed intake, growth rate and efficiency of feed conversion are all much lower where the chickens were under water stress. These three factors are very important in the success of a chicken project.

It was also noticed that feathering in group 3 was slower than in groups 1 and 2. Group 3 chickens did not have their feathers fully established at the end of the sixth week while groups 1 and 2 had their feathers fully established by the end of the fifth week.

CONCLUSION

The trial showed that water is an important factor in management of broiler projects. It is therefore recommended that extension officers dealing with chicken projects pay attention to making sure that there is always plenty of water available to the birds.