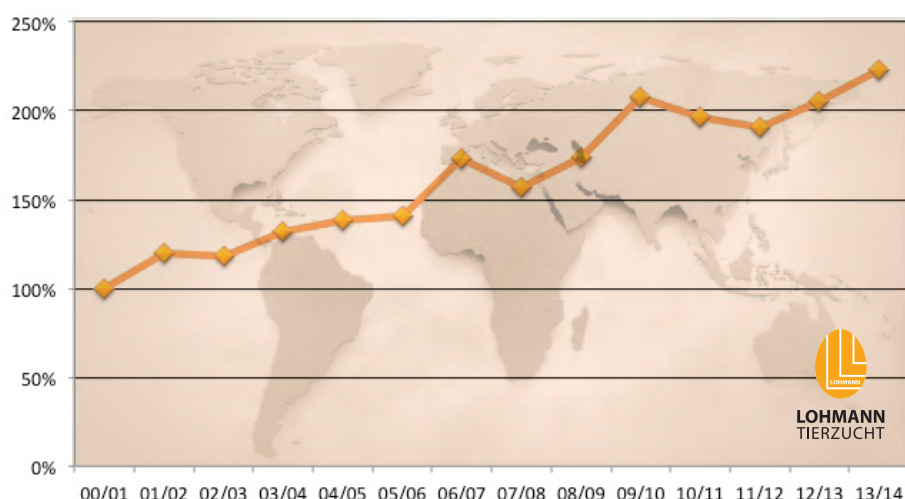


## "The trend is the friend"

### A review on the past 10 years

#### Sales Development of Parent Stock since 2000



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***This slogan is very well known at stock exchanges all around the world. However, there as well as for LOHMANN TIERZUCHT this is not a given thing. For the last ten years, LTZ has been able to maintain this trend by doubling our parent stock sales worldwide despite interruptions in countries where our customers are in for reasons such as natural disasters such as earthquakes, floods, etc. and civil unrest and wars.***

The revolutions in the Middle East have especially resulted in a decrease of parent stock sales in markets where LOHMANN TIERZUCHT had a leading position in terms of market shares.

Avian Influenza and other poultry diseases have also hampered ongoing supplies. Due to the presence of our global sales, we

#### LOHMANN ...Editorial

As much as you focus throughout the map of the world, as much as you descend into the detailed poultry activities all over the world,



as close as you are from the final poultry activities at every single corner of our geography, the better you realize the unique opportunity of being in permanent alert of challenges and making room for improvements. These include applicable multiple legislations, whether international, regional or local, and most of all, numerous interpretations of risk assessments in each location.

Not only animal health, but also logistic services as well as political and economical considerations all over the planet are playing a relevant role with one single goal, i.e. moving the best genetics all around. And that's what we, both you and us, are doing together.

The year 2014 will not be the first, neither will it be the last year in which those related challenges will be considered as the number one priority for LOHMANN TIERZUCHT as the leading supplier of layer genetics.

Setting simple priorities in a company is not only a matter of establishing a decisive dream team. It is a matter of a full package of considerations like market trends and its evaluation, local product adjustments and timeframe for the fi-

*Continued on next page*



nal product availability, and especially, the financial resources available for strategic qualitative investments.

LOHMANN TIERZUCHT has been able to put this complex puzzle together and is supplying the entire global market whilst observing the individual needs of both its respective production sites as well as those in the market. It has reaffirmed its global position with sufficient international locations and product supply possibilities. The most recent example is our latest large investment in Canada from which the possibilities to counter the above challenges will increase substantially.

But this is not enough; we also need you, the market, the partners and the related stakeholders to give us hints as well as indications and to try to add flexibility in schedules, etc. to the already formally established processes. To be precise, what we want is to deliver punctually the latest genetic products to your farm.

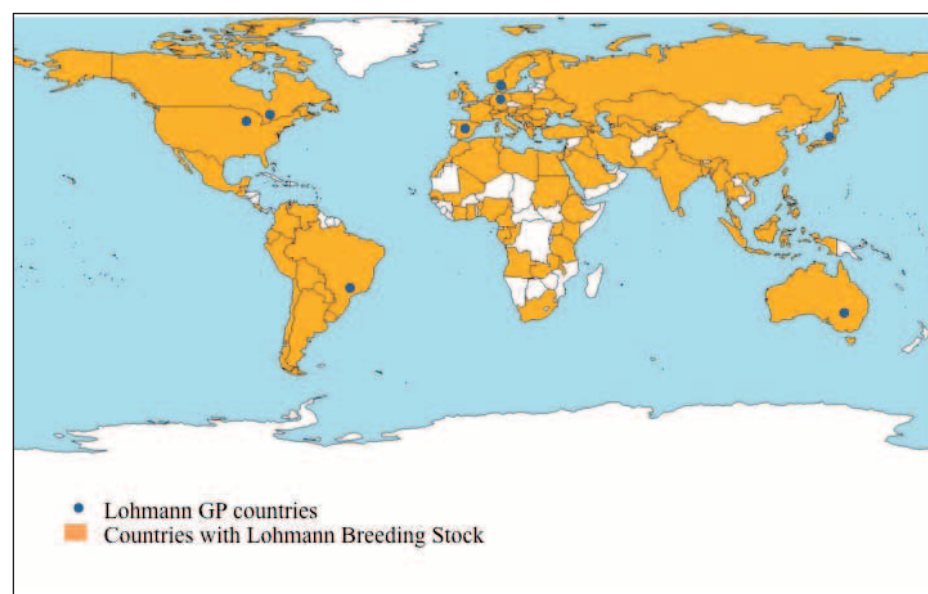
Till today, we are doing a great job together and LOHMANN TIERZUCHT can only thank you for your loyalty, cooperation and sustainable common growth. We are proud about this and are confident, it will continue this way.

We will remain on alert in the next days and even in the following months to make sure that the level of mutual satisfaction increases permanently.

**Join us on this challenging journey and let us succeed, together.**

**Javier Ramírez**  
Managing Director

*Continued from page 1*



have been more than able to compensate these shortfalls in other regions like South America and the Far East. Thanks to our production facilities in Germany, Denmark, Canada, the United States and Brazil, we are able to safeguard the supply of parent stock to our customers all over the globe. Particularly in South America and Asia, LOHMANN BROWN has experienced a strong growth with additional orders from current customers and acquisition of new ones.

But even in markets where LOHMANN customers already have a dominating market position such as Saudi Arabia or Turkey, growth is steadily and strongly continuing.

Thanks to our distributors, LOHMANN layers enjoy a high popularity and demand.

Because of the long selection for more than 50 years, LOHMANN TIERZUCHT will be able to continue genetic progress in the future with special focuses on the numbers of saleable eggs. The success of our customers is the driving force behind our never-ending efforts to provide the right egg for every market and for every management, the right hen.

Michael B. Seidel,  
Sales Director



## Steinsland & Co. Anniversary Tour 6 – 9<sup>th</sup> November 2013

Almost 200 persons boarded the ferry Color Line in the port of Oslo on the 6<sup>th</sup> of November to celebrate the 60<sup>th</sup> anniversary of Steinsland & Co. and 20 years of cooperation between LOHMANN TIERZUCHT and Steinsland & Co.

