

# POULTRY NEWS

2/2019

## INTERNAL

LOHMANN SCHOOL 2019  
Pooling Knowledge and Expertise  
for a Higher Purpose

## HISTORY

60 Years Genetic  
Improvement of Laying Hens

## TECHNICAL

Genetic Developments  
and their Implication  
on Layer Nutrition



*It still takes a lot to crack  
a LOHMANN egg -  
even more after 60 years!*

## LOHMANN BECOMES 60

and Cuxhaven the capital  
of the poultry world!





## Breeding for success ... Together! – for no fewer than 60 years!

LOHMANN turns 60 – an excellent reason to celebrate, but also to reflect. Sixty years is a long time, one that has been characterised by ups and downs. What has always distinguished us is our high adaptability. Adaptability to different environmental conditions is part of a general survival strategy. This

applies equally to the economic sector today, where adapting to the requirements of customers or the market, animal welfare guidelines and technical challenges is a necessity.

Adaptability and the willingness to accept challenges form our foundations and will continue to be in greater demand in the future than ever before. A new challenge, or rather a new goal, will be the push into promising markets. After establishing Russia HUB we are now exploring the options for the project to set up our next HUB in Asia close to the large potential demand of the market there.

Past, present and future, everything is linked together. The past is always the fundament for a successful present and a progressive future. Join us in this issue of our Poultry News publication and look back on the past and follow some of the developments in the present. And, above all, we hope that you will continue to accompany us into a promising future, as the basis for this is and remains "For every market the right egg, for every management system the right hen".

Sincerely yours,

*Javier Ramírez Villaescusa*



**4** LOHMANN becomes 60 and  
Cuxhaven the capital of the ...



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# LOHMANN BECOMES 60 AND CUXHAVEN THE CAPITAL OF THE POULTRY WORLD!

*Pioneering spirit and decisiveness, tradition and progress: the dynamic path from „Deutsche Fischmehl GmbH“ to LOHMANN TIERZUCHT GmbH, the global market leader for layer parent stock.*

## The Beginning

Which came first – the chicken or the egg? LOHMANN has always and will always focus on both: the chicken and the egg. The success story of layer breeding in Cuxhaven began in 1959 on the basis of a licensing agreement with Heisdorf & Nelson (H&N) USA and the setting up of the LOHMANN TIERZUCHT veterinary laboratory.

The contact with the US on the broiler sector caused LOHMANN to seek similar co-operation in the layer sector. In Europe the average production per hen at that time was about 130 to 150 eggs per year while American hybrids were laying 240 eggs per year.

In 1959 a contract was signed with Heisdorf & Nelson Farms, USA, a leading layer breeding company. LOHMANN acquired the exclusive distribution right of the "Nick Chick" in most

of Europe, North Africa, the Near East and the Middle East. An important part of the contract was co-operation in the basic breeding program. The first step in was to build up a franchise organization, i. e. parent stock operations and hatcheries, either fully owned by customers or as joint ventures with LOHMANN. The various regions were supplied with layer chicks and pullets by these franchise hatcheries. In contrast to broiler production, the layer type pullets were usually delivered to egg producers who had kept layers for years. Eggs were sold through the channels of the established egg trade. Due to the outstanding service provided for the franchise operations and the excellent quality of the HNL Nick Chick produced by them, within a few years LOHMANN became the leader in the layer market in the Federal Republic of Germany and in numerous other countries.



## Things really start to happen

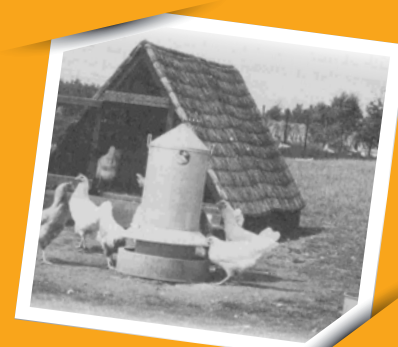
Not quite 10 years later, in 1968, the company began to develop specific pathogen free flocks for the production of Vakzine Lohmann SPF eggs (VALO → subsequently VALO BioMedia GmbH).

In 1970 things really started to happen. There was the spin-off of LOHMANN TIERZUCHT GmbH, including the veterinary laboratory and VALO SPF, in the course of the conversion of LOHMANN & Co KG into LOHMANN & Co Aktiengesellschaft. In the field of breeding, there is a great collaboration of scientists and technicians between the genetic departments in Cuxhaven and the USA. This large-scale breeding work can expect an above-average progress of the breeding products.



## LSL Efficiency Formula for Egg production

It soon became evident that the requirements for individual traits of the hybrid and the egg were not the same in Europe and the USA. Therefore, it was necessary to develop a layer specifically adapted to "our" markets. After only a few years of intensive genetic work, LOHMANN came out with our successful layer, the LSL hen (LOHMANN Selected Leghorn).



1977 began with the expiry of the licensing agreement for the world-wide sales and the huge success of the LSL laying hens.



### LOHMANN BROWN – guarantee of success

In 1984 there followed a further major guarantee of success: LOHMANN BROWN began to dominate the market. So for markets with a preference for brown-shelled eggs, LOHMANN also offers the tailored bird. Thus, LOHMANN also offers the right hen for markets in demanding brown eggs, thereby securing a high market share in this rapidly growing segment. After only a short time LOHMANN distributors and their customers appreciate that they can purchase very productive and efficient white and brown layers from the very same source and therefore are able to react quickly to changing demands on the egg market.



Three years later, in 1987, Paul Wesjohann & Co GmbH purchased LOHMANN & Co AG, inclusive of the subsidiary company, LOHMANN TIERZUCHT GmbH, which then in 1999 became part of the globally-operating EW Group GmbH.



### In 2008 the new vaccine factory was founded.

However, in 2010 the vaccine business was outsourced to the independent associate company, vaxxinova GmbH, closely followed in 2011 by the outsourcing of the VALO/SPF business sector to the subsidiary company, VALO BioMedia GmbH.

These are merely the significant key dates in this success story. This is based on the knowledge that the egg is, and will always be, an economical source of animal protein and an attractive and versatile product. Anybody who wants to produce eggs needs laying hens – and of course only healthy and efficient ones. Therefore, LOHMANN began very early to concentrate on these characteristics in their selection programs. Consumers, however, wanted more to choose from: Some people preferred white eggs, others brown eggs, some wanted large eggs, others smaller eggs.

Even egg producers had different demands: some kept layers in cages, others in aviaries or free-range systems. To meet these demands, LOHMANN quickly developed the principle „The right hen for every management – the right egg for every market“. The initial product range of two hybrids, LOHMANN LSL



and LOHMANN BROWN, was extended to three products in white or brown shell colour: CLASSIC for “average egg size, LITE for smaller egg size and EXTRA for extra high egg weight. The hybrids LOHMANN TRADITION, LOHMANN SILVER and LOHMANN SANDY complete the range.

### Technical Service

„The right hen for every management – the right egg for every market“ This means: Understanding the market of each customer and being in constant dialogue with distributors and egg producers. In other words: Breeding for success...together. Day after day – on all five continents. It was with this corporate mission that LOHMANN achieved outstanding breeding results over the past 60 years, becoming the global market leader in the production of parent stock and layers.

The ambitious goal, at that time and today: To further increase its world market shares by strengthening customer service and entering new markets with growth potential.



## World-wide presence guarantees first place

LOHMANN TIERZUCHT is represented in all the key regions of the world by production sites, subsidiary companies and world-wide shareholdings. With our own production sites for pure lines and grandparent stock in Germany, Denmark, Spain, Canada, the USA and recently also in Scotland and our own breeding establishments in all the major countries, we have a solid base and have secured major competitive advantages for our customers. Although the headquarters of LOHMANN TIERZUCHT is and remains in Cuxhaven, in order to meet the demands of a leading global company, we have been working since 2015 on decentralisation to secure the success and the existence of this "small company" from Cuxhaven. To be continued....



