POULTRY NEWS

1/2019

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LOHMANN celebrates Franchise Distributor Meeting on the high seas

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New age of selection

LOHMANN TIERZUCHT

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One boat – one team – navigate to success

That was the motto of last year's Franchise Distributor Meeting on the high seas. Of course, there is some insight into this conference in a rather unusual place in this issue. But an unusual place is not an obstacle to success, but rather a challenge – and we are known to like challenges and accepting them successfully.

This is demonstrated also by annually recurring training events in Cuxhaven, like the LOHMANN School and the LOHMANN Hatchery Course. However, our training concepts also work directly on site: so to speak on the doorstep of our customers worldwide. With our network of employees around the world, we organise seminars in each region and provide the same technical, expert know-how as at our classic schools. A concept that pays off for both parties. If our customers have sufficient knowledge of our birds and good management requirements, they can achieve the desired performance goals. But where does the know-how passed on by our experts come from? Their expertise is based on sound knowledge, but also and especially, on the many years of continuously exchanging experiences with our customers. This is an aspect devoted particular attention in our training courses. Certain processes are discussed in detail and optimisation measures and solutions can be found together. A win-win situation for both sides. We are experts because you are, we succeed because you do.

One team - an important condition to make these events successful for all parties. A team that consists of different fields of knowledge and that cooperates well. A large and important part of this global team, especially in connection with our training sessions, is the Technical Service department. The working strategy here is very clear: to be present always and everywhere. This edition offers some fine examples of this concept. In order to guarantee this strategy in combination with expert knowledge in the long run, we are constantly expanding the technical service team and are happy to introduce another two new members in this issue, for the areas of nutrition and flock management.

Of course, it is not only manpower that is crucial, but equally the constant development of the performance of our breeds. The cover story "New age of selection" shows a part of this progress. That is the only way we can turn new challenges, like alternative management systems in combination with the increasing importance of animal welfare, into opportunities as shown in our column "one challenge – one opportunity".

I hope I have made you curious and that you will enjoy reading the latest issue of our Poultry News!

Kind regards,
Javier Ramírez Villaescusa, Managing Director

Javier Ramírez Villaescusa

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PROGRESS IN GENETICS
NEW AGE OF SELECTION

LOHMANN TIERZUCHT continues to invest in the infrastructure of the breeding programme. Following the construction of a new, state of the art breeding farm in Canada in 2013 and 2014 and the complete renovation of a former parentstock farm of Spanish distributor IBERTEC into a breeding farm, the next step for expansion was the development of a new location in Scotland.

New location in Scotland

A plot of land was purchased two years ago (shortly before the Brexit referendum) not far from the city of Perth, about one hour by car north of Edinburgh. The site was earmarked for the construction of a new breeding farm from scratch. The capacity is approximately 26,000 females and 5,000 males. The first birds were housed in May 2018 and a new team successfully started genetic registration work. With the expansion of the pure line testing capacity, higher selection intensity and greater accuracy in the selection decisions based on genomic information, the rate of genetic gain is expected to further increase.

Safeguarding future genetic progress

This huge investment in the growth of the breeding programme and expansion of the testing capacity is a big step towards safeguarding the future developments of genetic progress. The increased economic merit in the pure line population will be transferred down the breeding pyramid to grandparents, parents and commercial laying hens. Of course, the breeding goals need to be defined as closely as possible to the needs of commercial egg producers. For this reason, the LOHMANN team maintains very close contact with customers to observe market needs and identify fields for further improvement of our birds. Due to this close collaboration, LOHMANN layers continue to gain a market share in many countries around the globe.

Selection priorities

- **Persistency:** the persistency of lay is the economically most important trait. The productive life of the flocks has increased in the past ten years by approximately five weeks, this means one more week of age every two years before flocks go to slaughter.
- **Shell strength:** this longer life of the flocks can only be achieved if the eggs produced at an older age are still suitable for grading, without too many cracked/broken eggs.
- **No later start of lay:** maintain and slightly increase the sexual maturity
- **Livability**
- **Nesting behaviour**

New equipment for floor testing

In cooperation with "Big Dutchman", a new version of the Weihenstephan funnel nest box was developed. After 10 years of experience with the proven layout, the status of the technological component was brought up-to-date. An additional house at a breeding farm in the Cuxhaven region was equipped with this revised version, and the first results are available for the selection.

Big is beautiful - update on body weight recommendations in rearing of LOHMANN commercial layers

The LOHMANN body weight standards for the rearing period of commercial hens have remained unchanged for a very long time. Other than the performance standards for the laying performance, there is no genetic progress in the body weight that needs to be adjusted in an updated standard. However, the management recommendations in the guides need to be periodically reviewed to ensure they are still current in a changing environment.

Body weight growth during rearing is a process that must focus on preparing the birds to fulfill their high genetic potential of a really high egg mass output in the laying cycle. This egg mass production has increased in the past years through a higher peak, a prolonged productive life and a more challenging environment for the birds, especially in the cage-free world. For this reason, the birds need to be better prepared for the challenging laying cycle by a better body weight. As the reproductive organs already start developing at 15 weeks of age, feed restriction after this age has a clearly negative impact on the performance potential of the hen. Any feed restriction, especially after 15 weeks of age, should be avoided. If flocks are overweight before 15 weeks of age, common practice is still often to bring them back to "target" weight or try to limit any further increase in overweight by restrictions in feeding time or feeding space, for example. To avoid this, and to stimulate better growth at the end of rearing, it was decided to increase the body weight standards.

This increased body weight standard has already been implemented for the LSL LITE management programme. It will be published and implemented for all other breeds in the management guides in early 2019.

It must be explicitly understood that this increase does not reflect a genetic change in the birds: it is solely a change and update in the management recommendations. The basis for this update was a review of body weight results from field data, showing a clear performance advantage, lower mortality and better feather cover in flocks with a reasonable "overweight" of 50 – 100 g above the old body weight recommendations.

Please note that, together with this update of the body weight standards, we will also change the recommendations for the lighting programme. The old version with a light stimulation at 19 weeks of age is outdated and stimulation is too late. To achieve a good start of lay, it is no problem for a well-developed pullet to be stimulated at 17 weeks of age with a body weight of approx. 1250 g.

Table: Comparison of old and new body weight standard LSL LITE

	Average Body Weight in g		
Week	LOHMANN LSL LITE old	LOHMANN LSL LITE new	Difference old / new
6	425	425	**0**
8	618	635	**+17**
10	802	825	**+23**
12	950	959	**+9**
14	1065	1084	**+19**
16	1160	1200	**+40**
18	1257	1306	**+49**
20	1375	1405	**+30**
22	1474	1497	**+23**
24	1553	1575	**+22**
26	1610	1628	**+18**
28	1640	1645	**+5**
30	1647	1651	**+4**

Conclusions

High investments in the breeding programme have been made to maintain the leading position of LTZ in the global layer genetic market. New breeding farms and further development of the genomic evaluation are the foundation of future development. Investments in additional cage and floor testing capacity have been made to increase the accuracy and relevancy of the testing results for an actual improvement of the birds' performance profile. There is a complete focus on efficient egg production and robust birds, able to adapt to the wide range of different environments in the egg production world.

