THE NATIONAL POULTRY HATCHERY AT ERAP

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INTRODUCTION

A number of poultry farms in Papua New Guinea breed and fatten broiler chickens for eating. Until recently, these farms had to import breeding stock from Australia. The National Poultry Hatchery was set up so that breeding stock could be supplied from within the country.

The National Poultry Hatchery started operating in March 1980. It is situated at Erap on D.P.I. land, some 60 km north west of Lae on the Highlands Highway. It is just across the Highway from the Beef Cattle Research Station, Erap.

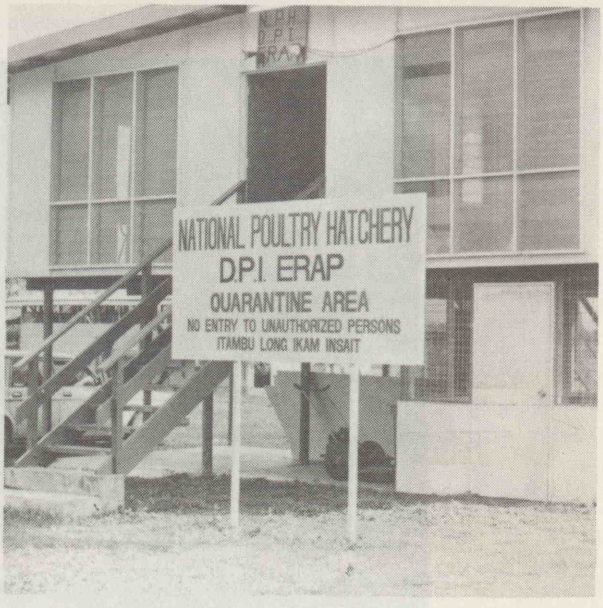
Chickens are raised from imported stock in five large sheds, each 200 m^2 in floor area. There is an incubating room containing five incubators with a total capacity of 50 000 eggs. In addition, there are offices, and a shower and changing room for the staff.

QUARANTINE

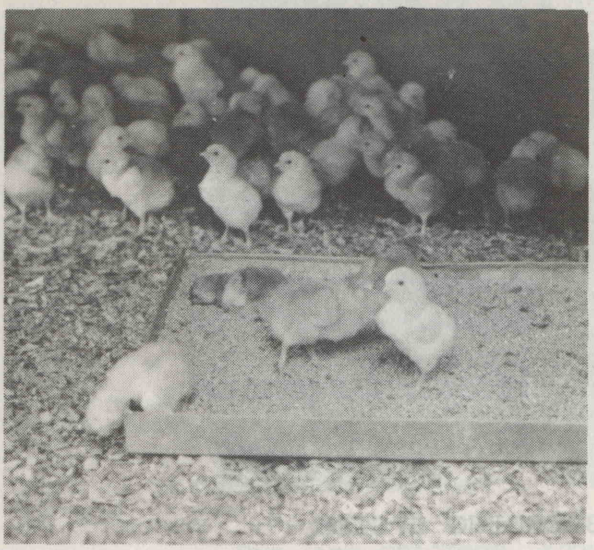
To protect the breeding chickens from disease, they are kept in strict quarantine. Before the first batch arrived, all poultry on the farm were killed. No one is allowed to keep poultry within a radius of 20 km of the hatchery.

All the hatchery buildings are enclosed by a 7 foot high wire fence, topped by three strands of barbed wire. The only entrances to the compound are a pair of large gates for vehicles, and an entrance via the shower room.

Everyone who goes into the compound must shower and change into a clean overall and gumboots. Trays of disinfectant are placed at the entrance to every building. Anyone entering must disinfect their gumboots. This is important to prevent germs from the ground getting into the buildings.



This notice outside the hatchery warns visitors that it is a quarantine area



Chicks feeding , just two days after arriving from Australia

MANAGEMENT OF BREEDING CHICKENS

Day-old chicks are flown in from Tegel Poultry Hatcheries, Camden City, New South Wales, Australia, in batches of 800, every 12 weeks. They are then looked after very carefully, following suggestions supplied by Tegel.