After the welcome by Nils Steinsland followed by a sumptuous breakfast, Mr. Harald Ellingsen entertained the group with slapstick comedy as the ferry began its journey to Kiel. During the crossing, Nils Steinsland presented the company's history and poultry specialists of LOHMANN TIERZUCHT made their contribution to the event with their expert presentations. An open discussion in the discotheque about these issues rounded off the afternoon.

After the "Jubeleumsmiddag" with many toasts and well wishes, the audience exchanged their experiences with the world of chicken.

On Thursday morning, after arriving at the port of Kiel, the guests travelled to Cuxhaven by bus. There, they had the opportunity to visit one of LTZ's breeding farms.

To make this visit possible, LTZ kept the farm empty as biosecurity regulations normally do not permit visitors at the facility. Before and after the tour of the farm, the guests were treated to sandwiches, sau-



sages and good old German beer kept the spirit alive. In the early evening, the bus transferred the guests to the Atlantic Sail Hotel in Bremerhaven.

Courtesy of LOHMANN TIERZUCHT, the whole group was invited to a common dinner that ended for some friends only in the early morning. After breakfast, the Norwegian participants returned back to Kiel to depart by boat back to Oslo at noon.

Today, Steinsland & Co. is the market leader

in Norway, covering about 75 percent of the white layer market. With about 2,300 grandparents, the company produces about 30,000 parent stocks for Norway and Island. The newly remodeled hatchery has a capacity of 2.7 million commercial female day-old chicks per year.

Steinsland employs 14 employees and rears 550,000 pullets in its own facilities annually.

Niels Fischer, Area Sales Manager







### Country Profile: Pakistan

Pakistan is a major country in South Asia with a total area of 796,096 km<sup>2</sup> that is home to 183 million people, making it the sixth most populated country in the world after China, India, the USA, Indonesia and Brazil. It has a population growth rate which is close to 2.5 % and an economic growth rate of 3.7 %.

The increasing population and consumer purchasing power stimulates demand for inexpensive, high quality animal protein. Eggs fulfill this demand perfectly although the annual per capita consumption is 55 eggs. There are approximately 45 million laying hens in Pakistan serving a market in which the demand for white eggs is at nearly 100 %.

Egg production in Pakistan is growing at an average rate of just over 5 % per year. This means, the Pakistani egg industry is one of the fastest growing in the world. The egg industry in Pakistan is making a

tremendous contribution to bridge the gap between the supply and demand of animal protein. In addition, the poultry industry of Pakistan generates employment and provides a source of income to more than 1.5 million people.

The poultry industry in Pakistan has become more professional and upgraded in its quality and capacity with the introduction of cage-farming.

In order to improve domestic consumption and increased consumer awareness, the Pakistani Poultry Association is promoting advertising campaigns and the branding of eggs.

LSL is the most popular breed in Pakistan with a current market share of 28 % which is increasing continuously year by year. The base for this ongoing growth has been laid by our three customers:

**Samundri Chicks Pakistan**

**Bahoo Chicks Pakistan**

**Awaz Poultry Pakistan**



## Awaz Poultry Pakistan

**Awaz Chicks** is not only proud of the quality of their products, but also the strength of their technical support to their customers. Their breeding farm currently has a housing capacity for 60,000 LOHMANN LSL-Lite parent stocks in semi-controlled environment houses. Awaz Poultry Farm is currently located in the Sargodah District, in the North of Punjab Pakistan. Awaz Poultry is part of the Awaz Group of Poultry. Mr. Zahid Rahim established it in 2009 and later on, in the year 2013, they started having business ties with LOHMANN TIERZUCHT which is growing day by day due to the availability of very well-qualified and skilled staff.

Awaz Poultry is the pioneer breeding company in Pakistan where you can place and track your order online. They are well established in Information Technology with a fully-qualified IT Department, Technical and Poultry Management Team. In the breeding farming and hatchery facilities, they use technical expertise, equipments and medications which are in accordance to International Poultry Standards (IPS). Their future plans is the establishment of a new hatchery and poultry breeding farms in southern Pakistan close to the Karachi area.

Dr. Sohail Habib Syed,  
Sales & Service Manager Pakistan



## Samundri Chicks Pakistan

To meet the varying needs of the Pakistani egg industry, **Samundri Chicks** keeps parent stock flocks of LOHMANN TIERZUCHT LSL-Lite and the new breed, LOHMANN LSL-Converter. Through their efforts, Samundri Chicks has established a prominent and steadily increasing presence for LOHMANN layers in the Pakistani market. The business started in the year 2002 with the name "Samundri Chicks", named after the town where they are located which is near Faisalabad in the centre of the Punjab Province. Mr. Muhammad Anees and his brothers run the family-owned business. Since 2005, Samundri Chicks has been a loyal customer of LOHMANN TIERZUCHT. They are the biggest parent stock layer company in Pakistan with a current capacity of about 100,000 parent stock hens which are housed with a brand new family cage system supplied by Kutlusan in Turkey. Today, the hatchery has a hatching capacity of

1.6 million chicks/month. The breeder flocks are vaccinated against all diseases known to poultry and regularly monitored by a monthly testing of immunity titers. After the completion of the new family cage parent stock farm this year, the capacity will increase to 120,000. Next year, the construction of a new hatchery with a

capacity of 2.5 million chicks per month is scheduled. Furthermore, Samundri is planning on the construction of a commercial feed mill with a capacity of 5,000 tons/month as well as a Biogas Plant to meet the needs of high energy demands.

Dr. Sohail Habib Syed,  
Sales & Service Manager Pakistan



## Bahoo Chicks Pakistan

**Bahoo Chicks** has invested in breeding farms and hatchery facilities which feature the latest technology. The breeding farm currently has a housing capacity for 80,000 LOHMANN LSL-Lite parent stocks in semi-controlled environment houses. Located in the poultry hub of Kamalia District Toba tek singh in southern Punjab, Pakistan, Bahoo Chicks is part of the Bahoo Group of Poultry.

The founder, Mr. Mohammad Sharif Malik, started his first commercial layer farm in 1992. Today, it maintains its own one million commercial layers. The poultry breeding business was established in the year 2000. Bahoo Chicks has been housing LOHMANN LSL parent stocks since 2004.

The latter also has a well-deserved reputation as a commercial feed manufacturer for broilers, layers and parent stock with a capacity of 7,500 tons/month. In addition,

they are also very big suppliers of grains to other commercial poultry feed mills.

Bahoo plans the construction of a state of the art poultry breeding farm in Northern Punjab which is to house 50,000 parent stock layers and a new hatchery with the capacity of 1.5 million chicks /month.

Furthermore, they are currently considering expanding the capacity of the existing poultry feed mill.

Bahoo is well-known for the quality of their products and the expertise of their technical support.