Dr. Matthias Schmutz

VETERINARY LABORATORY

The LOHMANN VETERINARY LABORATORY has a proud track record extending over several decades, celebrating its 60th anniversary this year.

The Veterinary Laboratory was initially established to maintain the health of own breeding stock, but it soon turned out just how important veterinary "after-sales service" is for customers. The Laboratory employs highly qualified, specialist poultry veterinarians, who ensure that appropriate, practical measures are taken in a timely manner following careful diagnosis.

The team at the Cuxhaven location comprises laboratory technicians, 3 specialist poultry veterinarians and a biologist. The Animal Health, Veterinary and Hygiene & Diagnostics services provided by the Veterinary Laboratory are available to all national and international LOHMANN customers. Examples include:

- Recommendations of vaccination programmes for LOHMANN customers
- Development of vaccination programmes for LOHMANN flocks
- Consultancy services as part of technical services for international customers
- Hygiene monitoring
- Infection status analyses of farms
- Proof of efficacy of cleaning and disinfection measures
- Assurance of optimum husbandry and production conditions

The Veterinary Laboratory is state-accredited under ISO/IEC 17025:2005. This ensures compliance with the most stringent quality standards and technical competence in performing all diagnostic investigations.

Comprehensive diagnostics

The Veterinary Laboratory provides a wide range of diagnostic solutions from different areas. Samples are received from customers all over the world.

Bacteriology

The detection and typing of salmonella is a core objective of bacteriological investigations as part of zoonosis control programmes. Comprehensive further investigation methods are required for state-of-the-art hygiene monitoring.

Classic pathogen isolation is used where the pathogens affecting diseased flocks need to be precisely identified and resistance profiles developed for antimicrobial therapy. Additional serological or molecular biological methods allow the various strains to be accurately differentiated and thus support epidemiological information that may be important in using the relevant pathogens for the production of flock-specific vaccines.

Serology

Serological investigations are conducted both to detect antibodies for identifying infections in flocks and to verify the efficiency of vaccination programmes. Optimised serological test methods are used in keeping with the given pathogen type and question at hand. Methods such as rapid serum agglutination (RSA), the agar gel precipitation test (AGP) and ELISA (enzyme-linked immunosorbent assay) are employed to detect antibodies against certain types of pathogens.

Haemagglutination inhibition tests (HAI) and virus neutralisation tests (VNT) additionally allow antibodies against various pathogen serotypes or subtypes (for example infectious bronchitis or avian influenza) to be differentiated. The use of immunofluorescence assists in clarifying other types of specialised questions.

Virology

While molecular biological methods cover a wide range of issues arising in virological diagnostics, they cannot replace classic methods of virus isolation in embryonated chicken eggs or cell culture systems. The Veterinary Laboratory of LOHMANN TIERZUCHT continues to provide these methods, which form the basis for isolating viruses for producing flock-specific vaccines against avian reoviruses or adenoviruses or the infectious bronchitis virus, among others.

Molecular biology

Molecular biological methods such as PCR (polymerase chain reaction) form an essential part of veterinary diagnostics, above all for poultry. Modern real-time PCR, for example, ensures that the potential involvement of avian influenza viruses in acute disease events can be clarified within a matter of hours, and the method has thus become an indispensable part of disease control. While the detection of antibodies can only provide retrospective information on disease events in flocks, PCR allows the current health status in flocks to be determined, for example with regard to mycoplasmas. PCR as well as subsequent sequencing, if required, additionally facilitate the speedy identification of infectious bronchitis virus strains or the determination of virulence factors in E. coli strains.

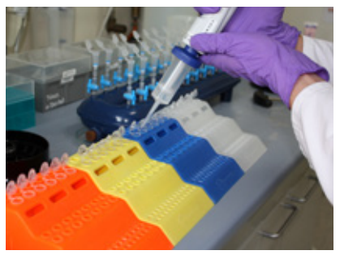
Sampling

can be performed using a variety of carriers and media, which the laboratory is able to recommend to customers on an individual basis.

Research & Development

The Veterinary Laboratory has conducted research and development projects on identifying and controlling new poultry diseases for many years. It also collaborates closely with national and international universities. The Veterinary Laboratory regularly participates in inter-laboratory proficiency tests in all areas of diagnostics and engages in research projects in collaboration with the genetics department.

Sandra Tietjen



STEADY GROWTH OF THE TECHNICAL SERVICE TEAM

Feeding & Nutrition / Flock Management – two important fields worthy of expansion

Our technical service team has been joined by another two new members, this time for two fields. We are very pleased to welcome Mr Juan Valle Diez for the field of feeding and nutrition, and Mr Mark Allen as a new expert on flock management.

JUAN VALLE DIEZ

Mr Juan Valle Diez has a master degree in industrial risk prevention, in quality in the agrifood industry and a bachelor degree in organic chemistry and biochemistry.

With more than 15 years of work experience in feeding and nutrition in broiler and layer integration companies and in additive premix companies, Mr Valle Diez will cover the support to ELD and ILD companies as Feeding and Nutrition Technical Service.

MARK ALLEN

Mr Allen brings more than 20 years of professional experience. He has worked as a poultry consultant and bio-security technician, a field support manager and a consultant in the poultry and veterinary sector mostly for cage-free housing systems. His field of activity within the technical service team will concentrate on flock management in alternative egg production systems.

We are certain that our two new colleagues will strengthen the technical service team in the best way possible to further improve our excellent after-sales-service.

Marketing

UPDATE TECHNICAL TOOLS

Our new section "Update Technical Tools", will inform you about digital innovations that should make your life easier.

Update Internet presence:

As of now, our new LOHMANN Hatchery e-guide is online on our website, as announced at the Franchise Distributor Meeting. "INCUBATION UNDER CONTROL". The guide includes short films on the subject of hatcheries and explanations of individual technical terms are displayed via pop-up windows.

Also available on the website is the revised MANAGEMENT E-GUIDE LAYERS "CAGE HOUSING", with updated data.

To consult the new e-guides, visit our website www.ltz.de and click the banner of the guide that interests you.

The NEW E-GUIDE

Do not forget!

INTERNAL

One Boat – One Team Navigate to Success

LOHMANN celebrates its 57th FRANCHISE DISTRIBUTOR MEETING on the high seas

A mini-cruise with one of the largest motor cruisers in the world - an unusual venue for a conference? Not for LOHMANN. This year, we invited our customers and business partners to our four-day FRANCHISE DISTRIBUTOR MEETING Cruise Tour. Starting in Nice our journey took us along the French and Italian Mediterranean coast including visits to the beautiful cities of Livorno, Florence and Portofino.

