

Observations on management and production of local chickens kept in Muy Muy, Nicaragua.

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I. Introduction.

Production and reproduction parameters of local chickens have been reported from several countries (for example, Wilson e.a. (1987); Kingston e.a. (1982)). The parameters reported are not all the same, and were measured under different circumstances, resulting in data that are sometimes contradictory.

In Nicaragua, no information was available on the questions regarding how local chickens perform and how families were benefiting from the produce.

To answer these questions, a survey amongst 18 families was carried out over the twelve months of 1994, registering production and management parameters of local chickens kept free range.

II. The production system in Nicaragua

This document, when mentioning free range backyard poultry, refers to the following system:

A flock of about 10 adult chickens, one rooster, 10 – 20 pullets, that are all sleeping on a tree during the night. The tree can be covered with a piece of sink, to protect the birds against predators. The farmers sometimes make a ladder of bamboo for the chickens to reach the tree. Feeders are not used; the maize is simply thrown on the ground. Drinking water is only supplied to the chickens in the dry season. Nests are makeshift, made from leaves or rags. About 50% of the families keep a pig, and some keep one or two turkeys and / or a pair of ducks, in the same backyard. The backyard can be estimated at about half to one acre. Banana trees, coffee, orange trees and other trees are found in the same backyard.

All the women had the custom of allowing only a few chickens to hatch. The majority of broody chickens were taken away from the nest, and tied with a rope, until broodiness was gone. Pullets are consumed or sold at the age of 2 – 3 months.

III. The Study Area.

Muy Muy is a village of about 3000 inhabitants in the centre of Nicaragua. The landscape is undulating. The altitude at village level is about 350 metres above sea level, and the average rainfall is about 1500 mm per year. The main rainy season is from June till September. March and April are the really dry months. Average temperature, year round, is about 25 degrees C.

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IV Results, discussion and conclusions.

Number of animals.

On average, the women owned 10 to 11 adult chickens. This number did not vary much throughout the year. A record was kept of what happened to the adult chickens during the course of 1994. The results are shown in table 1.

Table 1. Dynamics of the rural chicken flocks in Muy Muy, Nicaragua, during 1994.

Perspectives of the chickens existing at the beginning of the year.	Percentage
Eaten	29
Sold	29
Died	1
Lost	8
Given away	3
Survived the year	30

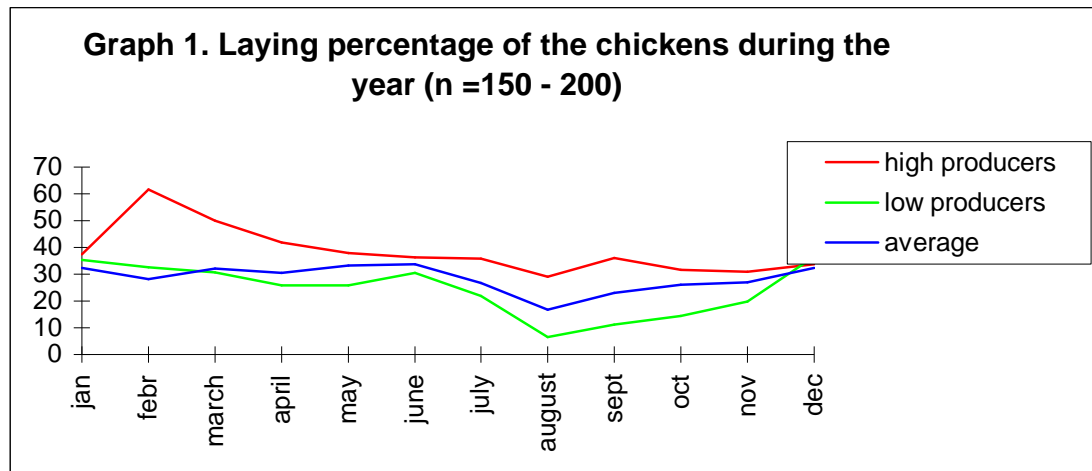
Some other authors have reported high mortality rates among adult chickens (e.g. Kingston e.a. 1982, with a mortality in villages from 13 – 80 % and Johnston, 1992 with a mortality of 40 %). Our survey indicated that the total losses in our respondents' flocks did not exceed 9 %. Out of that only 1% of the adult chickens died and the rest were lost (most likely) to predators. There were virtually no chickens that died from diseases. This has also been observed by the author in other places. An adult chicken in the free-range system seems to be quite resistant to diseases. Although it is often stated that chickens on free range are more vulnerable to diseases than in confined systems, the author has found the opposite to be true.