Dr. Sohail Habib Syed,  
Sales & Service Manager Pakistan





## 2-Egg Promotion in Japan



Participants of 2-Egg Campaign in Toyohashi, Japan

### Japanese egg producers organize successful bicycle tour through the country to promote egg consumption.

Japan is amongst the countries with the highest per capita egg consumption worldwide. Owing to continuous increased productivity of modern layers, better performance of layer farms due to well-balanced feeding programs, improved disease control and housing conditions, the supply of eggs has increased dramatically over the years. An aging population and years of economical stagnation has, however, shown a slight reduction in egg consumption in Japan in recent years.

The association of egg producers organized a bicycle tour in Japan during the summer of 2013. The goal was to attract

consumers attention to the positive experience of eating table eggs. In all prefectures (provinces) of Japan, groups of producers and sympathizers joined in the bicycle tours. National media gave much attention to this positive initiative which will surely result in a good perception with consumers.

Closing events were held in Central Japan. On Sunday 20<sup>th</sup> October, Ron Eek participated in an event organized in Toyohashi. Many people visited the booths to learn more about the merits of table eggs and the way they are produced. Many kids were fascinated by holding the small baby chicks in their hands.

Ron Eek  
Area Sales Manager

#### Egg consumption Japan

| Country facts   |  |
|-----------------|--|
| Population      | 127 Mio  |
| Layers          | 137 Mio  |
| Eggs/person     | 329  |
| Proportion      | 93 % conventional cages<br>6 % Barn/HighRise<br>1 % Free Range |
| Selfsufficiency | 95 %   |

#### Top Five Egg Producers

| 2000   | 2010   | 2020 (forecast)     |
|--------|--------|---------------------|
| China  | China  | China (500 Billion) |
| USA    | USA    | India (100 Billion) |
| Japan  | India  | USA (90 Billion)    |
| India  | Japan  | Mexico (50 Billion) |
| Russia | Mexico | Japan (40 Billion)  |

## Technical support from Lohmann to SDF (China)

*In November 2011 Sun Daily Foods (SDF) China has signed a consultancy contract with LOHMANN TIERZUCHT GmbH for technical co-operation through technical services and support to establish a "LOHMANN Grand Parent Demonstration Farm". The desire is to have a reliable source for healthy and quality Parent Stock chicks thru their own integrated system.*

In the first phase technical visits of LOHMANN experts were agreed in the field of Genetics, Management, Hatchery and Veterinary issues to assist the planning of the Grand Parent farm. After completion phase two started to include training, checking the operations and providing recommendations. The final step was the inspection of the new established farms.

SDF is very well recognized by customers. This April they organised a well prepared two days customer event hosting more than 450 people including Parent Stock and Commercial chick producers, Government representatives and other officials. The second day a seminar was organised



with various presentations including the ever present topic of Avian Influenza, status and prevention. Javier Ramírez, General Manager of LOHMANN TIERZUCHT was addressing the audience by introducing LOHMANN TIERZUCHT and the Erich Westjohann Group. Furthermore, after visiting the GP and PS farms in Mianyang, he was glad to confirm the state of the art stand-

ard combined with a very strict and enforced bio security protection. The short history of Sun Daily Farms is even for Chinese standards very impressive. They started in 1999 in Mianyang with the first 1.8 million layer operation and a Parent Stock operation for 300,000 chicks. The first expansion followed 6 years later in Jiangxi province adding 1.3 million layers and a second Parent Stock farm at Xi-angyang/Hubei province with additional 100,000 PS. 2012 SDF was the first company to introduce branded eggs in China. They are suppliers to supermarket chains and also to the food industry. The latest expansion was last year in Guangyuan with 300,000 PS and a state of the art Grand Parent operation.

Today SDF keeps totally 4.5 million layers and 1 million Parent Stock chicks in various provinces. Within the next three years they want to expand to 10 Million own layers and about 40,000 LOHMANN Grand Parent chicks.

Michael B. Seidel,  
Sales Director





## PT Multibreeder Adirama Indonesia Tbk: A loyal customer of LOHMANN BROWN for more than 20 years

**Indonesia's leading animal feed and poultry meat producer "PT Japfa Comfeed Indonesia" has merged its business with "PT Multibreeder Adirama Indonesia" (Multibreeder), a leading poultry breeding company to form one of the largest vertically integrated agribusiness companies in Indonesia. For more than 20 years now, Multibreeder has been a loyal grandparent customer at LOHMANN TIERZUCHT GmbH. The first contract was signed already on 15<sup>th</sup> April 1992.**

The head office is located in the Indonesian capital of Jakarta. The Republic of Indonesia is the world's largest Island State consisting of 17,508 islands with almost 250 million inhabitants. It is the fourth largest country in the world. Jakarta has about 10 million inhabitants and is located on the island of Java where more than half of the country's total population is living. Other major islands include Sumatra, Borneo, Sulawesi and New Guinea. Indonesia's egg consumption per capita is one of the lowest in Asia with about 90 eggs only!

PT JAPFA COMFEED INDONESIA Tbk is one of the largest agri-food companies in the country. Its core business activities include the manufacture of animal feed, chicken breeding, poultry processing, aquaculture farming and the research and production of animal vaccines.

With a total production capacity of 2.6 million tons per annum, Japfa is one of the leading feed manufacturers in the country commanding over one third of the total market. Of the total feed produced by Japfa today, 10% is used for internal breeding operations while the rest is sold to local farmers and independent distributors.

Japfa already commands a significant share of the domestic poultry market and has successfully achieved strong market positions in many of its business lines. A string of acquisitions transformed the company into being one of the largest and most integrated poultry / shrimp producers in Indonesia.

In farming, Japfa enjoys a high level of integration with its former subsidiary, PT Multibreeder Adirama Indonesia Tbk. Established in 1985 and publicly listed on the Jakarta and Surabaya Stock Exchanges up until the merger, Multibreeder currently operates a number of poultry breeding

farms to produce day-old chicks for farms located throughout Indonesia. Its annual production capacity is one of the largest in the country and represents about 20% of the domestic market share. Most of Multibreeder's day-old chicks are sold to local commercial farmers.

One of Multibreeder's major competitive advantages is the provision of specific types of day-old chicks to best suit the needs of the customers. Closely related to this is the use of strain-specific feed made by Japfa's feed production plants. To ensure a consistently high quality output, Multibreeder imports grandparent stocks from LOHMANN TIERZUCHT and Aviagen, through which it produces parent stocks and commercials, both for layers and broilers.

In staying ahead of the competition, Multibreeder has achieved a high level of operational efficiency. Two particular initiatives implemented in its breeding farms are indeed praiseworthy. The first is a biosecurity system which has dramatically improved sanitation standards. As a result, the farms now enjoy higher productivity of the parent stocks, low mortality rates, reduced losses through mishandling, as well as consistency in day-old chick quality.

The second system aimed at improving its breeding operations, is a performance benchmarking program. This involves defining quality parameters by which the quality of Multibreeder's day-old chicks are compared locally from farm-to-farm and also with farms in other countries.

Already in September 2008, Japfa acquired one of the leading research-based animal vaccine producers in South-East Asia, PT Vaksindo Satwa Nusantara. This is a key portion of Japfa's integration strategy to enhance its state-of-the-art biosecurity measures. This also allows Japfa to pro-



vide a total poultry solution to its customers, ranging from DOCs to feed to poultry health needs.