One boat - one team – navigate to success

This was the motto of the tour and the first day of the seminar made our course for success clear. Success means development - reaching new horizons. In this sense, the LOHMANN team presented our new management recommendations. Being successful does not mean ignoring new developments but "exploring new seas" –the global subject of the second part of the day. The LOHMANN experts looked at the different aspects of alternative housing systems, one of the main developments in the poultry industry and not only in Europe.

Set sail for new inspiration

The second seminar day "set sail for new inspiration". The start was made by Dr Matthias Schmutz (chief geneticist LTZ) and Jörg Heier (director of global production LTZ), who presented internal innovations and new projects to be realised by LOHMANN.

This was followed by interesting contributions on innovative projects in the poultry industry by Mr Jörg Hurlin (EW Group), Will van der Heijden (Cooperative DEP), Marta Miguel (Institute of Food Science Research) and Prof. Mario Díaz (University of Oviedo).

Italian culture

Being in wonderful Italy, we could not afford to miss the opportunity to taste a little culture or just enjoy the beautiful scenery. Accordingly, we also prepared a varied leisure programme for our guests. A visit to the Tuscan capital Florence is an absolute must and Portofino and Genoa also offered many opportunities to relax and to breathe the Italian air.

The 56th FRANCHISE DISTRIBUTOR MEETING was an eventful meeting of a different kind. We hope that our customers and business partners enjoyed our cruise as much as the entire LOHMANN team did. We thank all the participants for being our guests!

Marketing

INTERNAL

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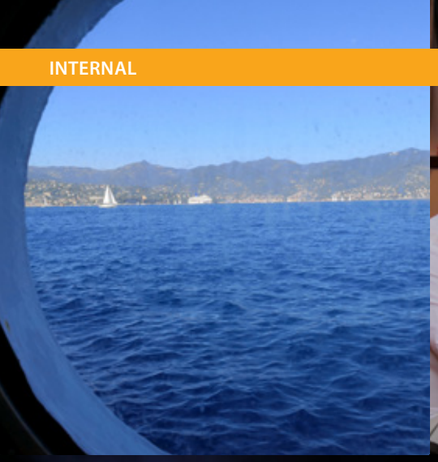




















LOHMANN SCHOOL IN CUXHAVEN!

For every market the right egg, for every management system the right hen and for every customer the right training

Established expertise, practical orientation and individual advice – these are the key factors of our LOHMANN SCHOOL. This special training programme is held once a year for our customers from all over the world. The great success and enormous popularity of this event was reflected in this year's record-breaking number of 49 participants from around 21 countries. It is the combination of informative presentations from our experts and the exchange of experience in a friendly and relaxed atmosphere that makes this training so special.

We always try to cover all interesting aspects for our customers. Starting with a general overview of our company itself, we offer special insights into different topics like genetics, nutrition, housing and brooding, hatching egg handling etc. Particular attention is also paid to vaccination and important diseases as well as to biosecurity and hygiene at poultry farms. The range of topics seems to be infinitely long, but we always try to prepare the most important subjects. As speeches are held by our own experts, we are always willing and able to offer a spontaneous deeper insight into topics which are of special interest to the participants.

Those who learn a lot also need to have a chance to relax and process the information. Therefore, of course, the culinary and cultural programme is an integral part of the programme. This year, we offered the participants a tour around Cuxhaven harbour to get a taste of the North Sea air and of course, due to the soccer world championship, public viewing was an item on our agenda too.

We would like to thank all our customers for their participation and interest which makes this event incomparable every year.

Marketing

LOHMANN HATCHERY COURSE

Highly international character

Our HATCHERY COURSE cannot be missed on the LOHMANN annual calendar. This very practice-oriented training seminar, with a focus on hatchery management, always enjoys great popularity and we cannot complain about a lack of participation at any of our events.

Two groups trained in parallel

This time, we made every possible effort to accommodate each participant, and for the first time there were even two groups trained in parallel: a Russian and an international group. We welcomed a huge number of participants: 19 guests from Russia and 20 "international" participants coming from Germany, Nepal, Saudi Arabia, the Netherlands, Finland, Indonesia, Serbia and even Brazil. The programme was staggered for both groups so that everyone could work on the same lectures.

Speakers

In addition to our own experts, who are of course well versed in the matter, we were also able to welcome guest speakers from companies Pas Reform, EMTech and Petersime.

Thank you!

We think that once again we found the right mix of interesting topics and will continue the good tradition of the Hatchery Course next year as well. We thank all our customers who use this opportunity to train their own staff and thus make the handling of our breed a sure success.

Marketing

VIV EUROPE

unthinkable without the participation of LOHMANN TIERZUCHT

VIV Europe is the World Expo based on the 'Feed to Food' principle. Organised every four years (this year from 20 – 22 June), VIV Europe offers a global, multi-species event with a strong focus on the production and processing of poultry meat and eggs as well as the pig sector, dairy and veal production and fish.

For every management system the right hen, for every market the right egg

Our LOHMANN staff were very pleased to welcome many customers from all over the world to our stand. Our strength lies in our close collaborations and by working hard we make our brand even more successful. In order to meet our customers' demands, our genetic lines fit every imaginable market.

Spanish flair in Utrecht rounds off exhibition days

As a highlight during the fair, we offered our customers a special opportunity to get together and share experiences. In the late afternoons on two exhibition days we brought a touch of Spanish flair to our stand, offering visitors some original Spanish jamón ibérico (Iberico ham) prepared by a dedicated professional cortador de jamón (ham cutter) – rounded off with a good glass of Spanish red wine, of course! So on both evenings, the LOHMANN TIERZUCHT team was able to bring a long day to a relaxing close in the company of customers and visitors.

Our participation at the exhibition was a resounding success and we would like to express our gratitude for everyone's visit and hope to meet again in the near future.

Your team at LOHMANN TIERZUCHT

WORK STRATEGY OF LOHMANN TECHNICAL SERVICE TEAM: BEING PRESENT EVERYWHERE

In line with this strategy, the LOHMANN Sales & Service Team has been present at different events - ranging from trade exhibitions to supporting the technical teams of our distributors, giving technical talks to commercial customers, as well as presentations at various symposiums and national and international seminars.

FOR EVERY MARKET THE RIGHT EGG, FOR EVERY MANAGEMENT SYSTEM THE RIGHT HEN AND FOR EVERY ENVIRONMENT THE RIGHT TRAINING!

Established expertise | Practical orientation | Individual advice

April 8th–12th 2019

LOHMANN SCHOOL 2019 in Cuxhaven

August 5th–9th 2019

LOHMANN HATCHERY COURSE 2019 in Cuxhaven

November 9th–14th 2019

57th FRANCHISE DISTRIBUTOR MEETING in Cancun, Mexico

STRONG PRESENCE IN LATIN AMERICA

Participation of LOHMANN and customers at various events in Latin America

Argentina

Cabaña Camila, one of our distributors in Argentina, organised meetings and lectures for its customers in two different and important regions of egg production in Argentina. The meetings were held in Salta and San Miguel de Tucuman, two cities in the historical north west region of Argentina. The two events were attended by approximately 85 people.

