## Egg Layer Cooperatives Join Forces in Thailand

**Na Dee Pun Co is determined to excel, says Big Dutchman.**

Three egg layer cooperatives have joined forces to set up a parent stock (PS) farm for producing layer chicks to supply their own members and the open market, with a joint investment of around 100 million baht. The cutting-edge farm is set to revolutionize local chick production by using the latest technologies, battery cages for rearing breeders and a single-stage hatchery.

Manoj Chutabtim, founder and chairman of Chachoengsao Layer Farmer Co-Operatives, said the investment in Na Dee Pun Dee Co is aimed at breaking out of the vicious cycle currently faced by layer farmers: expensive chicks combined with low egg prices. Also, farmers were fed up with the bullying tactics used by some chick producers who forced them to buy feed if they wanted to buy chicks.

Constant shortages and higher prices for layer chicks, a problem exacerbated by inappropriate trade practices have been blamed by many for the collapse of small- and medium-sized farms in 2003.

Failing in their attempts to attract the attention of policy makers to the matter, veteran layer producers and core members of the three egg layer cooperatives in Chiangmai-Lamphun, Chonburi and Chachoengsao opted to bite the bullet and invest in their own PS farm.

After securing a layer chick import quota from Thailand's Department of Livestock Development, the group decided to construct the farm. The timing of the decision turned out to be excellent, with low interest rates, a favorable exchange rate and cheap construction materials amid an industry downswing.

The progeny of the first batch, which arrived in Thailand in 2003, was delivered to customers in mid-2004. It was a good start for the group as the price of layers chicks was then at its peak.

Customers are member cooperatives in Chonburi, Chachoengsao, Chiang Mai and the open market. The retail price is pegged to market price but members are entitled to receive dividends should the enterprise generate profits.

From left: Dr Pornsak Hirunpatawong, Manoj Chutabtim, Somboon Oathivate and Boonyong Sritrirasri

Boonyong Sritrirasri, chairman of the Chonburi Layer Farmers Co-Operatives and a Na Dee Pun Dee co-founder, said farmers have complained for years about the volatility of prices and poor quality chicks, but never before believed they had the power to do anything about it.

"It is for us to help ourselves first and then extend assistance to others," said Mr Boonyong.

"To get to that point, it is necessary to improve the quality of both breeder farms and hatcheries. We plan to export in the future," he added.

Na Dee Pun Dee's business is not solely driven by profits. Its intention is to produce the best possible chicks with consistent quality. The combination of state-of-the-art breeder and hatchery management and quality control systems assures buyers that the chicks will perform at their fullest potential in line with the recommendations from the breed's supplier.

In addition to annual dividends, quality and sustainable performance of layers hens are additional benefits that Na Dee Pun Dee wants to return to its members, Mr Boonyong added.

### Biosecurity and Layout

Humidity and temperature probe

Three-tier University starter battery cages

Gas brooder

The 22.8-hectare farm is located in a highly isolated area in Prachinburi, 200 kilometres north-east of Bangkok.

Fences separate the office, located in front of the facility, from the farm and hatchery. A disinfectant station and wheel baths are installed at the main gate. All vehicles are subject to a second disinfection before entering the farm area. Workers and visitors are required to take a shower and change into farm overalls before entering production areas. Upon entering the layer houses, visitors walk through a disinfectant mist and put on boots used only in that particular house.

The design and construction of the farm is comparable to grandparent (GP) farms.

The farm consists of four houses, three breeder houses and one starter house. Each breeder unit (12 meters x 120 meters) has a dozen 52-inch exhaust fans installed at the mid-section. The air is sucked into the house through cooling pads installed at both ends of the house. Relative humidity and temperature are monitored by probes installed on both sides.

The chicks are raised in starter cages in the starter house (9 meters x 70 meters) until they are 16 weeks old and then moved to the breeder houses.

The distance between breeder units is 50 meters, while a distance of 100 meters separates the breeder

and pullet units.

All units are fitted with two gas brooder units suitable for multiple-tier battery cages as they generate enough heat to keep the birds in the whole house comfortable. This saves a lot of labor and gas too, since the temperature is regulated by a thermostat. The breeders are also raised in cages. Both caging systems have feed chains, water lines and manure belts underneath.

The cooperative has chosen a caging system instead of floor for hygiene and productivity reasons.

### Chick and Pullet Management

Setters

Radiator and fan inside the setter

Light trap

Somboon Oathivate, the farm manager, said the cooperative has chosen Hisex Brown breeders. The males are raised together with the females and fed the same diet from day-one. They are beak trimmed in the first week. The males are de-toed in the eighth week to prevent damage to females at mating. This practice helps sustain good fertility over the long run.

The birds are subject to weighing on a regular basis to maintain flock uniformity, which is closely monitored during their grow-out and pre-peak periods. The birds are subjected to light stimulation in line with the body weight target. Light intensity is set at 20 lux in the first week and reduced to 10 lux from 2 to 4 weeks, then 6 lux from 5 to 17 weeks, and later increased to 10 lux from week 18 until finishing. During the production period the birds are exposed to 16 hours of 'daytime'.