In 2013, "PT Charoen Pokphand Indonesia", equally as large as Japfa, became a LOHMANN BROWN parent stock customer for Multibreeder. Although CP has ISA grandparent stocks in Indonesia themselves, they entered into a supply agreement with Multibreeder for an annual supply of 200,000 LOHMANN BROWN parent stock day-old chicks for the next 3 years.

Because of the strong underlying demand for DOCs in Indonesia, there is ample room for further growth into the future. This is supported by Indonesia's rapidly growing consumer market and a growing population, not to mention, an increasing purchasing power. To further strengthen the co-operation between PT Japfa Comfeed and LOHMANN TIERZUCHT, a new Franchise Hatchery Agreement was signed recently in Jakarta.

Michael B. Seidel

## PCR techniques in medical diagnosis of the veterinary laboratory

**For the diagnosis of diseases in veterinary medicine the technique of PCR (polymerase chain reaction) could be used since several years. In this method, individual genome sections of the pathogen are propagated by repeating different tempera-**

**ture steps and thus finally made them detectable. In addition, pathogens could be typed and differentiated from vaccine strains. This can for example be done by a vaccine – specific PCR or by subsequent sequencing of the PCR product.**

The direct detection of the genetic material of the pathogen by means of PCR, in contrast to serological tests, has the advantage that diseases can be promptly detected after the initial infection. The PCR provides here a faster method than e.g. the cultivation of viral pathogens in eggs or cell cultures. However, the genetic material of the pathogen may possibly no longer be detected after a successful fight of the immune system against infection. Thus, the PCR may serve as a practical complement to serological tests that detect the antibodies produced by the host organism and help to overcome the gap in diagnostics between the time of infection and the production of antibodies.

Basically, PCR reactions could be differentiated in two techniques: During the first one, the "Endpoint" -based PCR, after the PCR reaction the products are separated in an agarose gel according to the size of the product and are stained. With the faster and more sensitive method the formation of the PCR products during the temperature cycles is observed in real time (Fig. 1). In recent years the veterinary laboratory has almost all the PCR detection methods converted to real-time PCR. This allows faster processing of the samples and more precise results by using this more sensitive method.

Frequently requested examinations in the veterinary laboratory of LTZ are the detection of Avian Influenza (AIV), Avian Infectious Bronchitis (IBV), Mycoplasma (Mg / Ms) and Avian Metapneumovirus (AMPV, TRT). AIV can be typed by further PCRs in H5, H7 or H9. For serotyping of IBV recently "Real Time" detection systems for the serotypes

QX, Italy O2, Massachusetts, D 274, 4/ 91 and D 1466 have been newly developed. By using a further PCR followed by sequencing positive Ms and Mg results can distinguish vaccine from field strains.

Further real-time PCR tests can for example be performed for the detection of Newcastle disease virus (NDV), Marek's Disease and Egg Drop Syndrome virus (EDS). For ND virus a further PCR reaction followed by sequencing of the F1 cleavage site could determine pathogenicity and classification of the strains.

Overall, as established in the veterinary laboratory at present the detection of more than 25 pathogens is possible, with development of further detection systems. As matrices for the detection tracheal or cloacal swabs, FTA cards or organs can be used depending on the agent to be detected.

In addition, typing can be carried out for Avian Orthoreovirus, Fowl Adenovirus (FAdV) and Infectious Bursal Disease Virus (IBDV). Through this, vaccine from field strains could be distinguished, the phylogenetic relationships of different virus isolates be determined (Fig. 2) and serotyping could be done. This method can serve as a decision aid in the selection of isolates for

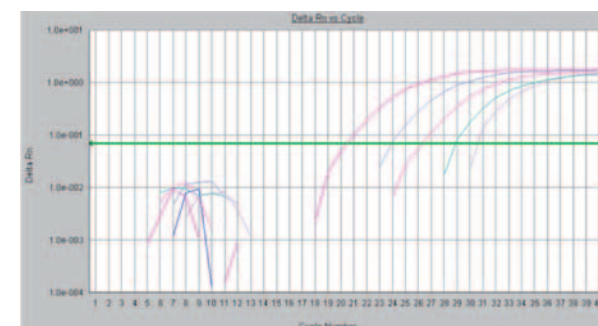


Figure 1: Detection of Avian Infectious Bronchitis via "real time" PCR. The rising curves indicate an increase in fluorescence and thus prove the presence of genetic material of the pathogen



Figure 2: Phylogenetic trees of selected Orthoreoviruses; blue points are from field isolates, vaccine strains in red

the production of autogenous vaccines. For typing of FAdV and Orthoreovirus the initial culture in liver cells is recommended in order firstly to achieve enrichment of the viral material as well as to be able, where appropriate, to use the isolate obtained for vaccine production later.

Dr. Martin Barz and  
Dr. Matthias Voss,  
Veterinary Laboratory

# Biosecurity in Layer Farms

**In today's poultry operations, hygiene is an essential part of the management system. A good and reliable biosecurity and hygiene concept should be established to prevent outbreaks of diseases and to ensure good performance conditions. Only flocks which perform well can secure a reliable source of income for poultry companies. Keeping medical treatment to an absolute minimum should be one of the most significant goals during production, both from an animal welfare and an economical point of view.**

**Disasters like the outbreak of epidemics are always indicators of inadequate biosecurity. There are different measures to restrict pathogens from getting into contact with the birds on the farm. The types of measures which are implemented depend on the specific situation on each farm. Basic hygienic rules, however, like the washing of hands and changing of shoes before entering a barn, should always be performed. They help to keep the hygienic status of a flock on a high level.**

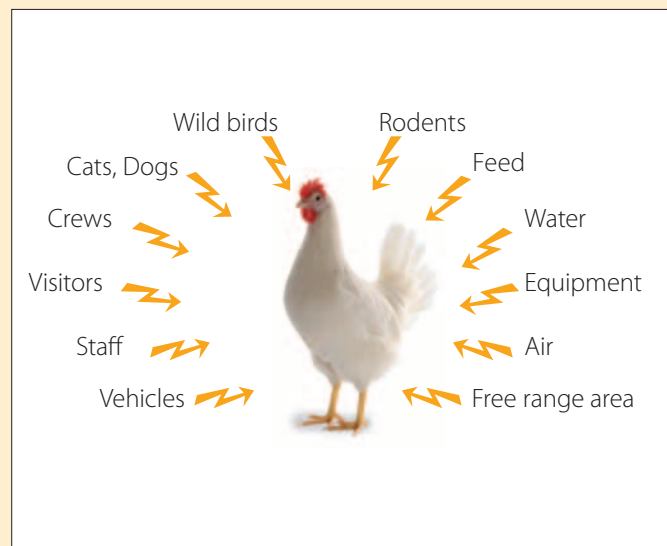
## What are we fighting?

The biggest problem with biosecurity rules is that untrained people may think that these were only established to make

The most recent ways of pathogen transmission are as follows:

- **Faecal to oral:** Pathogens are excreted in the faeces and are consumed by susceptible chickens.

either by being consumed, by biting or by spread of infectious particles (e.g. faeces).