At the beginning of each meeting, Mr Jaime Saponare and Mr Victor Gonzalez talked about Cabaña Camila and presented a very well-made corporate film to the customers. Matheus Alves´ presentation was about "Critical Points of Management in Rearing and Production" while Marcelo Carceres, who is a nutritionist and consultant in Argentina, gave a presentation about "Nutritional Strategies for Production Cycles up to 100 Weeks".

It was an important opportunity to exchange ideas and experiences and created chance to increase the company's presence and customer intimacy.

Costa Rica

In San Jose (Costa Rica), LOHMANN TIERZUCHT and Incubatica - Avícola Pozos (distributor of LOHMANN layers) were present at the "XV Jornada Avícola Nacional" ("XV National Poultry Seminar") under the slogan "Resilience in Poultry Production". It was a very interesting event with high participation from egg and broiler producers as well as technical and commercial representatives of companies that supply the poultry market.

The poultry topics were on health, nutrition, management and industrial processing. Matheus Alves participated with a presentation titled "Rearing Management to Optimise Layer Performance". It was discussed about the importance of, the rearing period to achieve the maximum production potential of layers and excellent financial results from the flock.

Incubatica - Avícola Pozos had a stand at the event, where we could welcome and talk with the customers. We would like to congratulate Incubatica - Avícola Pozos and the organisers on the event.

Matheus Alves

SALTA

SAN MIGUEL DE TUCUMAN

SUPPORT FOR LOHMANN DISTRIBUTOR PRONAVICOLA COLOMBIA

Pronavicola - Festavi 2018 Congress and annual meeting

One example was the support provided to our distributor in Colombia – PRONAVICOLA - at the XIX National Poultry Congress of the National Federation of Aviculturists of Colombia (FENAVI). On that occasion, PRONAVICOLA carried out in parallel its annual meeting with its commercial technical team. We were invited to participate in a dual role as part of the audience and as an exhibitor. Within the framework of the FENAVI 2018 Congress, PRONAVICOLA participated as a gold sponsor and had a stand in a privileged location where we participated in formal and informal meetings throughout the event.

The event was held at the CENFER Convention Center in Bucaramanga, Santander, an area recognised for its high poultry development in laying hens and meat poultry. It was an ideal platform to share the current issues in Colombian poultry farming, as well as in Latin America, which form part of the economic and social development of all countries in the region.

Braulio J. Ruiz Poblete

ONE-STOP STAND AT THE ETHIOPEX EXHIBITION IN ETHIOPIA

Facts & Figures

Ethiopia is situated in the Horn of Africa. It shares borders with Eritrea to the north, Djibouti to the north east, Somalia to the east, Sudan and South Sudan to the west, and Kenya to the south. With over 102 million inhabitants Ethiopia is the most populous landlocked country in the world and the second-most populous nation on the African continent.

Poultry and eggs

Poultry production in Ethiopia is at a rudimentary stage of development. The latest estimate of the poultry population in Ethiopia is over 60 million, of which indigenous chickens comprise about 94.33% (CSA, 2016). The remaining birds are crosses and exotic chickens owned by improved family-run poultry and commercial farms respectively. Egg consumption in Ethiopia stands at 0.5 kg per capita per year, while neighbouring Kenya has an annual consumption rate of 1.9 kg per capita. The African average is 2.3 kg, 9.2 kg for Asia, 11.4 kg for the Americas and 12.7 kg for Europe. The global average is 8.9 kg.

Ethiopex

Nevertheless, the resources and comparative advantages of poultry development are very high. The Government of Ethiopia, in recognition of this, has placed an emphasis on poultry and set huge development targets. Part of this action plan was the poultry exhibition Ethiopex in Addis Abeba held on 18-21 October 2018. LOHMANN and Aviagen as well as Big Dutchman shared a stand at this exhibition in order to give interested poultry farmers a "one stop" shop to obtain all the necessary information. The stand was a big success, numerous small-scale farmers, but also managers and owners of farms with 70,000 and more layers, seized the opportunity for technical discussions. With one of the biggest and most professional farms in Ethiopia, Alema Farms in Debre Zeid, already a strong partner who received their newest parent stock flock during the show, the future for LOHMANN lines in Ethiopia looks bright.

Viola Holik

HUMANE SOCIETY INTERNATIONAL SEMINAR, SURABAYA, INDONESIA

Cage-free egg production - new concept in Asia

Cage-free egg production has been practiced for decades and is not something new in Europe or in other western countries in the world. However, in Asia this concept is still new but gaining in popularity due to increased awareness about animal welfare and in particular about the living conditions of laying hens in the cage system. In south east Asia, major companies such as Charoen Pokphand Foods, Betagro of Thailand, San Miguel Corporation and Bounty Fresh of the Philippines have started to implement cage-free production in their operations to fulfil this growing demand as more and more companies like Accor Hotels, Compass Group, Sodexo and Unilever Group are committing to 100 percent cage-free egg supply chains.

First technical workshop on cage-free egg production

Humane Society International (HSI), in cooperation with the Indonesian Veterinary Medical Association (IVMA), recently hosted south east Asia's first technical workshop on cage-free egg production on 3 September 2018 in Surabaya, Indonesia. It was attended by more than 80 participants including egg producers, government officials and academics specialising in animal husbandry and veterinary sciences from Indonesia, Thailand and Malaysia. It also brought together food industry leaders, technical specialists, egg producers, academics and poultry equipment manufacturers to share their experiences and provide technical advice on successfully implementing cage-free egg production systems in south east Asia.

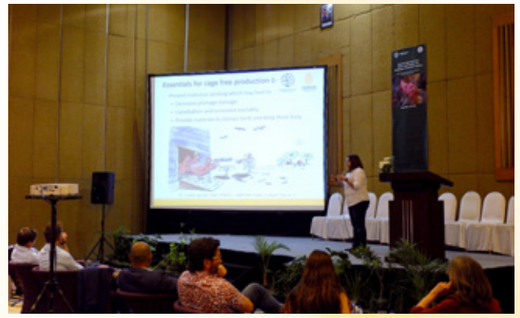
Speakers from various organisations like Sodexo, LOHMANN TIERZUCHT, Big Dutchman, Humane Farm Animal Care and Potato Head Family contributed. Their presentations covered topics such as the south east Asian market trends for cage-free products, the scientific basis to support cage-free egg production, and also technical aspects on the successful management of cage-free layer flocks. The standards and criteria required for animal welfare certification and cage-free corporate social responsibility procurement policies were also discussed in depth, and also how the Humane Society International is involved to help producers transition from cage production to cage-free production systems.