Blood samples are taken every month during the growing period until they enter the breeding-laying stage, in order to ward off Mycoplasma outbreaks.

At 17 weeks, flock uniformity is 90%, with average weight 1.6 kg. The birds lay their first eggs at 18 weeks. Body weight at this stage is critical to long-term sustainable production. The female birds are grouped according to body weight so that the daily ration can be managed accordingly.

During the pre-laying stage random weighing is carried out every week, with weightings becoming less frequent after the peak laying period.

Each house stocks up to 10,000 breeders. The male: female ratio is 3:30, and stocking density is 730 $cm^2$/bird. Spiking is also practiced to maintain good fertility as the flock gets older. The three males are replaced simultaneously to prevent injury from fighting with the new birds.

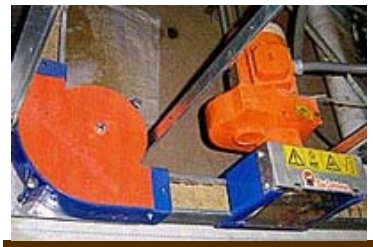
The birds are depleted at 65 to 66 weeks, depending on market conditions. Overall mortality is less than three per cent. Final body weight is 2.1 kg.

The hens' peak production is 96 per cent per hen per house, with production maintained at an average of

90 per cent per hen per house for five months.

"With caging system, egg shells are cleaner. The number of hatching eggs is above 97 per cent compared with 92 per cent for the floor rearing system. Also, peak performance is sustained longer and the mortality rate reduced," explained Mr Somboon.

### Feeding and Diet



Chain-feeding system

The birds are allowed to self-feed, unlike broiler breeders which have a tendency to get too fat. Phase feeding has been adopted, with feed delivered by a chain feeding system. Average daily intake during productions is 110 grams per day for both males and females.

In the starter period, up to 3 weeks, the diet consists of 20% protein, with metabolisable energy (ME) at 2,975 kcal/kg. Grower rations, at 4-9 weeks, are 18% proteins and ME of 2,790 kcal/kg, while in the developer stage, at 10-17 weeks, the birds receive 15.5% protein, with ME of 2,750 kcal/kg.

This is followed by pre-lay feed, at 18-19 weeks, with 16.5% protein, and ME of 2,750 kcal/kg. Peak stage rations are 16.7% protein with an ME rating of 2,775 kcal/kg, and at the End, or 45 weeks, protein is 16.2-15.3%, with an ME of 2,750-2,725 kcal/kg.

The diet is supplemented with limestone chips after 40 weeks of age to improve shell quality. To avoid the risk of salmonella, oyster shells are not used.

### Egg Handling and Hatchery

Extra cockerels

The automatic egg collection belt runs twice a day. Double-yolk, cracked, ridged and thin-shelled eggs are sorted out. The eggs are cleaned, fumigated and stocked in a chilling room in the front part of every house. The egg chilling room is capable of stocking up to 40,000 eggs below 18°C to suspend embryonic development.

Na Dee Pun Dee farm is one of Thailand's first layer hatcheries to have installed single-stage hatching equipment. The four hatchers and six setters for each unit can be loaded with up to 57,000 eggs. The hatchery equipment is supplied by Pas Reform.

The entire facility (66 meters x 60 meters) is air-conditioned. The eggs are loaded, fumigated and stored in a refrigerated egg-holding room.

The walls and ceiling of the entire facility are insulated. The concrete floor is glaze-finished which is easier to clean. The construction and interior materials are selected to withstand continuous washing and disinfection. Floor drains are installed throughout the building, with drains for clean and dirty areas separate.

Prevention of cross contaminations is the heart of hatchery design. Work flows from the clean to dirty zone, with positive air pressure maintained in the clean area and egg zone. The facility is designed to produce up to 50,000 chicks a week. Eggs are set twice a week, with egg stocking limited to four days in an egg-holding room where the temperature is set at 16°C. The relative humidity in the room is 75 to 80 per cent to reduce egg evaporation. Prior to setting in incubators, the eggs are left at ambient temperature for 4 to 6 hours.

The hatching eggs are obtained from hens aged 23 weeks, and the average egg weight is 50 grams. The hatchability rate is 85 to 86 per cent.

The eggs are removed from the incubators on day 18. They are subject to candling before loading into hatchers for another three days. Egg break-out analysis is carried out regularly.

The hatched chicks are transferred to a chick grading room. The room is installed with evaporative cooling units to keep the chicks comfortable.

The female chicks are sorted and graded, with cockerels culled and disposed of humanely. The chicks are hen vaccinated for Marek's disease and dispatched to clients. For customers in Chiang Mai, the chicks are sent by air-freight to assure that they reach the customer in top condition.

Hygiene and biosecurity measures are strictly enforced. Workers are required to take a shower and put on hatchery clothing before coming to work. Visitors are kept to a minimum.

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