Picture 1: Some ways of how pathogens can reach the layers



Picture 2: well-maintained surrounding of a poultry house

**poultry density** and if possible, no presence of wild birds or water fowls.

The entire farm has to be fenced and information signboards should be fitted in order to make everybody aware of a critical area in which biosecurity rules have to be strictly followed. Buildings have to be kept **free of vegetation**. Long grass, trees and bushes will attract rodents and wild birds. A good possibility would be to build a 2-meter strip of a pebbled pathway around the perimeter of each house (see picture 2).

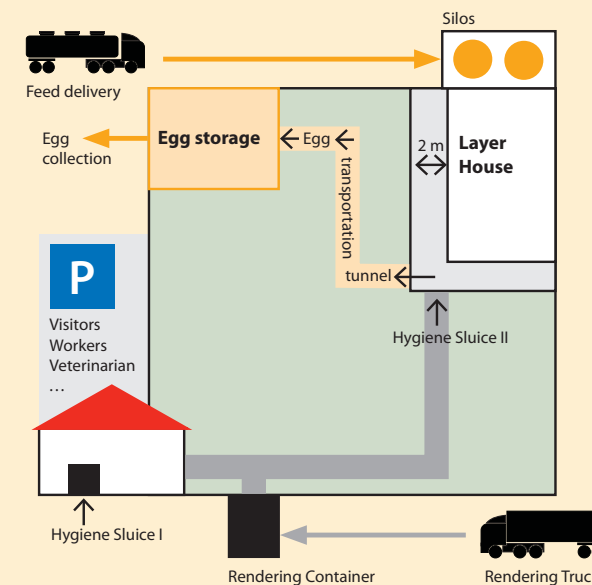
Generally, the farm should be divided into clean and dirty areas. "Dirty" activities include the handling of manure, removal of carcasses and pests as well as contact with rendering containers or rendering trucks. "Clean" activities comprise of egg, chick and feed handling, movements of

Cars should not have access to the premises. If the frequency of vehicles cannot be avoided (e.g. feed delivery trucks), then these must be cleaned and disinfected before allowing them to enter the farm grounds. It should be a matter of course that these trucks have not been to other farms before, and if this would be otherwise, then they should always start with the youngest to the oldest birds that are present on the different farms. Picture 3 shows how vehicles can be kept out of premises. This, however, is not always possible.

Picture 3 also shows how workers and visitors should enter the farm. Reduce vehicle and visitor movements at your respective sites. Be aware that the most common visitors like veterinarians and consultants are the most dangerous ones because they would have most likely been to other

Biosecurity measures should not just stop after showering. It should also be implemented at farm level throughout the lifespan of the flocks as well as during the cleaning and disinfection time to follow. Every poultry house should have an own hygiene station which every person has to pass through before accessing the birds. These hygienic stations can be kept very simple but in any case, shoes should always be changed, a barn-owned overall should be worn and hands should be washed. Picture 5 displays a simple example of how an effective hygienic station can be realized on barn level.

Always try to work with very simple solutions which makes it easy for every person to exercise biosecurity rules in their daily routines. This is the most effective guarantee to make the whole biosecurity program successful and effective on your



Picture 3: Design of a farm in observance of biosecurity rules



Picture 4: Example of a one-way shower

their daily work even harder and more uncomfortable. Therefore, to make the whole system successful, it is of most importance to provide training on biosecurity practice to the staff involved.

It is crucial to explain that disease-causing organisms (whether viruses, bacteria, or parasites), are often invisible to the naked eye and to make people aware of how these pathogens are usually spread (see picture 1).

- **Aerosol:** Pathogens are transmitted in microscopic droplets of moisture/dust and are inhaled by the hens.
- **Mechanical Vectors:** Pathogens travel on people, insects and can therefore be brought into physical contact with layers.
- **Biological Vectors:** Carry pathogens in their body and transmit the disease

## Good Biosecurity Practice – Farm Layout

In terms of the possible methods of transmission of pathogens, one of the most important measures in Biosecurity is to have as much distance to other poultry operations as possible. Therefore, build the farm in a minimum distance of 1 km to other farms and choose an area with a **low**

birds, and numerous daily activities which involves direct contact with the birds. It is preferable that equipment and personnel not be shared between clean and dirty activities! If this is **not** possible, then clean activities should first be completed before **dirty activities** are carried out. Upon completion of their tasks in these areas, the personnel should be dismissed for the day.

farms before. Prepare a visitors logbook to have a record of traceability in the event of a disease outbreak.

The procedure for every visitor and worker when entering farm level is via a shower in facility (see picture 4). The first step would be for them to leave their own clothes, accessories and jewelry in a locker. The second step is to take a shower and to put on clothing and shoes as provided by the farm.

farm. Picture 6 shows an example on how easy it can be to change shoes in the ante-room of the poultry house.

Keep in mind that the solution of the disinfection footbath has to be changed on a daily basis. Otherwise, they are more harmful than helpful. A substitute of the disinfection bath is a pad with chlorine powder that only needs to be changed



every fortnight (see picture 7). This has the advantage, i.e. that the powder is not slippery and leaves a much cleaner residue.

Good Biosecurity Practice - Bird Management

To reduce the pressure of infectious agents on your farm, it is advisable to avoid multi-aged farms in which diseases and vermin can easily survive and spread to the different age groups. Therefore All-in All-out management is the best principle from a biosecurity point of view! If that is not possible, handle every age group as a separate unit. Avoid crossing equipment, feed, eggs, staff, etc. Traffic should always flow from the youngest to the oldest and from healthy to sick birds.

An effective reduction of pathogens can also only be powerful by choosing enough

Table 1: Longevity of some disease-causing organisms (BELL and WEAVER; 2002)

| Disease                   | Lifespan away from birds |
|---------------------------|--------------------------|
| Infectious Bursal Disease | Month                    |
| Coccidiosis               | Month                    |
| Fowl Cholera              | Weeks                    |
| Coryza                    | Weeks                    |
| Marek's Disease           | Month                    |
| Newcastle Disease         | Days to weeks            |
| Mycoplasmosis             | Hours to Days            |
| Salmonellosis             | Weeks                    |
| Avian Tuberculosis        | Years                    |
| Avian Influenza           | Weeks to Month           |
| Infectious Bronchitis     | Weeks to Month           |

Cleaning and Disinfection

Cleaning and disinfection are measures to reduce the amount of disease-causing organisms to a minimum. Therefore, they are important tools of a biosecurity program.

measures into 6 main steps, which lead – i.e. when strictly followed - to very good results in terms of the hygienic status of the farm (picture 8).

**Step 1 – Rough cleaning:** Treat the house while it is still warm with insecticides to eliminate flies, beetles, etc. Remove litter and dirt. Transfer these to somewhere as far away as possible.

**Step 2 – Soaking:** Soak the facility for several hours. Use enough liquid to soak. Tenside solutions help to combat stubborn dirt. Soaking when properly done can help to reduce the time of real cleaning.