LOHMANN – technical know-how

LOHMANN TIERZUCHT, represented by Mr Ron Eek, the Regional Area Manager for Asia, and Ling Ling Chuah shared with the audience how our breeds, in particular LOHMANN BROWN layers and LOHMANN LSL CLASSIC commercial layers, are adapted to the cage-free system and how our breeds perform better in this new system. Laying performance results in both conventional systems and cage-free systems were compared and tips on how to rear the pullets for good performance were discussed. Our birds were shown to be highly adaptable, docile and robust with excellent performances due to the consistent and excellent selection performed by our geneticists throughout the years.

The event was a success and we were proud to be able to contribute our technical know-how to enable producers to make a successful and profitable transition.

Ling Ling Chuah



EXCEPTIONAL GROWTH IN PERU! EXPANSION OF REPRODUCTORAS ROMA HATCHERY

Our customer Reproductoras Roma from Peru has recently doubled the incubation capacity of its hatchery. Reproductoras Roma produces LOHMANN day-old chicks that are only intended for Avivel (Mr Raul Velit) and Diano Marina (Mr Atilio Garibaldi). The production of day-old chicks from LOHMANN is only intended for Avivel and Diano Marina. Expansion at Avivel and Diano Marina and the necessity of larger flocks of LOHMANN BROWN layers for the automated layer houses, meant that the incubation capacity of Reproductoras Roma´s hatchery also had to be increased. We are happy with the growth of the company and would like to congratulate them on another goal achieved!

Matheus Alves

INTERNATIONAL POULTRY SYMPOSIUM (IPS) IN NEPAL

The International Poultry Symposium 2018, held from 28-30-October-2018, was jointly organised by the Faculty of Animal Science, Veterinary Science and Fisheries, the Agricultural and Forest University and the Ministry of Livestock Development, Food and Agriculture in Nepal, Nepal Agricultural Research Council, Michigan State University, USA, Food and Agriculture Organization of the United Nations, the University Grant Commission and other international organisations. LOHMANN was one of the major sponsors of the event.

As chair of the organising committee of the IPS, Prof. Sharada Thapaliya, Dean of the Faculty of Veterinary Science, welcomed the delegates from different nations, in the poultry capital of Nepal, Citwan.

The purpose of the IPS was to facilitate collaboration and knowledge exchange between scientists, researchers, students and professionals from the different countries participating in the event.

The symposium was the first of its kind to be organised in Nepal. It definitely provided an important platform for interaction and discussion between national and international stakeholders on various aspects of poultry rearing and development of the nation with livestock as a livelihood for its citizens.

A total of 112 papers were submitted, of which 17 were invited, 33 were oral and 62 were poster presentations.

On our behalf, Mr Ron Eek (Regional Area Manager Asia) presented his papers on "Recent Advancement on Layer Breeding".

Dr. Manoranjan Sharma

MARKET DEVELOPMENT IN MEXICO

Everyone is aware that one of the most attractive markets worldwide in terms of consumption and production of eggs is Mexico. Per capita consumption of 365 eggs annually, plus the government's strategies of strengthening good poultry practices based on the export of poultry products in all world markets, verifies that the work done to date by our company in expanding its local presence and installing parent stock farms and incubation plants has been the correct course of action.

Greater strength and presence strategy

The technical team has supported this work by disseminating the benefits and specific needs of our line by providing field support in the form of visits to customers by our representatives in the country, as well as meetings with a cluster of production managers, nutritionists and advisors in different states. The strategy of greater strength and presence was also backed up by participation at technical trade events and academic seminars at no fewer than five of the six most established events in the Mexican poultry sector.

- **XLIII ANECA 2018 Annual Convention**
  (Asociacion Nacional de Especialistas en Ciencias Avícolas de Mexico AC)
- **11th AVEM 2018 International Congress**
  (Aviespecialistas de Mexico AC)
- **55 Anniversary Apyzan**
  (Asociacion de Patologos y Zootecnistas Aviares del Noroeste AC)
- **XX Meeting AVECA-G 2018**
  (Asociacion Nacional de Especialistas en Ciencias Avícolas de Guadalajara)
- **53 National Poultry Congress UNA 2018**
  (Unión Nacional de Avicultores).

Continuous work to increase market share

Our work has not finished: the market share of our line is increasing year by year, but there is still space for us. For our part we will continue to raise our market profile and have already confirmed our participation for the period ahead.

Braulio J. Ruiz Poblete

ONE CHALLENGE – ONE OPPORTUNITY

CAGE FREE LAYERS – FROM A DANISH POINT OF VIEW

History – Figures from 2017

In Denmark for the last five to six years, we have seen a change in the demand for table eggs - shifting from more than 50% of eggs coming from enriched cages to more and more eggs coming from alternative housing systems. Eggs from barn and organic production, in particular, have increased to the detriment of eggs from cage systems. This development is likely to continue and will be driven by the supermarket ban on selling table eggs from enriched cages from 2017/2018.

Many years of experience and excellent management, especially in organic production, show that today's breeds are all very efficient and can be adapted to the housing system – no matter whether it is a house for cage layers or organic production. The pullets and hens need to be "trained" for each housing system.

Beak trimming facts – history of Denmark:

- Until 2013, all laying hens for enriched cages, barn and free-range production were debeaked. (beak trimming was performed on day-old chickens at the hatchery)
- From 2013, beak trimming was banned for enriched cages. In addition, one year later - from 1 July 2014 – beak trimming of day-old chicks for alternative egg production systems was also prohibited.
- Hens for organic production have never been beak trimmed in Denmark! Since 2003, pullets for organic production have been raised in organic systems and welfare screening was introduced by the authorities.

How to manage a "perfect" performance!

In accordance with animal welfare and efficiency, we all want our hens to perform well – no matter whether they are kept in enriched cages or in alternative housing systems. Healthy birds with a good feather cover and the "right shape" are essential for animal welfare as well as high egg numbers, correct feed consumption and good egg quality etc. Laying hens in "good shape" are calm and curious.

Figure 2 shows an example of efficiency data from an organic flock that reports data to the Danish efficiency control programme according to the hen's age in weeks (hen age is at the bottom of the fig): The figure shows high efficiency – due to:

- low mortality/high livability (red),
- very high egg yield (dark blue),
- development in egg weight (light blue) and high number of eggs in class M and L shown on the green line (highest egg price),
- low feed consumption (pink),
- low number of downgrades from packing station (brown)

The flock ends up at 79 weeks of age with a total egg number of 374 eggs per hen housed and an FCR at 128 g feed per pc egg, or 2.15 kg feed per kg egg mass.
The curves in the figure show a persistent and consistent flock!

This farmer has often delivered fine production results. This is not due to luck but to hard work and excellent management! The farmer is systematic in his daily work and very regularly in inspection and stimulation (silage, oyster shells etc).

Debeaked versus non-debeaked hens

Non-debeaked hens in enriched cages did not show any difference in behaviour, efficiency etc. compared with debeaked hens in enriched cages. Consequently, no aspect of management practice needed to be changed.