## Little steps become milestones

Anyone who has been successful in one field of activity for decades, must have made progress. Often, any little steps become milestones – a sample:

- Marek Vaccination: Nearly 50 percent of pullets, especially in Southern Europe, became victims of Marek's disease until LOHMANN developed a vaccine against this virus.
- Feather-sexing LSL: Sexing of chicks used to be difficult. LOHMANN inserted a gene in one parent line which causes the wing feathers of male chicks to grow slower than in females.
- Fishy odour eliminated: Fishy odour in eggs is due to a gene defect in brown egg layers. Five to ten percent of hens show this gene defect. LOHMANN scientists developed a testing procedure and eliminated the problem by rigorous selection.
- Testing under non-cage conditions: To be able to collect individual records from hens in free range or floor housing, LOHMANN supported the development of two innovative solutions: The Weihenstephan Funnel Nest Box and the Electronic Pop Hole.
- Diversification of egg weight: Due to the growing differences in the demands of different markets on the egg weight, LOHMANN splits the breeding lines based on the egg weight in CLASSIC, LITE and EXTRA.





# 60 YEARS GENETIC IMPROVEMENT OF LAYING HENS



## The Beginning

Breeding of hybrid laying hens in Cuxhaven started in 1959, based on a license agreement with Heisdorf & Nelson Farms (H&N), a leading breeding company for hybrid laying hens in the USA. H&N had won many random sample tests with the "H&N Nick Chick", a White Leghorn strain cross with superior combining ability, and Art Heisdorf was convinced that the application of reciprocal recurrent selection (RRS) would assure genetic progress for many years.

## HNL Nick Chick

Based on this license agreement, LOHMANN started to adapt the performance profile of the "HNL Nick Chick" to the European egg market. In 1969, when I started to work in Cuxhaven, the HNL Nick Chick had an excellent image, and the number of parents placed in Germany had increased to more than 500,000 in 1969/70. Compared to other White Leghorns, HNL layers known for their calm behavior and superior egg quality. During the following years, we changed the breeding program step-by-step and monitored genetic improvement, based on internal "repeat mating controls", official random sample tests and field re-

ports. During my initial training at H&N (1968/69) I learned about the history of breeding egg-type chickens since the re-discovery of Mendel's laws, almost 100 years ago, and expected to learn more about potential improvements from analyzing pedigreed records of the HNL lines, performance under field conditions and discussion with partners in the egg industry.

## Improve genetic resistance to Marek's disease?

One of the questions was whether we should try to improve genetic resistance to Marek's disease (MD). Before MD vaccines became available, pedigreed test flocks were exposed to a challenge on a farm in Spain with a history of MD losses. In three generations of progeny-testing, we reduced MD mortality by 20% in a set of sub-lines, while egg production of the main lines increased significantly. Soon after MD vaccines were introduced in practice, the sub-lines were discontinued. The cumulative results are published in Muir and Aggrey (2003).

## Testing methods

Egg production of pedigreed test crosses was recorded in floor pens with trap-nets

and single cages before my time. Since floor testing was more expensive and results less accurate than from single cages, we decided to expand single cage testing and added tests in group cages under field conditions. A statistical analysis of six years data with paternal half-sib groups in single cages vs. group cages showed a high genetic correlation for most traits, except mortality. Before each selection and reproduction of a new generation, genetic parameters were estimated from the current generation and emphasis on individual traits reviewed in view of changing priorities in different segments of the egg market.

## From challenges to chances

During the 1970s, egg producers were challenged by rising feed prices and overproduction of eggs. Mortality of pullets had been reduced since the introduction of MD vaccination, and per capita egg consumption declined due to concerns about salmonella infections, cholesterol and animal welfare. As a result, LOHMANN TIERZUCHT sold fewer white-egg parents in Germany and focused on additional exports. At the same time, we started to record individual feed intake and selected for maximum egg income over feed cost.





### Feather sexing

After the end of the license agreement with H&N (in the meantime acquired by Pfizer) and entry into the world market, we learned that it is easier to develop a competitive brown-egg layer than to change consumer demand to white-shelled eggs, which can be produced at lower cost and have the same shell strength and better internal quality. Hatcheries placing LOHMANN Brown parents soon recognized the advantage of color-sexing and became interested in feather-sexing White Leghorns. We knew from the literature and the experience of other companies that feather-sexing White Leghorns are susceptible to Lymphoid Leucosis (LL). While introducing the gene for slow feathering (K) from an experimental line into the LSL female line (10 generations backcrossing), the pedigree generation of all lines was screened for LL carriers, and field testing with LSL-F started after the virus had been eradicated.

### Improvement of parent performance

One of the questions we wanted to answer was, whether a modification of RRS to include pure-line performance

could help to improve parent performance, without compromising the rate of progress for commercial hybrids. We estimated heterosis in 1973/74 after long-term RRS, based on pure-line and cross-line daughters reproduced simultaneously by artificial insemination and tested in single cages; results were presented at the European Poultry Conference in Hamburg (1980). When we compared pure-line and cross-line results again in 1986/87 for the LSL lines, the reciprocal crosses had gained 2 eggs per year (318 vs. 292 eggs) and the pure-lines 3 eggs per year (288 vs. 249 eggs in 52 weeks).

Apparently heterosis had been reduced (from 17.3 to 10.4%) by selecting on a combination of pure-line and cross-line performance. The improved pure-line and parent performance was noted by the hatcheries and helped to reduce chick production cost, but was not a topic for the annual franchise hatchery meetings, where I used to present a summary of random sample tests and predicted genetic improvements, based on the selection we had practiced already. During the 30 years of my responsibility, the HNL and LSL entries consistently ranked on top or close to the top in terms of egg income over feed cost.

### Introduction of LOHMANN BROWN

When LOHMANN BROWN was first introduced, some hatcheries complained that they did not reach the hatchability specified in the management program and were short of chicks. I then resisted the suggestion to reduce the standards and instead promised genetic improvements in the near future. One of my graduate students, Anke Förster (1993), started with this problem for her thesis, analyzed reasons for poor hatchability and helped to solve this problem.

Several other graduate students worked with pedigree records of our white-egg and brown-egg breeding programs, and their results contributed to a series of improvements. Henning Willeke (1972) started with an analysis of egg production in 4-week periods and showed how annual genetic progress can be maximized by predicting full-year results from part records. Since then, we have focused on persistency of egg production (and shell quality).

When Art Heisdorf decided to start with RRS, a strong argument was that this breeding scheme did not require inbreeding to generate new crosses. However, intensive selection always leads to some inbreeding, which can be estimated from



the “effective population size”. Hossein Ameli (1989) estimated the rate of inbreeding from a large volume of pedigree data from the original HNL lines, after 12 generation classical RRS (ignoring pure-line performance) and 12 years combined selection on cross-line and pure-line performance (mRRS).

### Focus of genetic improvement

While the focus of genetic improvement was always on efficient egg production, we invested a lot in shell quality, especially shell strength in white-egg lines and shell color in brown-egg lines. Many people expect a negative correlation between the rate of egg production and shell strength.

Actually the genetic correlation is slightly positive, if only “salable” eggs with intact shells are counted and the effect of hen age is taken into account. The negative correlation between egg size and shell strength is another story. We selected many years on shell breaking strength and added resonance testing in recent years. Today, all white-egg and brown-egg strains from Lohmann should have superior shell strength.

Shell color of brown-egg strains has nothing to do with the nutritional value of eggs, but is often used as sales criterion and therefore has been given attention in the Lohmann Brown breeding program, based on photometric measurement (L-

a-b Index) and subjective scoring. Unfortunately dark shell color is correlated with the incidence of blood and meat spots.

During the last 20 years, the emphasis of testing and genetic improvement has been on adaptation to non-cage conditions. Genomic selection has become a standard to combine quantitative and qualitative information from several generations in different management systems. Today’s commercial layers can produce more eggs due to genetically improved persistency, and a range of different strain crosses is available to meet specific customer demand.

*Dietmar K. Flock*



# VETERINARY LABORATORY – THE BEGINNING

In 1959 the company LOHMANN & Co KG in Cuxhaven had established a poultry laboratory including a post mortem room and was looking for veterinarians for the care of poultry farms. Mr. Lohmann had already gained large experience in the feed sector and had employed nutritionists for the various food producing species. The laboratory was located in the old industrial area of Cuxhaven in Northern Germany. So I entered the company.

## Heinz Lohmann – a pioneer of the German poultry industry

Heinz Lohmann recognized in the late 50s that American chicken breeds yielded more meat and laid double the number of eggs in comparison with the European races. When the chickens were imported to Germany they showed the same performance in Europe. Mr. Lohmann made license agreements with Heisdorf Nelson for layers and Nichols for the meat type chickens. That was the breakthrough and Heinz Lohmann was henceforth regarded as a pioneer of the German poultry industry.