Debeaking

Chicks are debeaked (the tip of the beak is cut off) at 4 days and 16 weeks, to prevent them picking at each other's feathers and cannibalising (eating each other). Before the first debeaking, they are given Vitamin K with their feed. This improves the clotting of blood after injury.

Vaccinations

Fowl Pox vaccinations are at 10 days, 12 weeks and 17 weeks. At 7 and 16 weeks vaccinations are given against Avian Encephalomyelitis and Infectious Bursal Disease (I.B.D.). Blood samples are sent every 6 weeks to the Central Veterinary Laboratory at Kila Kila for analysis.

Feeding

Recommendations from Tegel are followed for the feeding programme.

For the first 2 weeks, chicks can eat as much as they want. After this, a chart of daily weight gain is followed. Chicks are fed to keep to the weights on the chart. A sample is weighed every week.

It is important that chickens grow at the recommended rates. The easiest way to do this is to follow strictly the programme supplied by Tegel. If the programme is not followed, egg laying may be erratic, and egg production will drop.

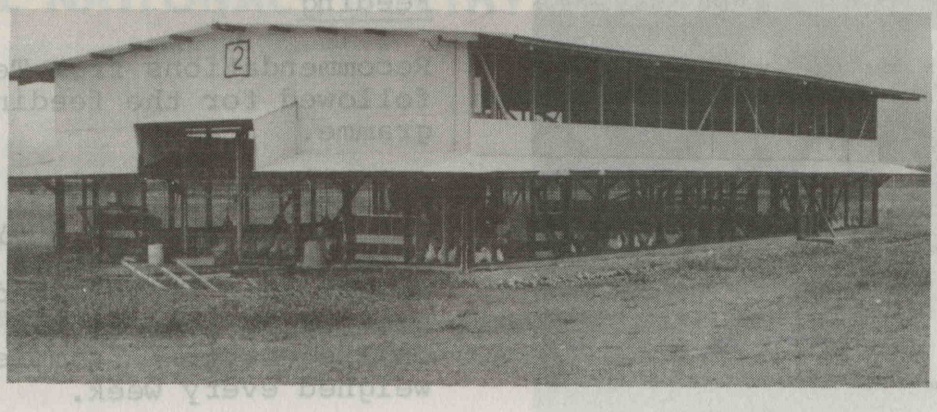
During laying, chickens must be given the right amount of food. Not enough food prevents egg production; too much food shortens the egg laying period. When peak egg production is reached (about 75% of chickens laying eggs), the amount of food is reduced.

Chickens are fed on the standard types of chicken feeds available from Lae food mills.

Hatching

Eggs are fumigated and stored in egg coolers at 14°C. This stops the embryo from developing. When required, the eggs are removed from the cooler in batches, fumigated again and allowed to return to room temperature. They are checked for fertility by candling (shining a bright light through the egg). If a dark spot and blood vessels can be seen, then the egg is fertile.

The eggs are kept for 18 days in the 'setter' incubator where they are turned five times a day. They are then checked by



One of the five sheds in which the chickens are raised

candling to see if the embryo is developing and transferred to the 'hatcher' incubator. After 3 days the eggs hatch.

Both the setter and the hatcher are maintained at 37.6°C. The temperature and humidity are checked five times every day. All the incubators are connected to an alarm system. If the temperature rises or falls too much, the alarm goes off.

Production

Chickens start laying at about 24 weeks, and continue for about 30 weeks. The average egg production per bird is about 10 dozen. Allowing for infertile eggs and embryos which don't develop these give about 90 day-olds, that is, about 45 breeding stock (females).

The day-old chicks are sent out direct to customers for breeding and the production of broilers. They are sold in breeding units of 122 (104 females and 18 males) at K250 per breeding unit.

The surplus male chicks are sold to be fattened and killed as broilers when they are 8 weeks of age.

After their 36 weeks laying period all the chickens in a batch are culled at the same time.

BREEDING SYSTEM

A special method of breeding has been developed for the intensive rearing of broilers. It involves rearing three generations.