Possibly due to this, to a greater or lesser degree, we did not make any changes in the rearing, transfer and feeding strategy when beak trimming was banned in alternative housing systems. This was a mistake!

In the first years following the ban, we faced many challenges in managing non-debeaked hens. Many flocks became stressed from the beginning of lay and started feather pecking. This often led to higher mortality, lower egg numbers, increased feed consumption and poor egg quality due to the lack of feathers.

Fig 3 Pictures of some of the first flocks after the beak trimming ban showing stressed and feather pecked hens

Figure 1. The images are from organic and barn production

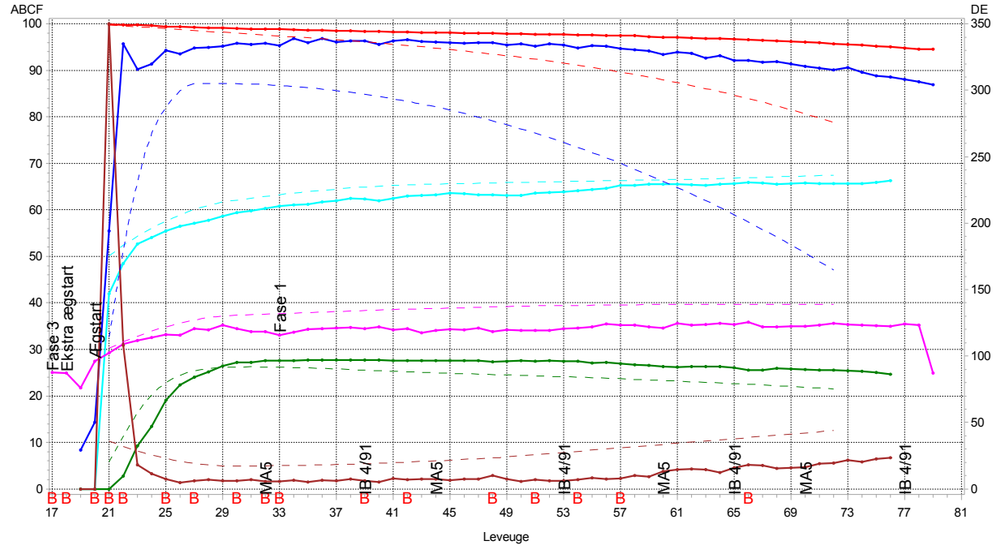


Figure 2. Example of efficiency data from an organic flock

Experiences from Sweden and organic farming and in Denmark

Experience from organic egg production in Denmark and from barn production in Sweden on good management of alternative flocks with non-debeaked hens has clarified important management tools. Lots of work and a focus on management factors during the last few years have made things better, but there is still room for improvement!

Some important key factors on how to manage a flock – whether it is an organic flock or a barn or free-range production system seem to be clear. In general, one can claim that compared with cage housing systems, free roaming hens need a quick response in management!

Important key factors for success in egg production

One of the most important key factors (some will claim that it is the most important!) is rearing process, and thereby, the quality of the pullets! Quality means that the pullets should have been reared under the same conditions as in the laying house – they should be well developed and trained to jump and grip the perches and should have learned to sleep in the system. In addition, a pullet must have achieved the recommended bodyweight and uniformity.

It takes time to raise a flock of pullets well– which applies to all systems: barn, free-range or organic! A focus on every single stage in the life of the pullet is needed – from day-old chick until transfer to the hen house – following the recommendations from the breeding company and using our experience and "gut-feelings". Management can be difficult to define, but if rearer farmers want to apply good management practice and intervene before anything goes wrong, they must spend time inside the house observing the birds! The farmer must check the chickens or pullets at least twice a day. Besides enabling a quick response, the birds will also be calmer if they get used to people inside the house.

Experience leads to a statement and conclusion in my opinion: You can get your pullets or layers to do almost whatever you want them to and they can get used to almost every type of environment, equipment, noise etc.: They just need to be trained!

Figure 3. First flocks after the beak trimming ban

Figure 4. Organic pullet rearing farm

I think this explains why we are quite successful with organic egg production in Denmark. The pullets are accustomed to a variety of different factors during the day from when they are young chickens such as changes in sunlight, roughage, outdoor area, noises etc. This makes them calmer and more robust.

As an example of how you can "train" your pullets, the following picture from an organic pullet rearing farm shows that many birds will use the outdoor area if they are used to it. At the time, the pullets were about 15 weeks of age and the farmer had opened the pop holes 3 minutes before the photo was taken!

As mentioned before, every organic hen in Denmark is raised using organic methods: meaning they have access to an outdoor area from 6-9 weeks of age (depending on time of the year). It shows the effect of devoting a lot of time to managing! It is difficult to define but easy to see the positive results of good management! The flock shown in the efficiency curves in figure 2 was actually raised at this farm, which simply emphasizes the value of pullets of excellent quality.

How to avoid undesirable bad behaviour

Factors of great importance on animal welfare and production:

- Pullet quality: good quality is one of the key factors for success in egg production.
- Feed and feed management. Chickens, pullets and hens may feel confident at any way and they must have fulfilled their nutrient need at all stages in their lives.
- Enrichment tools during the day: access to e.g. alfalfa balls, pecking stones, silage/roughage, straw
- An attractive outdoor area if hens are organic or free-range provides diversion and reduces stocking density inside the house
- Right climate and temperature: low levels of ammonia and the correct temperature give better air quality.
- Frequently inspect the flock for the presence of worms and red mites, as parasites cause high stress levels

Other factors can also greatly influence the behaviour and the welfare of the hens.

To secure high animal welfare and good performance, accounting for these factors is vital in the period from one day-old until slaughter.

Charlotte Frantzen Bjerg, Adviser, DLG/ Danaeg, Denmark

Poultry vision

The science of poultry vision is still relatively new and research is continuing. However, it is already known that birds have a highly developed visual system which functions in a very different way to human vision.

The main characteristics of poultry vison are as follows:

- Birds are able to move each eye independently and have panoramic vision of almost 300 degrees even without turning their heads. (Figure 1)

- In addition to the retinal light perception in the eyes, poultry can sense light through the pineal and hypothalamic glands.

- Poultry can see a wider range of the visible light spectrum (approx. 360-750 nm) than humans (approx. 410-730 nm). This ability allows birds to perceive Ultraviolet-A light. This important characteristic appears to be important for birds in recognising their environment, searching for the feed or mating behaviour. (Figure 2 & 3)

- Another primary difference in the visual system of birds compared to humans is the presence of a fourth retinal cone which enables layers to distinguish visual sequences of 150-200 images per second. Humans can only see up to approx. 25-30 individual images per second.

- Poultry can therefore perceive flickering light sources that operate in low frequency ranges. This causes negative effects on their behaviour such as nervousness, feather pecking and cannibalism. Flickering light sources include some fluorescent and energy-saving lamps. It is very important to realise that this flickering is invisible to humans.