## Cuxhaven full of veterinarians

In 1962 I became director of the LOHMANN Veterinary Laboratory. My team consisted of Dr. Helga Landgraf and another two veterinarians. Heinz Lohmann followed the general desire that in Cuxhaven veterinarians should be trained. This happened in the years 1963-64. In addition according to his principle "come and see" he invited many guests.

## No chickens - no plagues?

Already in the early 1960ies we experienced the first epidemic poultry diseases i.e. avian encephalomyelitis and severe outbreaks of Newcastle disease. Heinz Lohmann ordered that all farmers were to be fully compensated for their AE-losses. This measure created tremendous trust in the company LOHMANN. The Newcastle disease however nearly brought him to close his chicken business. "No chickens, no plagues".

## Importance of immunoprophylaxis

Fortunately Dr. Hitchner had discovered a vaccine virus (Hitchner B1) for mass application against Newcastle Disease and the problem came to a standstill. This event had convinced Heinz Lohmann and us of the importance of immunoprophylaxis in particular the use of live vaccines in chickens. In the course of the following years intensifying the farming of chickens increased the infectious pressure in flocks. To be named are Marek's Disease, Infectious Bronchitis, Infectious Laryngotracheitis, Reovirus, Chicken Anemia Virus, Infectious Bursal Disease and Salmonella. All of these diseases could be controlled by the development of attenuated live vaccines over a period of ca. 30 years.

## Marek's Disease vaccine

One of the most important vaccines introduced by LOHMANN in the early 70ies was the Marek's Disease vaccine based on HVT as discovered by Dr. R. Witter (East Lansing). For months LOHMANN was the only company in Central Europe, which offered

this vaccine. The sales of the HVT vaccine enabled the company to build a modern veterinary laboratory.

## Modern Veterinary Laboratory

In 1966 new chicken houses with FAPP (filtered air positive pressure) were built for the maintenance of large SPF-stock. The name of this particular animal husbandry became "VALO", of Vaccine LOHMANN. In addition Mycoplasma infections that caused great losses especially in broilers were eliminated by egg-injection techniques using various antibiotics (1969).

In the early 70ies Heinz Lohmann started to develop dementia and the business was then taken over by his sons. He died in 1975.

Dr. Egon Vielitz





# DEVELOPMENT OF THE GEFLÜGEL- ZUCHT HORSTMANN POULTRY FARM SINCE 1935

**Oldest  
Customer**



Head Office



Hatchery



Incubators



House and Feed Truck

The Horstmann poultry breeding firm started out simply as a farm. In 1935 Karl Horstmann Senior (born 24 October 1907) had already begun rearing and breeding laying hens on the farm.

In 1949 the first hen house of any great size (stocked with 450 hens) was brought into operation. That was the real start of breeding and multiplication, which has now been constantly developed as the main sector of operations.

At some time around 1950 the business began breeding for the Breed Registry in cooperation with well-known hatching eggs suppliers (breeding stock). New Hampshire hens were bred for the Breed Registry. At the same time the farm bred Partridge-Coloured Italians and White Leghorns. From 1957 to 1959 the sons of the family, Karl and Dieter Horstmann, contributed to the German breeding project with New Hampshire and Leghorn breeds, the result of which was intended to be the German Master Hybrids.

## Mr Heinz Lohmann introduced himself in 1958

In early 1958 the Hanover Chamber of Agriculture contacted Karl Horstmann junior (born 12 July 1936). There Mr Heinz Lohmann introduced himself in person in order to set up contact with what was then the largest hatchery in Lower Saxony. From their very first meeting Heinz Lohmann and Karl Horstmann saw eye to eye. It was quickly agreed that on a trial basis Karl Horstmann should obtain 200 hens as the end product of the HNL breed of laying hen (renamed LSL in 1978) directly from the USA. The animals showed their mettle in Germany, with the result that the first HNL parent

birds were purchased from the Horstmann breeding firm in 1959 by Heinz Lohmann. An appropriate breeding contract was concluded in the very same year. A group of hatcheries had formed themselves into a hybrid breed breeding association, with Mr Eckart Hosch as Managing Director. The object of the company was the placement of the breeding stock breeders' excess (free) hatching eggs.

## The HNL hens (today's LSL) proved their worth:

In the years that followed the HNL laying hens secured themselves considerable shares of the market. The general trend towards larger production units, which was achieved through the technical development of the barn equipment (caged system housing) and the high standard of breeding of the pullets and laying hens promoted the fast growth of the Geflügelzucht Horstmann poultry farm.

In 1963 Dieter Horstmann (brother of Karl Horstmann junior) expanded the pullet breeding segment with their own barns to meet the demands of the steadily growing market.

## State award

In 1967 in recognition of their success the Horstmann company was presented with the State Prize for Outstanding Services to Animal Breeding by the then Minister of Agriculture for Lower Saxony, Wilfried Hasselmann.

## Saved by the LTZ Veterinary Laboratory

At the start of 1970 Geflügelzucht Horstmann was threatened with total shut-down. A disease, which is still with us

today, Marek's disease, was causing disastrous loss of animals. Frantically, the firm sought solutions from every possible direction. Despair spread through the Horstmann family. However, they then they received a call from LOHMANN TIERZUCHT. There were reports that an innovative vaccine had been developed to control this devastating disease. As a last hope the vaccine was used by the LTZ Veterinary Laboratory in Horstmann's 'moor section' hatchery. The herpes virus, which had been isolated from turkeys, proved to have ground-breaking success as a vaccine and thus brought the desired salvation. At this point we would like once more to send our warm thanks to Dr. Egon Vielitz, the Head of the Veterinary Laboratory at that time.

### A new LTZ product, the LB hens:

From about 1978 the white breeds began to lose market shares, since brown-shelled eggs were becoming increasingly popular, especially in North Germany.

LOHMANN TIERZUCHT responded to this trend. On the occasion of the LOHMANN Breeders' Convention in November 1979 the new "LOHMANN BROWN" hen was presented. Karl Horstmann junior took over this breed and together with the LSL began breeding the brown laying hybrids (LB). The LB hens also proved to be 'high-flyers' both for their laying performance and for their low feed requirements. With this product LOHMANN TIERZUCHT once more gained market shares, from which the LOHMANN breeders, including Geflügelzucht Horstmann reaped the benefits.

### Breeding of LT hens for the alternative market:

In 1998 LOHMANN began breeding the LT parent birds in order to meet the increasing demand from the alternative sector. Geflügelzucht Horstmann reacted immediately and installed the first LOHMANN test flock on 6 March 1999. The first LT end products hatched on 30 July 1999.

The LT hens quickly became well-known for their nest mobility and they were the hens "with the large eggs". Current performance tests show that, compared with LB hens, the LT end product hen produces an egg weighing on average 2 grams more. In addition, as regards total egg mass the LT hen with 22.2 kg lies only minimally below the LB hen (22.3 kg.). Over the course of the years this outstanding 20 years of breeding output has gained a substantial market share for Geflügelzucht Horstmann, especially in the self-marketing market segment because of the many large eggs (Class XL).

### Status quo for Geflügelzucht Horstmann

In the last few years Geflügelzucht Horstmann has reared an average of approx. 28,000 parent birds per year. The perchery system has proved the preferred form of rearing. Pro rata approx. 15% LSL parent birds, approx. 40% LT parent birds and 45% LB parent birds are reared at the site at 31592 Stolzenau, Kohlenweihe 11.

Some 10% of the hatching eggs produced are sold to external customers and 90% are required for the firm's own hatchery. The hatchery, which was newly built in 1977, has a potential capacity of approx. 3.5 million pullet chicks per year with ma-



Dieter and Karl Horstmann



The new generation: Nico, Kevin and Tom Horstmann



Karl Horstmann - egg collection



State Honour Price for successful breeding company



ximum weekly production of 80,000 day-old chicks. Of the some 2.5 million chicks actually produced during the year approx. 55% are sold directly as day-old chicks and the other 45% are reared as pullets on the firm's six breeding farms (perchery system).

Since 1950 Geflügelzucht Horstmann has been recognised as a training company for animal farmers specialising in poultry. In March 2003 Frank, the son of Karl Horstmann and Knut, the son of Dieter Horstmann took over the management of Geflügelzucht Horstmann.

It is anticipated that in the fourth generation the brothers Nico, Kevin and Tom Horstmann will determine the further development of the Geflügelzucht Horstmann poultry business and will continue to rely on the breeding services of LOHMANN TIERZUCHT GmbH.