**Step 3 – Cleaning:** Use a high pressure cleaner to carry out the cleaning of the shed. Do this either with hot or cold water, depending on the detergent you are using during cleaning.

**Step 6 – Disinfection:** During application of the disinfectant, the house has to be sealed and the ventilation has to be switched off. Disinfection will reduce the amount of infectious agents to a minimum. Therefore, use a minimum of 0.4 l / m² of floor space. Disinfect from the rear to the front of the poultry house and from the ceiling to the floor. Do not work with a water pressure of more than 10 to 12 bar.

Choose disinfectants with a broad range of efficacy. They should be effective against bacteria as well as against fungus. If you had extraordinary problems with the last flock, consult your veterinarian for advice on the right disinfectant to apply.

**Keep in mind:** Disinfection without proper cleaning has no effectiveness. Increasing the concentration of a disinfectant is never a substitute for thorough cleaning.

actually react with bacteria or other infectious agents

2. **Soap mistake:** Disinfectants can be inactivated if they react with residues of cleaning agents. Therefore, it is important to rinse the facility with clear water after cleaning and to dry it thoroughly.

3. **Temperature mistake:** Some substances like Aldehydes do not work with temperatures which are below 10°C. The activity of many disinfectants improves significantly as the temperatures rise.

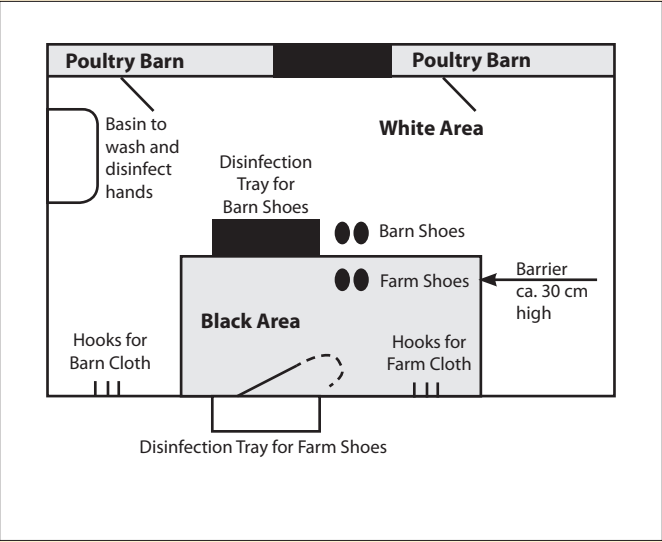
To make sure that the cleaning procedure was effective, the results should be tested either by your veterinarian or by your own quality department. The following figures shown in table 2 and picture 9 can be treated as guidelines where bacterial loads are concerned.

Water and Feed

Water and feed as well as their distribution systems are carriers for pathogens into the poultry facilities. These are often overlooked since farm and production managers focus their efforts on monitoring other management tools.

It is important to integrate water lines, silos and feeding chains into the biosecurity program so as to maximize cleanliness, edibility and potability of feed and water.

Clean and disinfect water lines regularly, especially before and after each treatment with vitamins, vaccination and medication. If this is not performed, a biofilm will build up which can harm the quality of your water. Pathogens like E.Coli, Salmonella can accumulate very easily in biofilms.



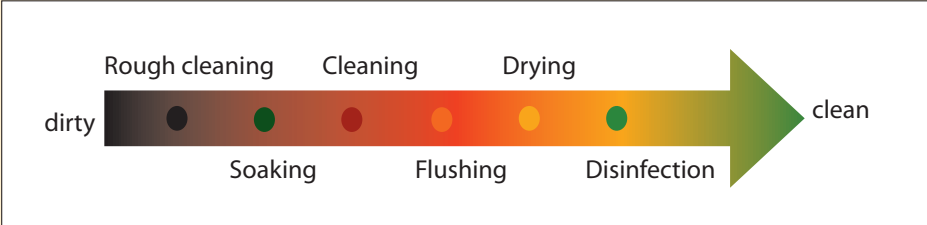
Picture 5: Plan for a simple sanitation area in a poultry facility



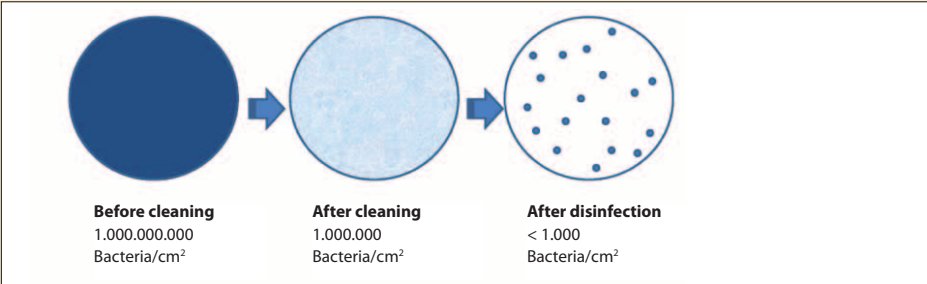
Picture 6: Simple and easy way of shoe changing and disinfection on barn level



Picture 7: Chlorine Foot Pan Powder



Picture 8: 6 steps of good cleaning and disinfection procedures (DLG, 2010)



Picture 9: Bacterial load before and after cleaning and disinfection (DLG, 2010)

downtime between flocks. The longer the service period, the better it is for the hygienic status of the farms. As table 1 shows, some pathogens are able to persist for a very long time in the environment even if the birds are not present. Therefore, choose the turnaround period based on the latest diseases you have had on your farm.

It is impossible to achieve absolute sterility on farm level but the goal should always be to reduce the bacterial load as far as possible. In order to achieve the best possible cleaning result, the whole procedure has to be performed correctly. Therefore, it is helpful to divide the cleaning and disinfection

**Step 4 – Flushing:** Rinse the facility with enough clear water after cleaning.

**Step 5 – Drying:** Let the facility dry properly. This is important as puddles of any kind will dilute the disinfectant to be used after drying.

During the disinfectant procedure some problems can occur. These particularly include the following:

1. **Protein error:** Occurs if in an unclean environment, the disinfectant reacts with faeces and other dirt before it can

Table 2: Microbial contamination of surfaces before and after cleaning and disinfection (benchmark)

| Point in time          | Cfu* / cm² surface in animal house |
|------------------------|------------------------------------|
| Prior to cleaning      | 1.000.000.000                      |
| After cleaning         | 1.000.000                          |
| After disinfection     | 1.000                              |
| After 2nd disinfection | 100                                |

\* Colony forming units (Source: Lohmann Animal Health)

Ways to keep the water lines mechanically clean include the use of pulsed water or with special water lines where the water is constantly in motion and little particles and sediments cannot stick on the walls of the pipes. The other possibility to maintain the hygienic status of the water lines on a high level is to treat the water chemically.