The survey showed that 70 % of the initial number of chickens were sold, consumed, or lost. This means that three out of ten chickens will survive for the next year, and only seven pullets have to be raised for replacement to maintain the same number of adult chickens.

The egg production.

The overall average production during the year was 104 eggs per adult chicken per year (Number of adult chickens surveyed was 200).

Graph 1 shows the egg production during the year 1994.



The average production had a dip in August. It has not been possible to determine the real reason. In August, the rainy season is quite advanced, and the muddy circumstances might have affected egg production. Some respondents said that mouldiness of feed was a factor. Lack of grains might have been another factor. August is the last month before the new harvest of maize. The dip in production is more pronounced for the 4 families that had the lowest average annual production, than for the 4 families that had the highest average annual production. An explanation could be, that a difference in management, highly related to feed administration, is likely to cause this difference. However, it was not possible to identify retrospectively what were the precise differences in management. All the families seemed to do the same, said they were doing the same, and had no differences in breeds. During the survey, how much maize was given was not measured.

Egg use.

The families registered what they were doing with the eggs. This is reflected in the following table.

Utilisation of the eggs.	Percentage
Eaten	31
Sold (minus 4 % eggs bought)	40
Hatched	10
Lost	1
Given away	3
Use not registered	15

It should be noted that only 10 eggs were used for hatching. As the average clutch size was 15, we can conclude that only 2 out of three layers were allowed to hatch once a year.

It is often stated that inbreeding is a potential danger for the family flocks. There is no danger. New blood is introduced in the family flock by exchange of eggs, by gifts of eggs and by way of giving away cocks.

An interesting feature is that the families did buy eggs, especially when a chicken was ready for hatching and they did not have enough eggs. On average they bought 4 eggs per year per hen, and it can be assumed, that all those eggs were used for hatching.

If we do not take into account the number of eggs purchased, and we assume that the not registered eggs are evenly distributed among all the categories, we get the following result: sold 49%, consumed 35 %, hatching 11 %, gift 3 % and lost 2 %.

In other places where egg production was monitored, the majority of the eggs were used for hatching. Kingston et al (1982) reported that 87 % off all the laid eggs were used for hatching.

It can be concluded that the Nicaraguan women prioritised eggs instead of pullets for sale and consumption. Their way of preventing the chickens from hatching must have contributed to the relatively high production, just as did the administration of an average quantity of maize of 92 grams per adult chicken. Of course, if the chicken is allowed to brood more often, and raise chicks afterwards, then there is less time to produce eggs.

Hatching

Clutch size was, on average, 15 – 16. Hatchability was 62 %. This hatchability was dependent on the number of eggs per nest, on the month when the eggs were hatched, and on the families. The relation of family to hatching was especially interesting. The lowest figure was a hatchability of 45 %, the highest as high as 85 %. All the families knew the factors that were important to take in account, e.g. freshness of eggs, number of eggs per nest, and wetting the eggs with water (They did this simply by putting the eggs into water for a few seconds). But the families with high results must have actually practised these methods, while the other families had other priorities. Another important factor mentioned is that the eggs bought for hatching were sometimes not really fresh.

A hatchability of 62 % means that 6 chicks are born per year per adult hen. These, however, do not all survive. The next chapter tells us what happened to the chicks.

What happens to the chicks born?

Table 3. Perspectives of the born chicks

Perspectives of the born chicks	Percentage
Died	25
Lost	24
Eaten	23
Sold	8
Given away	11
Replaced adult chickens	9

It can be concluded that death and losses account for too big a percentage, although still less than reported by Wilson et al (1986), Ologhobo (1992) and Kingston (1982). Most of the deaths occur during the first 2 – 3 weeks. A good shelter to protect chicks will help to reduce the mortality. Presently the women only protect the chicks for the first two days, by keeping the hen inside the house. Despite the few eggs that are selected for hatching and the high chick mortality of 50%, replacement is not Endangered. Only about one out of two surviving female pullets is necessary for replacement.

Benefits, revenues and gross margin.

Based on the collected parameters, a woman with an average flock of 10 adult local hens and an average production would achieve the following results per year:

Total benefits US \$ 70.-

Total revenues US \$ 25.- = US \$ 0.5 per week.

Gross margin US \$ 7.- when the maize is valued at farm gate price.

Because of the fact that the maize is not paid for, an invisible transfer of money from the husband to the wife occurs. This can be important in gender-biased societies.

A revenue of US \$ 0.5 per week can be regarded as quite substantial when daily wages are around US \$ 1. -

What is more, even with these calculated marginal amounts, millions of families still give importance to family poultry. That should be reason enough to look for improvements.

Acknowledgement:

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V. Literature

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