1. 'Grandparent' generation

The batches of 800 day-old chicks which arrive from Australia are called the 'Grandparent' stock. Each batch consists of two parts:

Dam (female) line chicks: 500 females and 140 males. All females are white and all males are brown.

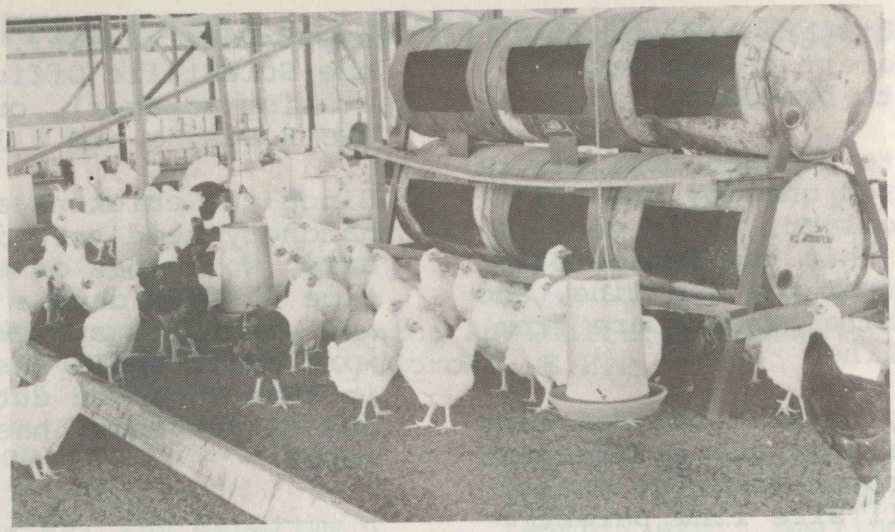
Sire (male) line chicks: 120 females and 40 males. Both males and females are white.

The dam and sire lines are treated in the same way in the brooder but are kept separate from each other. For this purpose, each shed is divided off into two parts. Dam line chickens are kept in the larger part.

The offspring from the two lines are also kept separated.

2. 'Parent' generation

The offspring of the 'Grandparent' stock are called 'Parent' stock. Dam line parent stock consists of brown females and white males. Sire



Dam line chickens, about 17 weeks old, inside one of the sheds. The oil drums are used as nests.