Chlorination

- Eliminates bacteria and many viruses
- Most effective in warm water > 18 °C
- Can affect the potency of medication and vaccines
- Concentrations > 5% can harm metal equipment and gaskets

Chlorine dioxide

- No interactions known with medication
- Improves digestive health of the flock

Organic acids

- Reduce the pH value of the water
- Improve digestive health of the birds
- Single acid application can cause slime formation and block pipelines and nipples. High dosages of single acids can damage water system and also be fatal to the birds
- Organic acids are also a tool to reduce bacterial load in feed

**Caution:** If the pH value of the water drops to a low level, this will have a negative impact on water intake and can have a negative effect on the equipment as well as vaccines and medication.

The water quality has to be checked on a regular basis. If the water is supplied by an own well, make sure that the samples of water are examined at least twice a year. Feed has to always be of best quality. Establishing a quality monitoring program helps to assure and to monitor nutrient content, microbial and mycotoxin contamination. One of the key factors is to store supplements hygienically to avoid contamination during storage. Besides storage, clean feed can also be contaminated during transportation. Therefore, it is important to include trucks into the biosecurity regime. The feed supplier has to be certified and controlled. He should be able to perform heat treatment as a tool of sanitation, although very high temperatures might have an impact on the quality and may reduce the nutrient value of the feed. Retain a sample and bill of each delivery to have traceability in the event of a disease outbreak.

Rodent Control

Rodents are attracted to poultry facilities by feed, water and environmental condi-

tions in the barn. They contaminate poultry facilities with faecal excretions and are major vectors and reservoirs of pathogens; especially Salmonella. Therefore, having an effective vermin control in place is a big advantage. Take expert advice and audit the success of the monitoring program regularly.

New Technical Guide Biosecurity & Hygiene

We are pleased to introduce our latest Technical Guide on "Hygiene and Biosecurity" where all the discussed topics have been compacted for you. The guide is available in English, German and Spanish. Please contact our marketing department: [marketing@ltz.de](mailto:marketing@ltz.de) to place your orders for the same.

Djanet Ould-Ali,  
Technical Service



# Random Sample Test of LOHMANN LSL and Dekalb White

**German Random Sample tests for layers are based on two state-owned testing stations in North Rhine Westphalia and Bavaria. Worldwide, additional testing stations are located in the Czech Republic, North Carolina (USA) and Japan. These tests supply comparable figures of performance and behavior traits which are captured under standardised conditions.**

Therefore, breeding companies provide different strains, depending on the query of the testing stations. The tricky thing in this matter is always that none of the participants knows the results of these comparable tests in advance. However, LOHMANN TIERZUCHT can be very satisfied with the results of the latest tests at Haus Düsse in North Rhine Westphalia. The white layers tested were of LOHMANN LSL and Dekalb White origin. They were housed in small aviaries for a production period of 364 days. In total, 252 layers of each strain were housed in seven compartments with 36 layers each. Due to the request of the testing stations, all layers were hatched in the same hatchery, reared together and transferred into the production units at 18 weeks of age under the same feeding and light regime.

The average laying performances in a production cycle of 364 days were above 91 %, thus very good for both strains. However, high mortality rates of Dekalb layers diminished egg numbers per hen housed (HH). The average egg number per HH was 331 for LSL hens which is 12 eggs more than the average for Dekalb hens. Despite the higher egg weight for Dekalb layers, the total egg mass production per HH was 0.5 kg lesser in Dekalb layers as compared to LSL layers. The feed intake was also higher for Dekalb layers. The calculated feed intake was at around 113 g for the LSL hens on a daily basis. In regard to 1 kg of egg mass produced, one LSL layer consumed an average of 1.99 kg of feed, whereas one Dekalb layer consumed 2.11 kg. With a purchase price of 30.69 €/dt of feed, the difference calculated in feed in-

take results in a difference of 0.25 € per HD. The surplus calculated over feed costs was 13.74 € for each LSL layer and 12.91 € for a single Dekalb layer. With these results, the LSL flock is significantly superior to the Dekalb flock.

**High egg numbers, low mortality and the very good feed conversion ratio of LSL layers not only provide satisfaction for the farmer but they are economically interesting as well. Over the total production period of one year, these very good performances result in a surplus over feed costs of 0.83 € for LSL layers as compared to Dekalb hens!**

Dr. Wiebke Icken and  
Dr. Matthias Schmutz  
Genetics

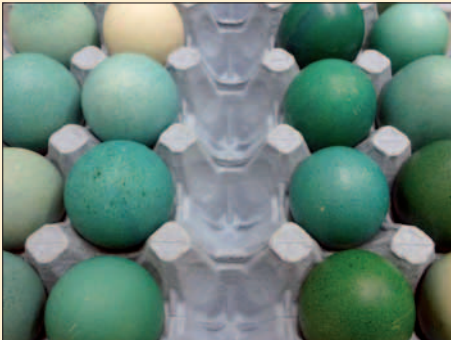


It is probably not uppermost in your mind when you dye eggs for Easter that you are depending on an invisible structure called the cuticle being present.

The amount of change in colour you see depends on how much cuticle is present on the egg. Having colourful Easter eggs is good news, but more importantly the cuticle prevents bacteria entering the egg. This reduces the chance bacteria can reach the developing chick if the egg is fertile and keeps the eggs we eat safe.

With industry we are developing tools which are more practical, although less colourful, to measure the amount of cuticle on an egg. This will allow genetic selection to improve the cuticle and improve biosecurity for poultry.

Ian Dunn Ph.D



Photos courtesy of (l-r): Ms. Hannah Dunn, Mr. Ian Dunn, Ms. Norrie Russell

Table 1. Performance traits for white layers.

| Strain                    | LSL    | Dekalb |
|---------------------------|--------|--------|
| <b>Performances</b>       |        |        |
| Egg number/HH             | 330.7* | 318.6* |
| Egg number/HD             | 333.9  | 333.0  |
| Laying performance/HD [%] | 91.7   | 91.5   |
| Average egg weight [g]    | 63.4   | 64.1   |
| Egg mass/HH [kg]          | 20.9   | 20.4   |
| Egg mass/HD [kg]          | 21.2   | 21.4   |
| <b>Feed intake</b>        |        |        |
| per hen and day [g]       | 112.8* | 115.2* |
| per egg                   | 123.1  | 125.8  |
| per kg egg mass [kg]      | 1.938  | 1.964  |
| per HD [kg]               | 41.1*  | 41.9*  |
| <b>Mortality [%]</b>      |        |        |
|                           | 2.4    | 8.4    |

\* significantly different at p=0.05

Quelle: Hof&Feld, LZ 8-2014: 39-41

HH= hen housed; HD= hen day

Table 2. Differences in LSL and Dekalb White layers; Surplus over feed costs.

| Strain                           | LSL    | Dekalb |
|----------------------------------|--------|--------|
| <b>Performances</b>              |        |        |
| Egg number/HH                    | 330.7  | 318.6  |
| Egg mass/HH [kg]                 | 20.9   | 20.4   |
| Purchase in price of kg feed [€] | 0.3069 | 0.3069 |
| Revenues from egg sales/HH [€]   | 26.35  | 25.77  |
| Feed intake/HD [kg]              | 41.10  | 41.90  |
| Feed costs/HD [€]                | 12.61  | 12.86  |
| Surplus over feed costs [€]      | 13.74  | 12.91  |

**Difference 0.83 €**



# In the footsteps of Mozart ... the 51<sup>st</sup> Franchise Distributor Meeting in Salzburg

**The 51<sup>st</sup> Franchise Distributor Meeting was held in the beautiful city of Salzburg in Austria from 30<sup>th</sup> September to 2<sup>nd</sup> October 2013.**

With over 280 guests from 34 countries, this international event was well repre-

sented and attended. The theme for this event was "Management & the Latest Innovations at LTZ". The first day was officially opened by Javier Ramírez, Managing Director of LTZ with a multifaceted presentation of photos of layers worldwide. His intention was to make clear that there

are already many factors in the rearing of pullets which have an influence on the later success of egg production. This was followed by a presentation by Dr. Michael Lüke (LTZ) with the focus on economics in egg production. He concluded that you have to take targeted feeding

into consideration for performance and egg quality. The technical service team of LTZ will continue to assist our customers by capturing and analysing biological and economic data thereby offering our customers a 360-degree service and supporting them even more.