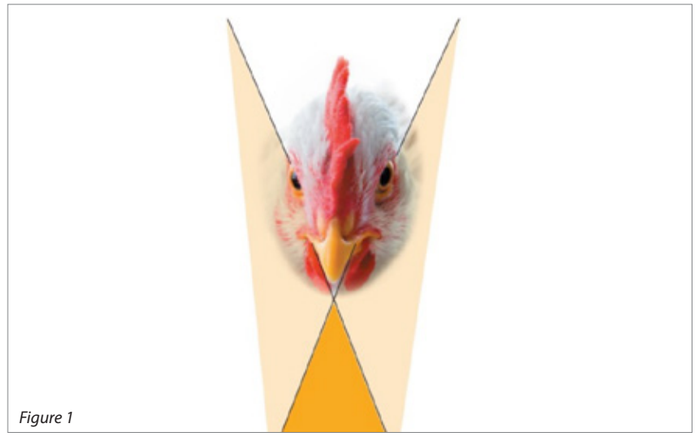


Figure 1

Light sources

Different kinds of light sources such as incandescent lamps, tubular fluorescents, energy-saving lamps, and most recently LED lamps, are used in poultry facilities. Incandescent lamps have already been banned in many countries since they cannot efficiently convert electric power into light. Light sources such as LED lamps, which are more energy-efficient and long-lasting, are therefore more widely used in modern poultry houses.

Regardless of the advantages and disadvantages of each light source some important basic facts must be considered when selecting light sources for poultry.

- The frequency of the emitted light should be at least around 150 Hz to avoid flickering.

- It is advisable to use poultry-specific light sources. These are expensive but generally adjusted to suit poultry vision

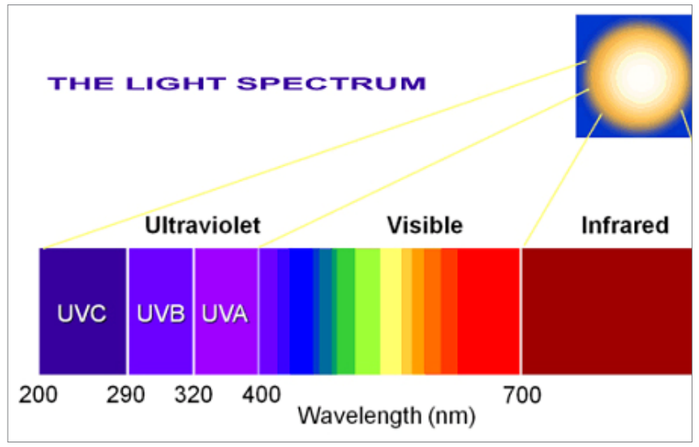


Figure 2

in terms of light spectrum etc. In general, light sources which approximate the natural spectrum are recommended, especially for the production period.

- Depending on the light source, the light intensity could be perceived by poultry as far higher than by the human eye. Therefore, conventional Lux meters which are designed for human vision have limitations when used to measure the correct light intensity for birds. For example, they cannot detect UV-A light.

- A specific Lux meter for LEDs is required to measure the correct intensity of LED light.

- The light colour alone measured in Kelvin appears to be insufficient to evaluate the light spectrum of light sources, because it only reflects the wave length and not the whole spectrum including UV-A light. Aside from the light spectrum, a light source with warm-white colours between 2700-3000 Kelvin should be considered for poultry houses.

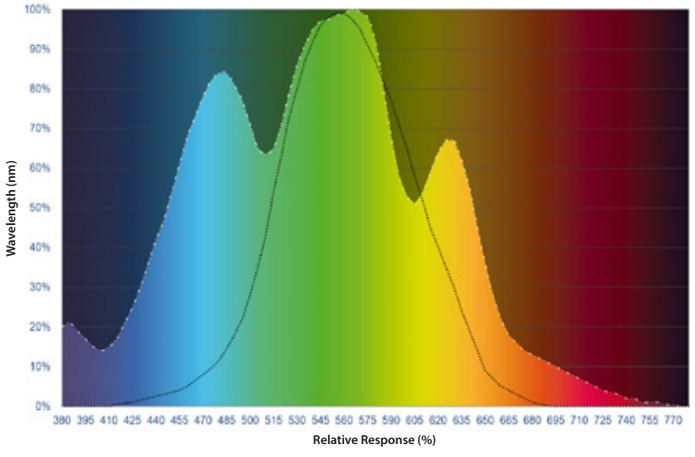


Figure 3

- Light sources for birds should be designed to be dimmable. Not all lamps are suitable for dimming, and dimming could cause flickering or reduce the lifespan of the lamps.

- Direct and uneven light and shadows should be always avoided. When using LED lamps, diffusers can be useful to avoid direct light.

- To avoid stress after transferring the pullets to the layer house, it is important to ensure the pullets are already adapted to natural daylight if they will be kept in open house facilities.

- Light sources should be designed for easy cleaning and disinfection in the poultry house.

Farhad Mozafar

Practical aspects of feeding, crude fibre applications and problems with digestion in poultry feed?

Introduction

Crude fibre in poultry feed – what sort of topic is that? When as an animal nutritionist you speak on this topic with poultry farmers, you are (still) often met with incomprehension and embarrassed smiles. Every poultry rearer and farmer knows that crude fibre is important in feeding cow, sows, horses and rabbits – but in poultry feeding? Sometimes colleagues, who work with poultry feed, also reply with a friendly, somewhat uncomprehending smile, when you talk about crude fibre in poultry nutrition or suggest that it should be specifically included in laying hen feed formulae.

When you examine the international literature in more detail and listen more closely to colleagues in various countries you very quickly begin to think that this must be a very interesting topic. As research on poultry behaviour has become more common, test results are increasingly proving that crude fibres (roughage) have a positive effect on this complex issue. There are also extensive indications from research and practice that there appears to be a positive correlation with the consistency and moisture content of the faeces and overall intestinal health and therefore the litter quality.

Definition of crude fibre

The expressions, crude fibre and roughage are often equated. This is because crude fibre is an expression, which has been used for a very long time. The term crude fibre comes from animal feed analyses, more precisely from the Weender analysis established in 1864. The Weender analysis records the different animal feed components or substances in their relation to each other and enables a rough estimate of digestion to be made. The value, 'crude fibre' describes various structural materials, which are insoluble in diluted acids and alkaline solutions, including an amorphous group of feed components, which are difficult or impossible to digest, and which therefore have a 'poor reputation' in poultry nutrition.