### Rewards of experience:

One thing can be said about the previous generations and that is that during the last 60 years the Horstmann family have purchased the parent birds exclusively, because this firm has always supplied high quality birds. During the last 60 years this quality has ensured success on the market vis-à-vis all the firm's competitors. Another particularly important and valuable factor as regards this is that LOHMANN TIERZUCHT GmbH has reacted very quickly to altered market conditions and market requirements and has updated breeding policies in good time.

At this point the Horstmann family would like to congratulate LOHMANN TIERZUCHT GmbH on its 60th anniversary and thanks it for the cordial cooperation and the helpful support over the last 60 years.

*Frank Horstmann & Family*

	1959	2019
<b>Poultry farming</b>		
Employees and family members	7	35
Number of parent birds per year	450	28.000
Rearing system	classic barn rearing	predominantly perchery rearing
Capacity of hatchery facilities including hatching incubators	8.000 eggs	680.400 eggs
Number of pullets reared per year	classic barn rearing: 22.000 birds	perchery rearing only: 1.100.000 birds
Laying hens	none	75.000 places
<b>Farming</b>		
Arable farming	39 ha	420 ha
Sheep, including. 1 ram	25 animals	13 animals
Cows	8 animals	none
Beef cattle	4 animals	31 animals
Sows	15 animals	none
Fattening pigs	none	900 animals
Fallow deer	none	80 animals



**Newest  
Customer**

# Questionnaire

**Company profile (formation, number of employees today, number of animals today, husbandry etc.)**

CHICKS AND CHICKEN SERVICES LIMITED, FORMED 2005,  
35 EMPLOYEES,  
3600 LOHMANN TRADITION PARENTS

**Since when do you get our animals?**

2016

**Which breed do you get from us? Reason?**

LOHMANN TRADITION. THEY WERE RECOMMENDED  
AS LAYING LARGE EGGS

**How did the contact come about? Why did you choose LOHMANN?**

I HAVING BEEN ASSISTING THE LOHMANN REPRESENTATIVE  
OF AFRICA HERE IN GHANA. LOHMANN BIRDS LAY VERY WELL  
WITH VERY BEAUTIFUL BROWN EGGS. LOHMANN BREEDERS MAKE  
ABOUT 75% OF THE TOTAL MARKET SHARE IN GHANA, A SIGN  
THAT THE LOHMANN BIRD IS THE MOST PREFERRED CHOICE IN GHANA

**What do you appreciate particularly about our company?**

VERY FRIENDLY, VERY HELPFUL AND VERY COOPERATIVE

**How do you see the general development in the poultry industry, especially with regard to animal welfare and alternative forms of housing?**

ANIMAL WELFARE ISSUES ARE NOT ACCEPTED IN GHANA,  
SO THERE ARE NO RESTRICTIONS WITH REGARDS TO KEEPING BIRDS  
ON THE FLOOR OR IN CAGES





## GHEN CORPORATION HAS BEEN RISING LOHMANN'S SUN IN JAPAN FOR MORE THAN 50 YEARS

Since its foundation by former chairman Hideo Tokoro in 1963, Ghen Corporation of Gifu in Japan has evolved into the undisputed leader in the Japanese layer chick industry. At present this full subsidiary of the EW-Group supplies nearly 90 % of all layer breeders in Japan. About 22 independent hatcheries purchase breeders from Ghen's GPS operation. Japanese consumers prefer white shelled eggs (about 65 %), brown (28%) and tinted (7%) eggs are mainly sold as so-called branded eggs.

A recently founded company called Nihon-Layer, which also belongs to the EW-Group, is a key producer of commercial layer chicks with an annual capacity of almost 25 million chicks. Since the early nineties the share of LSL commercials (called Julia in Japan) has grown to more than 85 % of the domestic white egg layers. LOHMANN TIERZUCHT supplies both LSL CLASSIC and LITE Grandparents to Japan to safeguard continuous produc-



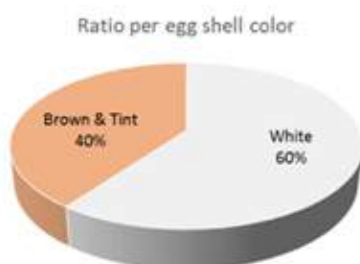
tion of breeding stock. Both breeds form a perfect match for producers who need medium and large sized eggs.

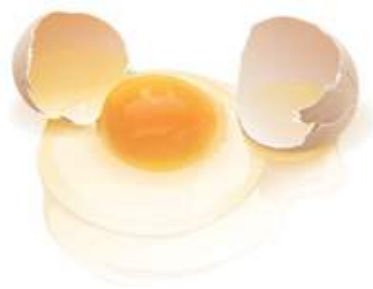
### How did we achieve such an impressive growth?

#### Excellent genetics.

In the early years we had only one white variety; LSL. Due to different preferences for egg sizes in various regions, LOHMANN genetics started to develop varieties with different egg weight patterns.

After the introduction of the LSL LITE variety to complement the LSL CLASSIC, more birds were placed in different regions. The Japanese table egg market is characterised by urban areas where people prefer medium sized eggs and more rural areas where large sized eggs are preferred. Besides diversification of egg size, genetics also realised impressive progress in productivity and egg quality traits, which made the LSL the most popular white egg in Japan.





*In supermarkets, eggs are sold in transparent containers. Consumers see the shell colour and uniformity when they purchase eggs. (all eggs are washed). A habit of Japanese consumers is eating raw eggs, so the yolk color, albumen quality and absence of inclusions (blood & meat spots) is very important.*

### Committed distributor.

Ghen Corporation of Gifu has grandparent stock of LOHMANN and Hyline. They supply parent stock to nearly all layer hatcheries spread over Japan. Their GP facility is located in an isolated area in northern Japan, with state of the art facilities and strict bio-security. Having GPS is a huge advantage in Japan, as authorities can be very precise concerning the import of parent stock from abroad. Ghen Corp. also has a team of specialists who support their customers both in PS-, hatchery- and commercial layer issues.

### Meeting high quality standards.

Japanese consumers demand excellent quality in all respects. The Japanese egg

market is highly quality oriented and therefore breeding companies have to concentrate not only on the productivity of the birds, but also both external (shell) and internal (albumen height, absence of blood and meat spots) quality are crucial traits. The table egg market is predominantly white, but brown and tinted eggs are gaining in popularity with consumers.

### Market summary

Japanese market

- Egg consumption per capita: 330 eggs
- Egg demand volume: 2.6 million tons
- 50% of eggs for table eggs, 30% of eggs for restaurants and 20% of eggs for processing
- Share by shell colour: 60% white and 40% coloured (brown and tinted)

### Providing technical information and education

As an integrated service company for the layer industry, GHEN Corporation has unique activities:

#### → Making an original management guide

We always check if each variety's performance reaches the standard of the guidelines under Japanese circumstances and make original management guides by adjusting the standard or management method as necessary.

#### → Diagnostics for PS we sell

Not only is a standard di-

agnostics programme provided, but also additional services according to customer demand. We assure the product quality and a speedy response in the event of any issues. This diagnostic fee is included in price of PS.

#### → Julia meeting

We ask geneticists or responsible persons from LTZ to give lectures on genetic improvement, management methods and so on to provide the latest or useful information.

#### → GHEN poultry school

This is a technical school for new employees who follow a course for three days and two nights. The programme includes hatch management, poultry diseases, productivity, economic topics. The various topics are presented by specialists in each discipline.

Ron Eek



Julia meeting



GHEN poultry school





# "WE WILL DELIVER – WHATEVER COMES ..."



## 9 December 2014 – loading

It can be cold, very cold in December in Ukraine .... Snow, a deep, dark night, an industrial area somewhere on the outskirts of Tscherkasy belonging to a reliable partner of our old client, assigned as a point of transfer of goods, it is 9 December 2014. And at last - we see the lights of some vehicles approaching. "The truck is coming, the truck is coming!!!" people gathered here are calling with excitement – yes, indeed this is our truck with our birds led by the car which had waited eight hours for it on the Kiev-Tscherkasy motorway – the last PS flock who will make it into the war zone of Donetsk.

But first, they must be loaded onto the trucks of PPR Sugresky, our old client in Ukraine as no European forwarding company



wanted to officially cross the "non-existent border" between what people here call Big Ukraine and Small Ukraine (Donetsk People's Republic – DPR). Before the loading process can start, the state security alarmed by the customs arrives – all the boxes are searched for weapons (this is the time of strict security measures for the movement of people and goods between Ukraine and DPR). After four hours, the green light was given – the trucks could depart for Sugresky.

