

**PRODUCTION AND PRODUCTIVITY CONSTRAINTS OF FREE-  
RANGE CHICKEN IN OYAM DISTRICT**

**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT FOR THE AWARD OF  
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## ABSTRACT

The study was conducted in Oyam district among free range chicken keeping households who were mixed crop–livestock farmers keeping mainly cattle, goats and chicken with a mean number per household of  $2.7\pm 0.6$ ,  $3.6\pm 0.3$  and  $10\pm 0.7$  respectively. Chicken production system was a free-range type whereby chicken was left to scavenge but supplemented with cooked food and surplus grain and nuts. Water was given ad libitum on daily basis. Chicken were housed at night in kitchens and ordinary huts. At night, majority households with small flock size housed their chicken in kitchens while majority households with medium and large flock sizes kept their chicken in ordinary huts separate from human dwelling. Chicks were not housed nor given supplementary feeding.

Chicken were kept mainly for sale and household consumption. About 29.2% and 22% of male growers and pullets were consumed respectively. Cocks (39.2%) were the ones mainly sold. Overall, the value of chicken sold, consumed and given as gifts contributed 39.3%, 60.3% and 0.4% respectively to total output from chicken enterprise. There was ready market for chicken. The flock composition was as: 34.4% chicks, 25.9% pullets, 19.6% male growers, 14% hens and 6.4% cocks. Out of the eggs produced, 9% was sold, 4.5% eaten and the remaining 86.5% was retained for hatching. The mean production parameters were found to be: maturity age  $8.1\pm 0.1$  months, clutch size  $12.2\pm 0.2$ , hatchability  $88.2\pm 0.2\%$ , brooding period 2.3 months, chick survival 64.8% and clutch number/year 2.8.

The major constraint was predation and diseases. Predation caused a loss of 26.3% of chicks. Kites were main predators of chicks while mongoose were for sub-adults and adult chicken and hence caused the most economic loss. Diseases especially New Castle Disease (NCD), whose epidemics were reported to occur during dry season were important. No vaccination against NCD was done. Other diseases reported were infectious coryza and fowl pox. Mites were the most common ecto-parasites which were controlled using *Comelina* species and sevin dust<sup>®</sup>. Diseases and predation caused an annual loss of Ug. Shs 27,800 in small flock sized households, with predation constituting 51.4% and diseases 48.6%. In medium flock sized households they caused an annual loss of Ug. Shs. 25,300 with diseases causing 58.8% of the losses and in large

they caused a loss of Ug. Shs 22, 800 with diseases causing 57.8% of the losses. High off-take for consumption of grower males and pullets was seen as a factor negating optimisation of free-range chicken production in Oyam. The difference in flock sizes was deduced to be attributed to the difference in off-take. In small flock sized households there was high off-take for home consumption and from predation. For small and medium flock sized households the value of chicken consumed was 2.2 times more than the value of chicken sold. However in large flock sized households the value of chicken eaten was 0.9 times to the value of chicken sold.

Overall, chicken sales earned Ug Shs 19,300 per household annually, contributing 7.8% to household income. Current observed annual Gross Margin (GM) for small sized flocks was Ug. Shs 42,500; Ug. Shs 45,300 for medium and Ug. Shs 58,700 for large flocks. Overall, the average GM of Ug. Shs 49,000 was earned. If intervention was made to vaccinate the local chicken under current management and off-take, GM would be expected to rise by 1.4 times, 1.7 times and 4.3 times in small, medium and large flock sized households respectively, giving a return on investment of 2.2, 3.5 and 20.7 in small, medium and large flock sized households respectively in the first year. The performance of free range chicken could further be enhanced by reducing chick mortality through housing and feeding chicks using local feeds for up to 2 months. The GM would be increased 3.9 times for small flock sized households, 2.9 times and 4.2 times for medium and large flock sized households respectively. However on optimisation of free range chicken by rationalising off-take through reduction in home consumption of sub-adults and increasing flock size to an optimum, the GM would increase markedly 11.5 times, 13.2 times and 8.6 times for small, medium and large flock sized households respectively. After optimisation of free range chicken production in each flock size household category from second year onward, each household would get a GM of Ug. Shs 847,300 annually which is 3.5 times the current annual household income. This shows that the free range chicken enterprise has a high potential to reduce poverty in Oyam district.