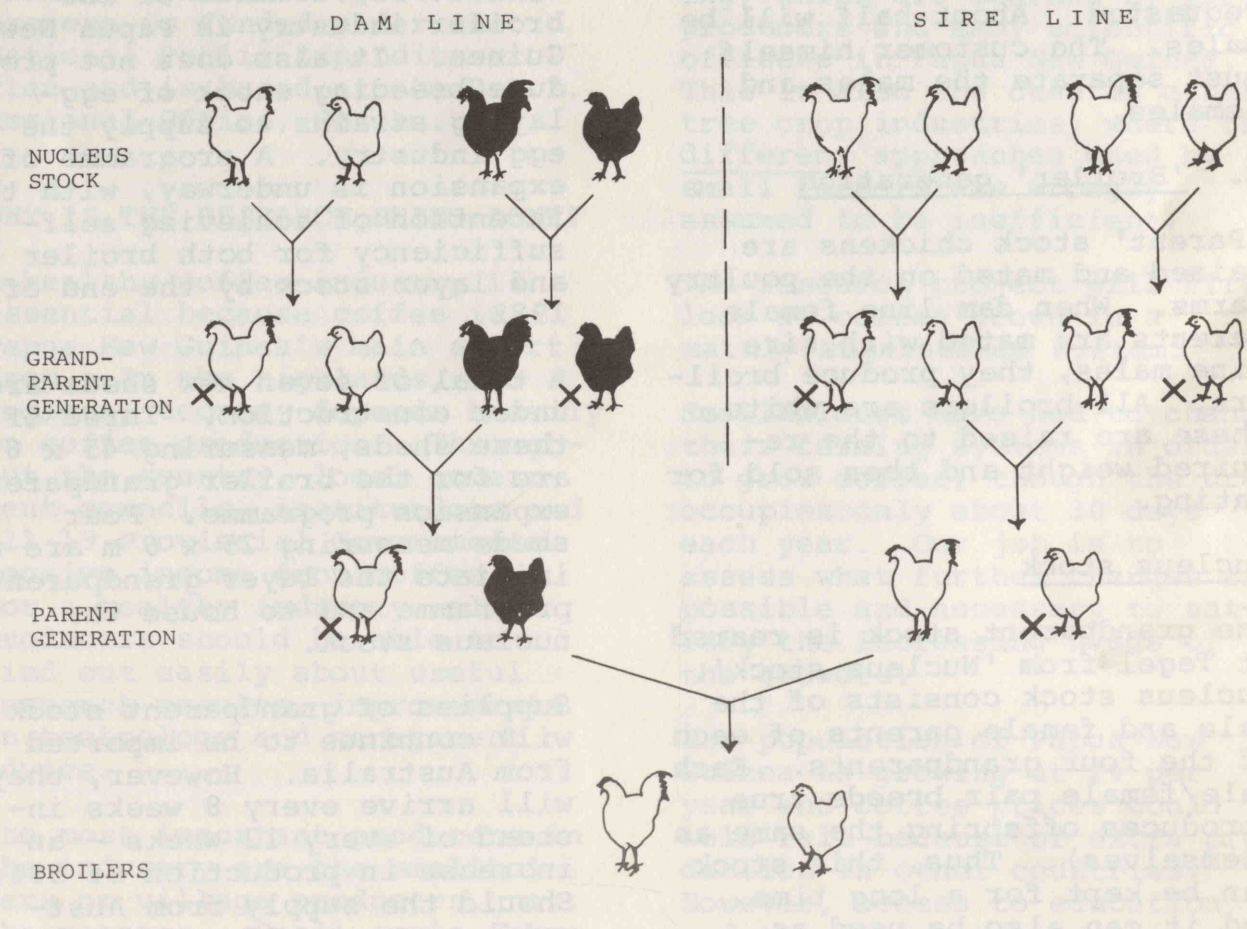


Diagram of the generations involved in the breeding system

line parents are all white. Day-old parent chicks are supplied to breeders.

In order to produce broilers of the required quality and all the same colour, it is very important that the female parents are from the dam line, and that the male parents are from the sire line.

It is easy to pick out dam line females as they are a different colour (brown) from the males. However all sire line parent stock are white and chicks have to be sexed individually. To save time, the hatchery supplies breeders with twice as many sire line parent stock as requested. About half will be males. The customer himself must separate the males and females.

3. 'Broiler' generation

'Parent' stock chickens are raised and mated on the poultry farms. When dam line female parents are mated with sire line males, they produce broilers. All broilers are white. These are raised to the required weight and then sold for eating.

Nucleus stock

The grandparent stock is reared at Tegel from 'Nucleus stock'. Nucleus stock consists of the male and female parents of each of the four grandparents. Each male/female pair breeds true (produces offspring the same as themselves). Thus, this stock can be kept for a long time, and it can also be used as grandparent stock when required.

STAFF

The National Poultry Hatchery has a staff of 12, plus an expatriate manager. There are: one Scientific Officer (the station manager), one R.D.T., two R.D.A.'s and 8 labourers.

Since the chickens at the hatchery need very intensive care, work goes on all the time - seven days a week, day and night. A system of shift work, with employees taking it in turn to go on duty at night and at weekends, has worked well.

EXPANSION

The hatchery still does not produce enough breeding stock to meet the demands of the broiler industry in Papua New Guinea. It also does not produce breeding stock of egg-laying strains to supply the egg industry. A programme of expansion is underway, with the intention of achieving self-sufficiency for both broiler and layer stock by the end of 1982.

A total of seven new sheds are under construction. Three of these sheds, measuring 45 x 6 m are for the broiler grandparent expansion programme. Four sheds measuring 25 x 6 m are to initiate the layer grandparent programme and to house the nucleus stock.

Supplies of grandparent stock will continue to be imported from Australia. However, they will arrive every 8 weeks instead of every 12 weeks - an increase in production of 50%. Should the supply from Australia ever stop for any reason, the hatchery will start raising its own grandparent stock from the nucleus stock.