## 10 December 2014 – arrival

They arrived next day at the farm of PPR Sugresky; placed in cage system houses and reared under the experienced management of excellent poultry specialists, they started to produce hatching eggs picking 96%. As the price of table eggs exceeded in manifold the price of hatching eggs, some of the production was sold to retailers. The production, as in any crisis region, was marked by a shortage of feed. There were some weeks when the flock was fed only on grains, but after the supply of PS feed stabilised, the birds were back to the technical standard in no time.

The management of Sugresky established good relationships with both sides

of the frontlines, and to secure business as usual, they found out who to call before feed delivery time so no silo truck (see photo) would be wrongly considered to be a rocket launcher provoking artillery fire to attack the poultry houses.

## LB Lite not "light" but strong

On a product list we call them "Lite" – LOHMANN BROWN LITE, but they should really be called "Hard and Strong" - a little like the people living there.

We wish our friends at PPR Sugresky all the best in their professional activities and private lives and honour the workers of Sugresky who were killed by stray bullets in 2015.

## A story of excellent relationship

The story of Sugresky is a story of excellent relationships between the old Ukrainian franchise hatchery and LTZ, the story of the proud people of Ukraine who first rely on their own skills and ingenuity, and on the periphery there were some LOHMANN layers who demonstrated that they can deliver under all management, environmental and political conditions as well as LOHMANN TIERZUCHT does.





An egg production  
of 12 times  
her own weight.  
Easy for an LSL.



PAST PRESENT AND FUTURE

LOHMANN  
LSL

Si los huevos marrones son su negocio

**LOHMANN  
BROWN**



le ofrece  
las mejores  
perspectivas



Para información más amplia contactar:  
**Lohmann Tierzucht GmbH**  
Postfach 10-01, 49400 Bielefeld 10, Tel. 051/21 21-01, Telex 232221



LSL Lite. Tough enough for the American market.



Lohmann. Breeding for success.

Lohmann Tierzucht GmbH, D-49400 Bielefeld (Lohmann Tierzucht GmbH, D-49400 Bielefeld, Tel. 051/21 21-01, Telex 232221)



During the last decade  
LSL layers improved  
their feed efficiency  
bit by bit



xhaven liegt überall  
Deutschland.  
urch die HNL-Organisation.



Es sind HNL-Leghennen,  
die aufgezogen  
werden mit dem Ziel, das  
Produktionsniveau zu  
steigern und die Kosten  
zu senken. Das ist die  
Aufgabe der HNL-Organisation.  
Ein HNL-Leghennen ist  
ein Produkt aus einer  
HNL-Farm, das in einer  
HNL-Farm aufgezogen  
wurde.

# LOHMANN LSL IN NICARAGUA, A NEW MARKET!



**A**vicola Pozos - Incubatica, which is a distributor of our genetics for LOHMANN BROWN Classic and LOHMANN LSL Classic, has started to sell, besides the already existing breed LOHMANN BROWN, LOHMANN LSL Classic in Nicaragua – a new market for the LOHMANN LSL!

Avicola Pozos - Incubatica office is located in Provincia de Alajuela (Costa Rica) while the production facilities, farms and hatchery are in San Ramon and Puntarenas. The company is part of Grupo Guardia, which has been active in the poultry market since 1984. Other activities of Grupo Guardia include the production and sales of day-old chicks for broilers, logistics for

eggs and day-old chicks, importing raw materials, a feed mill and grain unloading facility in Caldera port. Grupo Guardia started to sell day-old LOHMANN BROWN chicks in Costa Rica in 2015.

In Central America, white eggs dominate the market in Nicaragua. In Costa Rica, on the other hand, there are more brown eggs and it is a country where LOHMANN BROWN is also growing in sales with Avicola Pozos - Incubatica.

We would like to congratulate Avicola Pozos - Incubatica and all the people involved with the growth of the company and the new market in Nicaragua with LOHMANN LSL!

*Matheus Alves*



*It still takes a lot to crack  
a LOHMANN egg -  
even more after 60 years!*





# LOHMANN REINFORCES ITS PRESENCE IN THE CANADIAN MARKET

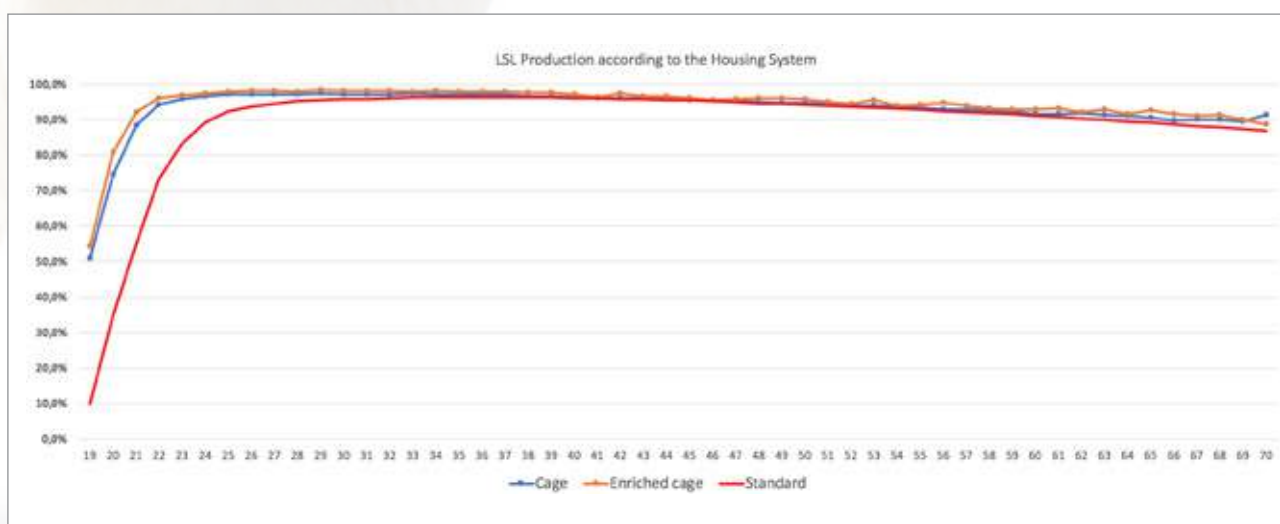
Our Global Nutritionist Dr Robert Pottgueter travelled to Canada with Regional Area Manager America Thomas Calil to share some knowledge and exchange some nutritional experience from one of the best performing countries in the world. In a fully planned week, our technicians met some of the most important feed suppliers in four different provinces in the vast territories of Canada.

Canada is privileged to have access to rich raw materials which ensure LOHMANN customers an outstanding feed quality. Summed up to the highly skilled

technicians in Canada, through perfect management, LOHMANN results outperform the competition, especially when it comes to egg weight, cumulative egg number per hen housed and livability.

There are some other impressive results such as total mortality in production as low as 1.5% at 72 weeks of age. Or even more important, production curves that surpass the highly demanding standards of LOHMANN birds, as shown on some graphs below in different housing systems in Ontario:

*Thomas Abdo Calil*



# FIRST INTERNATIONAL SEMINAR OF THE EGG

(Primer Seminario Internacional del Huevo)



On 22 and 23 August 2019, the "First International Seminar of the Egg" took place in Santa Cruz de La Sierra (Bolivia). It was a successful event organised by Amevea\* Bolivia with the help of some other companies and individuals active in the country's egg market. Mr Fernando Gonzalez and Dr. Sergio Gonzalez from Granja Linda, our distributor of LOHMANN Brown in Bolivia, were also responsible for helping to organise this successful seminar.

## Participants

Almost 200 people attended the seminar, with approximately 55 participants from Cochabamba. The participants comprised representatives from various egg-produ-

cing companies, supply companies from Bolivia and other countries, consultants and university students. Speakers from seven different nationalities gave presentations. The seminar was an excellent opportunity to exchange ideas, knowledge and experiences and gain more information on the different opportunities for the egg market in the near future.

## Range of topics

The seminar covered a range of different topics such as management of layers, lighting programmes, hygiene and biosecurity, nutrition, egg quality, the market in general (Bolivia and worldwide), how to develop the consumption of eggs nationally and the development of the compa-

ny brand in the market, as well as genetics development in the coming years and other important topics.

