

RESEARCH NOTE
AN INVESTIGATION INTO THE HATCHING PERFORMANCE
OF WESTERN AND FUNKI INCUBATORS AT GWADA,
NIGER STATE, NIGERIA.

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One of the impressive aspects of today's commercial hatcheries is the number of chicks and poults that can be hatched with relative ease from incubators equipped with sophisticated controls to maintain optimum conditions for hatchability (Austic and Nesheim, 1990). Oluyemi and Roberts (1979) described incubation as the management of a fertilised egg to ensure the satisfactory development of the embryo inside it into a normal chick. Moreover, incubation may be achieved by the natural method, with a hen sitting on the eggs, or by using special machines known as incubators which are placed in special buildings known as hatcheries. There are many types of incubators used the world over of which the Western and Funki incubators are the commonest in Nigeria.

In view of the dearth of information on the performance of incubators, generally in Nigeria, this paper is intended to investigate the hatching performance of Western and Funki incubators at Gwada, (Guinea Savanna area), Niger State of Nigeria.

The Cabinet type of Funki incubator with type 6 model, having capacity of 20,000 chicken eggs, and the walk-in type for the Western incubator with capacity for 28,000 chicken eggs were used in this study. The two incubators belonging to Niger River Basin Development Authority (N.R.B.D.A.), Minna, were washed and disinfected before starting the experiment. The two machines were then switched on the following day, and adjusted to

the required temperatures and relative humidities. For the Funki setter, the temperature was 100^{oF} and relative humidity was 58%, while that for the Western was 99.7^{oF} and 83.5%.

Eggs were collected from one-year old Hissex brown breeder layers from the N.R.B.D.A.'s farm at Gwada. The birds were raised from day-old on deep litter system, and subjected to the standard routine inoculation and vaccination programme. They were debeaked at two weeks and subsequently as necessary. Chick mash was supplied from day-old to six weeks, growers mash from seven weeks to 18 weeks, and breeder mash thereafter. Water was provided *ad libitum*.

The eggs collected and already stored for seven days at temperature of about 15°C and relative humidity of 70% were set in the incubators, after they had been graded, cleaned, and disinfected. Thereafter, eggs were set every seven days, following similar procedure, and this continued for 52 weeks. The eggs were set in the egg trays with the pointed end downwards. On the 7th day of every setting in the setter, the eggs were candled for fertility and on the 18th day, they were candled for "dead germ". The infertile eggs as well as well as the dead in shell were removed from the different batches respectively.

On the 18th day, the fertile eggs were transferred to the hatcher of the two incubators. Chicks normally hatch out three days after setting them extra six to 24 hours to do so. They were then removed from the hatching trays and separated into viable chicks

and culls. The chicks were then administered with Newcastle disease vaccines intraocular before being packed into transport cartons. Data collected were grouped and analysed quarterly, with the first quarter commencing from November, 1983 to January, 1984, second quarter March, 1984 to May, 1984, third quarter, November, 1984 to January, 1985, and fourth quarter, beginning March, 1985 to May, 1985.

Measurement of parameters taken in this study included, percentages of infertile eggs, chicks hatched, unhatched eggs, viable chicks, culls, percentage hatchability of all eggs set and that of fertile eggs. These percentages were transformed into Arc-Sine using the tables of steel and Torrie (1960) and student t-test (Fisher and Yates, 1973), was carried out to compare the two means for each parameter measured for the incubators. Table 1 contains the summary of the parameters measured during the four quarters. Analysis of the results show that values for infertile eggs, unhatched eggs, culls, and hatchability of all eggs set show no significant difference

($P > 0.05$) between the two incubators. The Funki incubator, however, gave higher values for the above parameters than the Western incubator, except for infertile eggs, where the Funki gave a lower value ($31.34 \pm 3.76\%$) than the Western ($32.82 \pm 5.74\%$).

It was found that values for total chicks hatched, viable chicks, and hatchability of fertile eggs were significantly higher ($P < 0.05$) for the Funki than the Western incubator. It was observed that both machines had the same basic features. However, the Funki incubator had a distinct inlet and outlet vents for the gaseous exchange. It is considered that this extra feature might have contributed to the more efficient dissipation of excess heat that might have been generated in the incubator and the environment, thus minimising the hazardous effect of excess heat on hatchability.

From this study, it could be inferred, based on the key parameters of performance, that is, percentage hatchability of fertile eggs and viable chicks produced, that the Funki incubator was found to be more efficient than the Western in this study.

TABLE 1: SUMMARY OF THE FOUR QUARTER FOR WHICH READINGS WERE TAKEN.

	<u>Parameter</u>	<u>Funki</u> <u>Incubator</u> <u>means %</u>	<u>Western</u> <u>Incubator</u> <u>means %</u>
1.	Infertile eggs	31.34±3.76	32.82±5.74
2.	Chicks hatched	48.62±3.00	33.87±3.85
3.	Unhatched eggs	32.74±2.44	27.90±0.48
4.	Viable chicks	42.44±3.62	29.65±2.91
5.	Culls	14.23±2.20	11.12±2.57
6.	% Hatchability (All eggs set).	60.66±2.28	57.66±2.71

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