In his presentation "Trouble Shooting", Dr. Hans-Heinrich Thiele (LTZ) spoke about locating and solving problems on the farms and illustrated this by two frequently occurring deficits: low egg weight at the beginning of the laying period and a light body weight (both in comparison to the standard). In his presentation, Farhad Mozafar (LTZ) reported about the current situation of egg production in the countries of Iran and Afghanistan. The support in plan-

ning and implementation of special projects by LTZ was shown in these examples. Prof. Dr. Rudolf Preisinger (LTZ) made a presentation on "Where is the biological limit". He emphasised that LTZ aims to achieve a continuous increase of the performance period which is directly related to egg quality and shell strength.

On the second day, the spotlight turned on the host country: "The sales and distribution of chicks and organic eggs in Austria" was the subject of the presentations by Walter Schroppe (Schroppe GmbH) and Manfred Söllradl (Geflügel GmbH). This was followed by an interesting presentation of the in-Ovo sexing with the possibilities of Endocrinological sex determination (Prof. Dr. Almuth Einspanier, Leipzig)

and the Spectroscopic sex determination (Priv.-Doz. Dr. rer. Nat. Hab. Gerald Steiner, Dresden). After this, there was an interesting panel discussion followed on the topic of "animal welfare" and the alternatives for euthanising male chickens were lively discussed.

A tour of Geflügel GmbH's facility in Kremsmünster with 7000 hens in floor-housing (winter garden) and organic broilers was part of the all-day trip to the Salzkammergut on the third day.

Owing to the active participation of our customers, this Franchise Distributor Meeting was a great success and the team of LOHMANN is already looking forward to the 52<sup>nd</sup> Franchise Distributor Meeting.

Stella Schnor, Marketing







# New business opportunities in Vietnam



MANN TIERZUCHT hosted the delegation for 2 days in Cuxhaven, and presented the company and its stringent biosecurity measures and practices. Michael B. Seidel, Sales Director of LTZ visited the Director General Dr PHAM VAN DONG in Hanoi prior to the fair who has confirmed that the agreement is now in place and supplies of Day Old Chicks from Germany is now possible.

**Vietnam is the easternmost country on the Indo China Peninsula in South East Asia. In the past two decades the country has undergone a very rapid developments and it is the one of the fastest growing economies in the world.**

Prior to the show in November 2013, a group of high ranking delegation from the Vietnam's Department of Animal Health, has visited Germany to evaluate the biosecurity status, measures and working on a discussion to an agreed Health Certificate between Germany and Vietnam. LOH-

Overall, the show has been quite a success as new contacts from the major players in the Vietnam's egg industry has been established and we are looking forward to a strong market presence in Vietnam.

Dr. Ling Ling Chuah,  
Area Sales Manager

The country has a population of 87.8 million people and therefore it is even more populated than Germany with 80.5 million people. As is most of the Asian countries the population continues to grow and the country has a young population with an average age of 28 years old. Egg Consumption is only 70 eggs per capita and expected to increase from year to year parallel to the economic progress.



Michael B. Seidel, Sales Director of LTZ was being interviewed by Tran Thi Thanh Tuy the anchorwoman for VTC 10 (Vietnam local media)



Our esteemed guest, Mr. Junairi Sungkono from Japfa Comfeed Vietnam and Michael B. Seidel

The major cities in Vietnam are Hanoi in the northern region, Danang in the central region and Ho Chi Minh City or formerly known as Saigon in the southern region. The poultry production activities are focused mainly in the southern region.

The recent "International Livestock, Dairy, Meat Processing and Aquaculture Exposition/ ILDEX" in Ho Chi Minh City was participated for the second time by LOHMANN TIERZUCHT. Despite still being a small show but it is an important one in Vietnam. Ildex Fair provides good opportunities for LOHMANN TIERZUCHT to establish new contacts and prepare the base for strong market presence in this important South East Asian country, VIETNAM.



A group of high ranking delegation from the Vietnam's Department of Animal Health visited LTZ in December 2013



# Investment into the future: New Lohmann pedigree farm in Canada

In order to keep LTZ in the leadership position amongst other breeding companies, LOHMANN TIERZUCHT has invested in the construction of a new state of the art breeding farm in Canada.

With the expansion of its breeding stocks and the intensive performance test in single cages which comes with it, another milestone in breeding progress has been achieved. The land area of 25 hectares offers the great advantage of not having any other poultry farms next to ours.

The experience gained in construction projects of the past have greatly influenced the planning and construction of this farm. Only the latest standards were used in terms of technical equipment. The new farm has a capacity of 30,000 places and is therefore a substantial component of the future-oriented breeding work at LTZ.

The photos show the different stages of construction – which began in January 2013 until today. The official opening ceremony will take place in September 2014.

Wolfgang Gottschalk, Production and  
Stella Schnor, Marketing



## Calendar

### Canadian Egg Board

15<sup>th</sup> – 17<sup>th</sup> June 2014

Canada, Toronto

### The XIV European Poultry Conference

23<sup>th</sup> – 27<sup>th</sup> June 2014

Norway, Stavanger

### SPACE

9<sup>th</sup> – 12<sup>th</sup> September 2014

France, Toulouse

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**Editor:** LOHMANN TIERZUCHT GmbH

Am Seedeich 9 – 11 · 27472 Cuxhaven (Germany)

P.O. Box 460 · 27454 Cuxhaven (Germany)

Phone +49 (0)47 21 - 505 - 0 · Telefax +49 (0) 4721 - 505 - 222

Email: [Info@ltz.de](mailto:Info@ltz.de) · [www.ltz.de](http://www.ltz.de)

**Responsible:** Stella Schnor ([schnor@ltz.de](mailto:schnor@ltz.de))

**Editorial collaboration:** Javier Ramirez, Dr. Martin Barz, Dr. Matthias Voss, Niels Fischer, Dr. Sohail Habbib Syed, Dr. Wiebke Icken, Dr. Matthias Schmutz, Djanet Ould-Ali, Michael B. Seidel, Dr. Ling Ling Chuah, Wolfgang Gottschalk, Ron Eek and Stella Schnor

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