## Technical Service everywhere

Braulio Ruiz and Matheus Alves were invited to participate in the event. Their presentations were on "Lighting programme update for commercial layers" (Braulio Ruiz) and "Nutritional factors that affect the internal and external quality of the egg" (Matheus Alves).

It was a very good opportunity for Granja Linda and LOHMANN TIERZUCHT to exchange ideas with participants, and meet existing and potential customers from Santa Cruz de la Sierra.

*Matheus Alves*

*\*Amevea (Association of Veterinary Specialists in Poultry) - "We are a group of veterinarians dedicated to the poultry sector. Our objective is continuous improvement of the technical and scientific knowledge of professionals active in the poultry sector in Bolivia"*



*From left to right: Juan Pablo Bolados (Director of Avicola Germana), Thomas Calil (Regional Area Manager Americas), Dr Braulio Ruiz (Sales and Service Manager) and Mr Clemens Huhn (President of Avicola Germana) during the first customs and health clearance procedure at Santiago Airport.*

# AVICOLA GERMANA

## New Chilean-German Distributor

**A**vicola Germana became the latest LOHMANN distributor in Latin America in 2019.

The company was founded exclusively to distribute LOHMANN CLASSIC birds throughout Chile with a special focus on alternative systems. After demonstrating compliance with all Chilean health authorities regulations (SAG), a LOHMANN

BROWN CLASSIC PS flock was set up in early January 2019. The first commercial chicks have already been placed and hatched in their brand-new Single Stage Hatchery in Melipilla, nearby the metropolitan area of Santiago de Chile.

Mr Clemens Huhn and his director Juan Pablo Bolados are excited to share their first hatches, averaging 43% female

hatchability and the feat of having sent chicks to the most southern area of the country, well-known as the Land of Fires (Tierra del Fuego).

LOHMANN supports this new distributor with technical service, and the same care and attention devoted to all our customers worldwide.

*Thomas Calil*



# MORE, BIGGER AND BETTER QUALITY EGGS

LOHMANN's value guarantee for the Colombian market.

Productivity has been the target for genetic selection in LOHMANN hens: peak lay and especially persistence of lay which translates into more, bigger and better quality eggs in terms of strength and more intense shell colour.

This selection has been based on the concept of 'adequate nutrient intake'.

Since its inception, LOHMANN hens have been developed to consume sufficient feed, which has enabled them to adjust to a wide range of conditions of temperature, housing, infrastructure, stocking density, farm type, feed quality and the significant health challenges they face every day in the conditions found in the Colombian tropics.

This ability to eat just a little more when confronted with conditions of stress has been the bedrock of LOHMANN's success in Colombia, especially under extreme conditions of climate and housing, when faced by significant health challenges,

or when going through natural periods of low feed consumption, such as during the pre-lay stage.

Table 1 shows the development of a complex, insidious and damaging health challenge, affecting all the birds on the farm and having a significant impact on liveability.

Although the LOHMANN birds also fell ill, they performed better during the outbreak, their mortality was lower and they recovered faster.

The farm is situated in a hot climate, and has vertical automated battery cages and open barns shared with birds of another popular genetic line.

Table 2 illustrates the effect of greater resilience at the height of the outbreak.

Adequate feed consumption at critical stages is crucial to the productive life of the bird, to allow potential to be expressed to the full in terms of peak lay, persistence of lay and egg size, specifically superior egg mass.

All birds shared a farm in a hot climate, at sea level, and in similar controlled-environment buildings. The bottom line was that each LB bird produced 0.67 USD more than the competitor bird.

Egg size and shell strength, both important qualities of the Lohmann bird, become take on even more significance in a system that markets eggs graded by weight, with larger eggs being worth more. Lohmann delivers on this promise too, as illustrated in table 4, which shows the same farm with a partial cut-off at 50 weeks of age, and compares Lohmann egg classification with that of the competitor birds at the same age.

Appropriate chick management during the rearing and growing stages, to reach the ideal weight at 5 and 12 weeks, optimum uniformity in age at sexual maturity, cumulative feed consumption at 18 weeks, and careful management of lighting have made Lohmann's viability

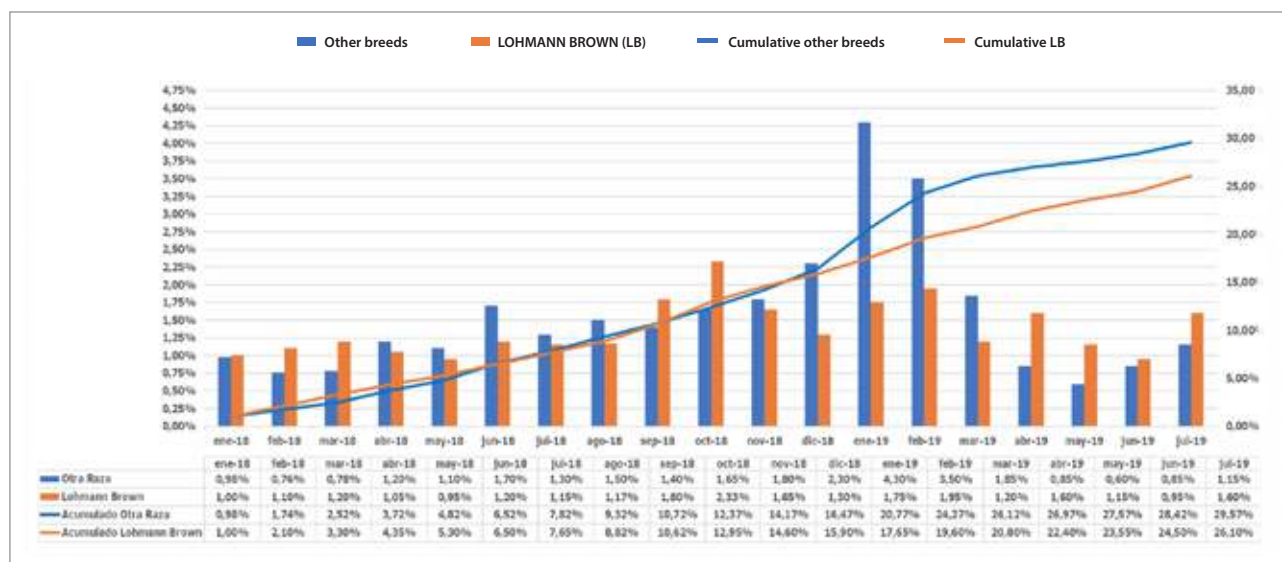


Table 1: Graph of overall mortality

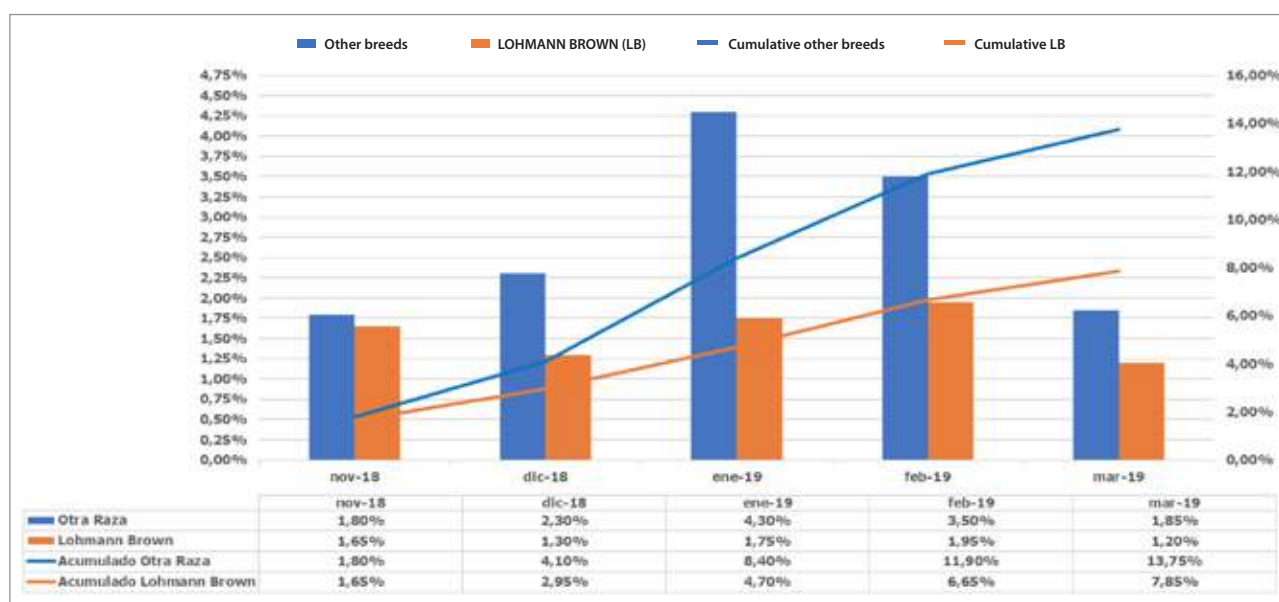


Table 2: Graph of mortality at the height of the outbreak

a highly competitive trait for Colombian poultry producers.