Origins of crude fibre

Crude fibre is used more or less inevitably in all feed formulae. Since 'officially' crude fibre makes no contribution to the nutritional value of a poultry feed, but nonetheless must be declared as a maximum value in many countries, the crude fibre content is included for information purposes in all feed calculations and improvements. Usually, no minimum crude fibre requirement is set in poultry feed formulae; a maximum value serves solely to ensure that the specified declaration value is not exceeded. Therefore, when different crude fibres are used, the actual value fluctuates within a range from approx. 2.5% in a maize-soya based mixture up to 6.0 - 7.0 % in mixtures based on barley, sunflower extract meal and cereal by-products such as bran. The crude fibre content in a poultry feed is related on one hand to the energy content of the different raw materials, yet on the other hand it should attract more interest in the preparation of formulae for poultry.

Table 1: Nutrient content of selected raw materials, base 88% dry matter

Raw material	Crude protein %	Crude fibre %	Starch %	Energy ME MJ/kg
Wheat	12.1	2.6	58.3	12.78
Rye	9.9	2.4	55.6	12.24
Triticale	12.8	2.5	56.3	12.59
Barley	10.9	5.0	52.7	11.43
Oats	10.6	10.2	39.8	10.25
Corn	9.1	2.3	62.0	13.35
Sorghum (milo)	10.1	2.1	62.0	13.03
Wheat bran	14.1	11.8	13.1	6.17
'Brasil 48' soya meal	46.8	4.3	4.0	9.9
Rapeseed meal	34.0	11.5	5.7	8.7
Sunflower meal (HP)	38.4	13.5	2.1	7.6
Sunflower meal (LP)	29.2	22.3	3.4	6.4
Field peas	22.1	5.9	42.1	11.03
Lignocellulose	-	min. 60	-	-

Source: Jeroch & Dänicke Poultry Yearbook 2008, Some Calculations and Data; Energy in accordance with the WPSA [World Poultry Science Association] formula for estimating the content of metabolisable energy in poultry diets; HP – high protein, LP – low protein

Requirements for crude fibre content in poultry feed

Whereas earlier feeding recommendations emphasised an upper crude fibre limit value on fodder, for various reasons a lower limit value is also necessary, for as a rule raw materials such as these, which are high in energy and contain relatively little crude fibre, are taken into account nowadays for highly productive poultry (both energy and protein animal feed). Moreover, the formulae sometimes contain considerable proportions of fodder fat. This can very often result in crude fibre contents, which are 3% in complete fodder. For the following reasons, however, we need to attach considerably more importance to the crude fibre content:

- requirement for the development of the digestive tract in rearing animals (e.g. pullets) in order to facilitate adequate feed intake from the start of laying activity to the peak of laying,
- stimulation of gizzard development,
- stabilisation of the intestinal flora and therefore improvement in faecal consistency (better litter quality in barn rearing, fewer dirty eggs in all types of housing systems,
- prevention of digestive disorders,
- has an effect on animal behaviour and therefore reduces the tendency towards (toe and => delete) feather pecking, eating feathers and cannibalism (especially with laying hens).

The recommendations for optimising crude fibre intake are dependent on the age of the animals, the type of poultry and the use for which the poultry are kept. The contents recommended in each case should not be significantly exceeded, because the nutrient digestibility is or can be reduced and the energy and nutrient concentration of the feed may become the limiting factor for an adequate supply. Exceptions from this are feeding procedures, in which high crude fibre contents are used specifically to restrict energy (e.g. broiler breeders). In addition, in extensive feeding procedures and during non-laying periods (moult) the feed contains higher crude fibre contents.

Because the positive use of crude fibres in general has meanwhile been recognised for many breeds of poultry, the range of the raw materials used in the feed has also been extended. Whereas maize used to be the preferred cereal, nowadays wheat is used in particular, as well as triticale, barley, oats to a limited extent and sometimes even rye. Where protein providers are concerned, soya products used to be predominantly preferred, whereas in the meantime products made from sunflower seed, rapeseed products and resource protein providers, such as various by-products from bio energy generation have come into use. These raw materials used as alternatives to maize and soya all show higher crude fibre contents and are currently widely used. Furthermore, crude fibre concentrates based on lignocellulose, with a minimum content of 60% of indigestible crude fibre must be mentioned. Their use has proved its worth on many counts and in particular offers the advantage of having the low usage rate of approx. 1% in the formulae, which scarcely displaces all the other raw materials in this respect.

In principle the introduction of minimum contents in crude fibres in poultry feed formulae should, however, not result in a "nutrient dilution", the consequence of which can be reductions in performance on the one hand or increased feed consumption. The possible content in crude fibres in a formula is on the one hand strongly dependent on the availability of the raw materials and on the other on the energy and nutrient concentrations in the formulae concerned.

Crude fibre in laying hen feed – how can this be achieved?

Laying hens in the rearing and production phases benefit to a large extent from crude fibre in the feed. This message and this knowledge has for a long time been regularly demonstrated in practice and for some time now has also been analysed from the scientific viewpoint. In this science differentiates between different proportions or fractions of crude fibre. The portion, which should be more closely examined here, is the indigestible portion, such as lignin and cellulose.

If someone with experience brings a certain amount of knowledge of the topic, crude fibre for laying hens and poultry in general, the next question is how to integrate crude fibre into the laying feed. First and foremost, it must be stated that the incorporation of crude fibres in laying hen feed should not reduce the normal nutrient concentration, because this would have a negative effect on the performance data for the animals. Secondly, this is strongly dependent on the availability of suitable raw materials, such as: the cereals barley and oats, any form of cereal by-products whatsoever, sunflower and rapeseed products, DDGS, alfalfa and finally ligno-cellulose concentrations.

All these raw materials have a lower nutrient concentration in comparison with maize and soya than the macro commodities most used world-wide for poultry feed. In order not to reduce the overall nutrient concentration in the feed and as a consequence of the intake of the raw materials in the feed mixture discussed above the fat content usually rises. For that reason it must basically be possible to dose or include fat and/or oil in the feed formulation. A significantly higher degree of crude fat in the feed offers a large number of benefits for the feed in rearing and production, e.g. with respect to the technical quality of the (meal) feed and also optimum nutrition for the animals.

The overall level of crude fibre in laying hen feed in rearing and production is determined or calculated by the well-known linear feed optimisation method. This has proved possible up to 7 % and neither the performance not the health of the animals has been adversely affected; sometimes crude fibre in the feed even improves the animals' health and behaviour. Based on this experience we can state the following: (indigestible) crude fibre will never harm your animals! Moreover, this knowledge is increasingly being taken into account in feeding poultry in general and even in the feeding of animals raised for meat production.

Summary

In conclusion, the question is posed whether the committed animal nutritionist has 'problems' with respect to poultry and in particular laying hen feed with the digestibility of crude fibres, or rather has a use for them. It would seem to be time for a paradigm shift.

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Robert Pottgüter

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LOHMANN TIERZUCHT GmbH
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Phone +49 (0) 47 21 / 5 05-0
Mail info@ltz.de **Web** www.ltz.de

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EDITOR:
Marketing Department 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) 47 21/505-222
Email: marketing@ltz.de | www.ltz.de

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