As can be seen in table 5, mortality in the Lohmann birds was highly competitive (6.79 % at 80 weeks), but it was more than double the mortality of the compe-

titor birds on the same farm. However, thanks to Lohmann's productivity (peak lay, and especially persistence of lay), the financial comparison is still very favourable toward the Lohmann due to the feed conversion (expressed as grams per egg

VARIABLE	LB	OTHER
No. birds at start	60,000	60,000
Cumulative mortality (%)	4.3 %	2.2 %
No. birds at end	57,420	58,698
Hen-housed eggs	194.6	190.1
Average consumption (g/bird/day)	101.7	101.4
Cost of feed/kg (\$) *	1000	1000
Sale value/bird (\$) *	7000	7000
Sale value/egg (\$) *	276.8	271.3
Cumulative consumption (kg/bird)	22.781	22.714
Cost of feed (\$) *	1,337,460,768	1,348,029,446
Value of eggs/bird (\$) *	53,869	51,570
Total sale value eggs (\$) *	3,232,150,320	3,094,185,462
Total sale value birds (\$) *	401,940,000	410,886,000
Gross income (\$) *	2,296,629,552	2,157,042,016
Gross margin/bird (\$) *	38,277	35,951
Difference/bird (\$) *	2,326	–
Difference/bird USD	0,67	–
TRM (\$) *	3,476	–

Table 3: Financial comparison between LOHMANN and birds from a popular competitor

Class	LB	Other	Price
AAAA	0.6 %	0.6 %	330
AAA	6.5 %	4.7 %	310
AA	35.7 %	26.8 %	290
A	47.3 %	53.9 %	270
B	8.0 %	12.1 %	250
C	1.5 %	0.6 %	230
Broken	0.4 %	1.2 %	–
Weighted price	276,8	271,3	–
Difference/ bird \$ *	5,54	–	–
Difference/ bird USD	0,31	–	–

Table 4: Financial comparison of egg size and breakages

Class	LB	Other
No. birds	60,000	60,000
Cumulative mortality (%)	6.79	3
GEB	122	128
Value feed/kg (COP [Colombian Peso])	1,000	1,000
Sale value of hen (COP)	7,000	7,000
Difference GEB (\$)	129,600,000	–
Difference hen (\$)	–	15,918,000
COP (\$)	113,682,000	–
USD	32,707	–
USD/bird	0.62	–

Table 5

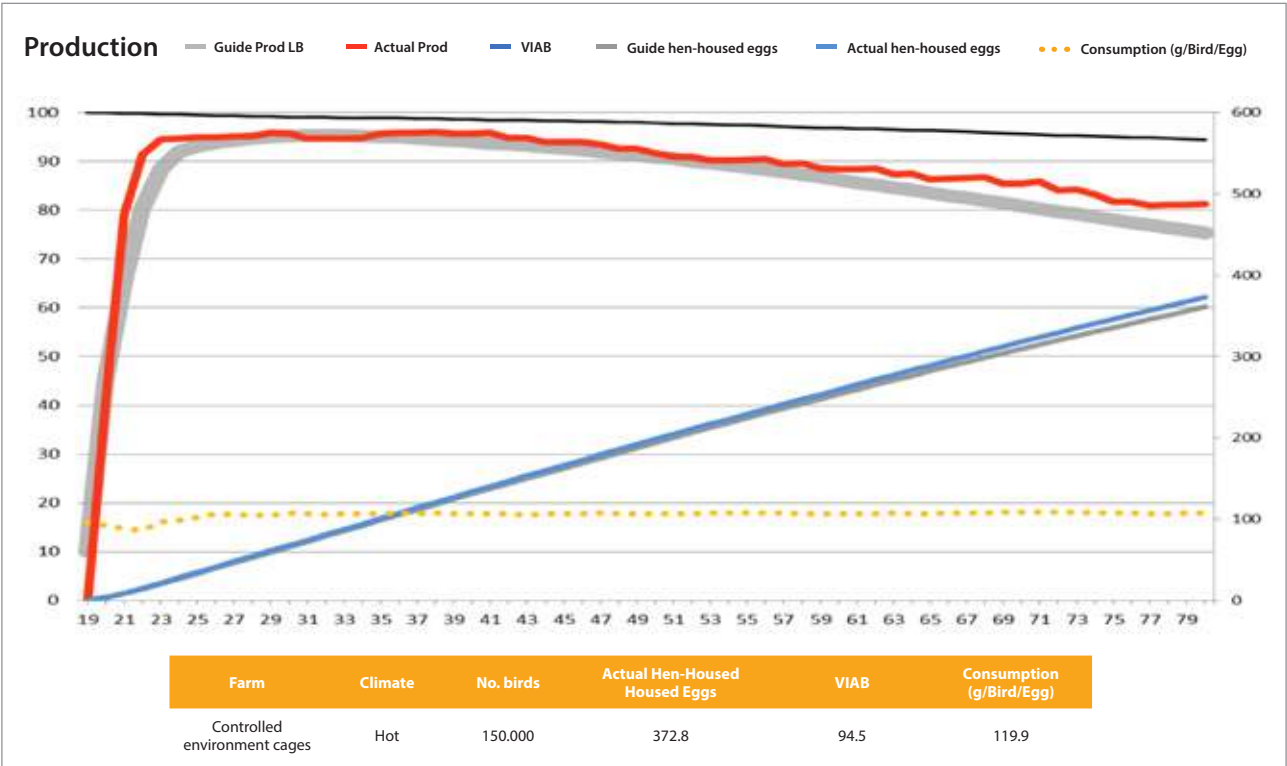


Table 6: Production

per bird, or GEB) which, in this trial, represents 0.62 USD per bird, without taking into account the increased value of the eggs due to their heavier weights. Here at Lohmann in Colombia, we have never in our 37-year history benefited to such a degree, and so consistently, from the genetic development of these birds: their main attribute of persistence of lay, and larger eggs, an egg colour which is outstanding in the market, and a GEB that makes Lohmann birds so profitable. Table 6 and 7 illustrate this:

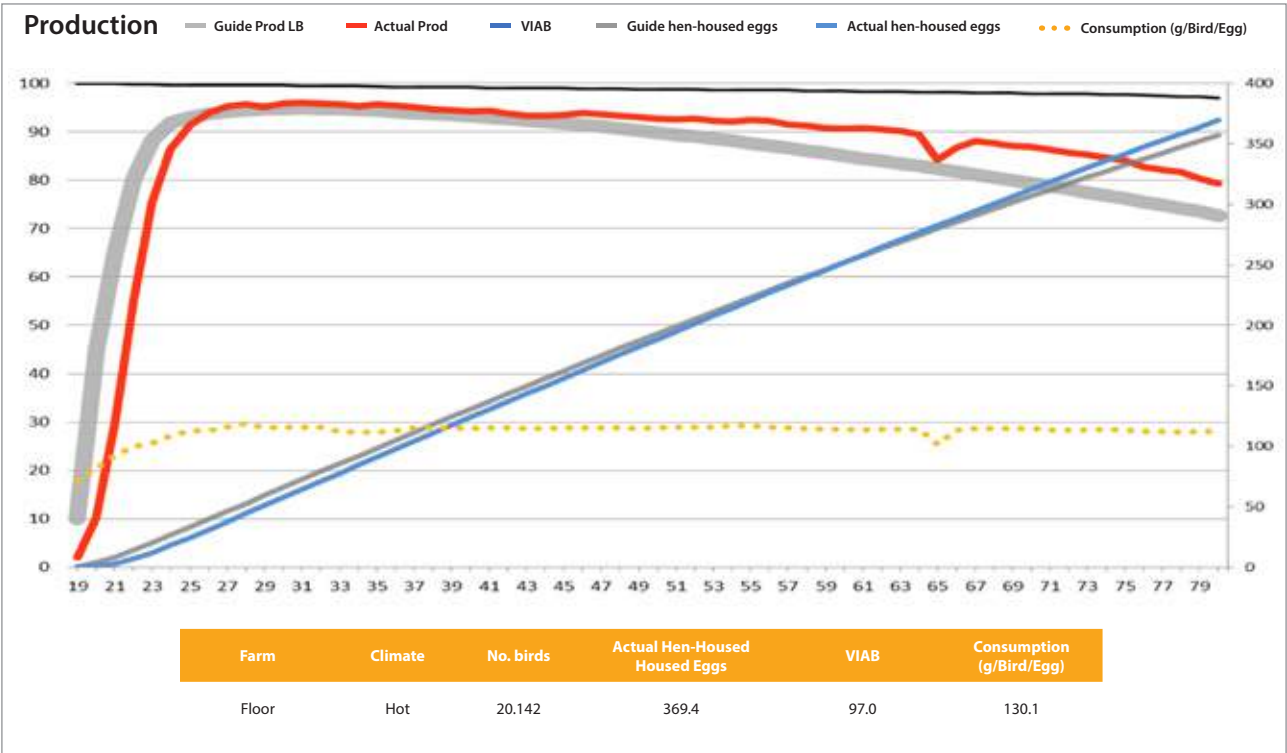


Table 7: Graphs form winning batches in the 2018 pronavicola competition

Moises Nieto





Perfect body

Perfect teint

Perfect quality

Perfect persistence

Perfect strength

Perfect feed consumption

Thanks to well-balanced selection strategies, all of the economically significant traits of Lohmann Tierzucht's hens are at their highest standards. The ultimate shell stability, attractive egg shell colours as well as persistency accompanied by the best feed conversion contribute to performance traits which are simply unbeatable. With Lohmann Tierzucht's products, you have made your choice for the maximum quantity of saleable eggs. For more information please visit our website [www.ltz.de](http://www.ltz.de) or contact us by email [info@ltz.de](mailto:info@ltz.de).

**Breeding for success...together**





# LOHMANN HATCHERY COURSE 2019

Once again we welcomed 25 customers from 10 different countries to this year's LOHMANN HATCHERY COURSE at the beginning of August (5-9 August).

Our LOHMANN experts had once again prepared an informative and interesting programme to present the latest developments in the fields of genetics, nutrition, management and general important aspects for the poultry sector. As usual, our technical experts were flexible and had enough time to discuss certain topics in more detail depending on the respective requi-

rements of the participants. In addition to handling technical issues, we also made sure that fun and leisure were not forgotten! A bowling competition and a karaoke session were organised in the evenings and on Friday afternoon we all enjoyed a wonderful guided tour of the beautiful city of Bremen.

It gives us great pleasure to conclude that this year's LOHMANN HATCHERY COURSE was once again a successful event! Thank you very much!

*Marketing*





# LOHMANN SCHOOL 2019 POOLING KNOWLEDGE AND EXPERTISE FOR A HIGHER PURPOSE

Uniting and bringing together a multitude of professionals from 21 countries, LOHMANN School 2019 was an event brimming with the exchange of new ideas, expertise and fresh new perspectives. The biggest LOHMANN School to take place to date, over 52 professionals joined the event with the motive of absorbing the knowledge and expertise of our speakers and to stay well-informed about the industry happenings.

The week long programme was a combination of relaxed presentations by our team of experts, field visits, entertainment sessions and delectable cuisine. Our team of experts was really able to dive deep and provide insights and connect with the participants. Each of our speakers gave meticulous and detailed presentations and highly encouraged the participants' reactions and feedback. This mutual sharing of knowledge and experience on several critical topics like Genetics & Breeding, Egg Hatching, Housing & Brooding, Feed Formulation, Rearing Management, Production Management, Vaccination and Diseases, Alternative Systems and IT Tools resulted not only in

the participants gaining from our experts, but our team also gained a fresh wave of perspectives from them.

Along with this, we were more than honoured to give our guests a taste of Germany through our culinary programmes and sight-seeing tour. From an exciting karaoke night to a breathtaking sightseeing tour of Bremen, we made sure our guests would have more to take home with them than their learnings from the seminar!

By providing a practical orientation of the poultry industry and a platform for transferring expert and competent advice, LOHMANN School 2019 has increased our determination to continually provide our customers with upgraded and comprehensive information. We are greatly indebted to the participants for joining this event and for considering it equally unparalleled and beneficial. With immense enthusiasm in our hearts, we can conclude that the event was enormously successful and a win-win situation for both sides!

*Marketing*





# GENETIC DEVELOPMENTS AND THEIR IMPLICATION ON LAYER NUTRITION

The major breeding traits in layer genetics are still performance oriented, which means saleable eggs, persistency, feed conversion ratio and viability. Additionally, geneticists are facing new challenges in terms of desirable behaviour and a nice appearance of the hens until the end of their productive lifetime. These new challenges need further support from general management and overall nutrition as well. As an example of nutritional deficiencies, the so-called post peak dip in the early production period should be mentioned. This situation is mainly based on a too low daily feed intake or too low dense feed. In the worst case these deficiencies can provoke unwanted behaviour in layer flocks and will harm the productivity of the flock in the long term. The energy intake of a layer bird must be

split into 2/3 demand for maintenance and 1/3 for egg mass production. This implies acknowledging the importance of the environmental temperature and good feathering of the birds. Both factor - low temperature and impaired feathering - ultimately lead to an increased nutrient demand and daily feed intake.

When focussing on the nutritional details we have the "old A-B-C", which says: amino acids - especially the sulphur amino acids - methionine and cystine. However, let's consider this topic as a "given fact", which everybody takes care. In terms of the previously mentioned new challenges we have a "new A-B-C", which says: feeding on gut health, layer type birds are fond of fibre, feed structure - as an urgent quality aspect - and feeding strategies in rearing and more. These ideas have already been

proven in many countries and are even devoted the highest interest in the scientific community. One aspect is the topic of crude fibre, resulting from raw materials such as sunflower products, barley or oats. Furthermore, there are fibre concentrates based on lignocellulose available in the market. As layer birds are fond of fibre, the content of crude fibre in compound feed can even reach up to 7% without affecting the performance in a negative way. In non-cage systems we need to see feathers in the litter at all times. If they have disappeared, they will have been eaten by the hens - which should be understood as indicating a deficiency of structure and fibre in general. In addition, the rearing period should never be neglected as the basis for later production period. This was pointed out by a professional rearing company in

the Netherlands as: "EVERY mistake which has happened in rearing, will be seen later on in production period!"

Adjusting the egg weight is an all-time big topic all over the world - it is either too low or too high. There is a varying demand within short periods, which genetics are not able to follow up. Nutrition and good flock management therefore have to take over this responsibility. A well-proven approach to controlling egg weight is a qualitative restriction of the egg-weight-driving nutrients, whilst keeping the energy level constant in order to avoid increased daily feed intake as a way to limit too high daily feed intake.

Another pressing issue in layer nutrition regarding productivity and the birds' behaviour is the structure of the mash feed. The feed structure needs to aim at homo-

geneity and some coarseness - both being the overall basis for good and uniform feed and nutrient intake as well as healthy digestion. Specialists in the UK would say "Birds need to have 'some grist in the diets' - in order to support gizzard activity!"

Some further breeding targets nowadays directly focus on welfare aspects, which in the end support productivity as well. One aspect is the ultrasound investigation of bone densitometry, which aims for strong bones and ultimately strong egg shells. Another one is measuring the upper beak length of the hens; aiming at lower mortality and good feather cover. Some take home messages:

- ➔ Be aware of the impressive genetic potential of today's layer breeds - persistency and long viability.
- ➔ The egg shell quality will be the one-

and-only reason to finally sign off a flock.

- ➔ Focus on the "control" of egg weight at all times - either support or control.
- ➔ Support liver and gut health.
- ➔ Support docile behaviour of the hens.
- ➔ Put (much) more focus on rearing and pullet quality.
- ➔ Accept the importance of optimal mash feed structure as an overall basic requirement for gut integrity and health.
- ➔ Apply new and proven additives as supporters of gut health.
- ➔ Feed the hens according to the performance - egg mass output - in order to avoid deficiencies as this could "provoke" a severe negative gut health challenge and feathering problems.

*Robert Pottgüter*



## FOR EVERY MARKET THE RIGHT EGG

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BREEDING FOR SUCCESS ... TOGETHER



**LOHMANN**  
TIERZUCHT

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