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1. Getting off to a good start

by Pam Cousins, Technical Manager, Cherry Valley. www.cherryvalley.co.uk

Providing the correct environment for ducklings from the beginning is key to achieving optimal results throughout the bird's life. Sheds must be preheated and thoroughly cleaned and disinfected prior to placement. Getting ducklings off to the best start will enable birds to reach target objectives for FCR and liveweight (Fig. 1). Promoting good early feed and water intake is vital to flock uniformity and health.

It is important that the environment does not leave the birds overheated or chilled as this can reduce early intake and impact on the development of the immune system and intestinal tract.

Poor brood management can lead to higher losses throughout the production cycle, slower growth rates, poor uniformity and a lower quality product at processing. Staff should have the ability to quickly identify and rectify any problems with the brooding environment.

The target temperature when placing ducklings is 32°C and this is reduced steadily as the ducks age (Fig. 2).

There are two popular approaches to brooding ducklings; spot brooding or whole house brooding.

For either option it is important that minimum ventilation requirements are met and the ducklings feel comfortable to move around freely to access feed and water. The choice of heating method will depend on house design and local climate.

FEED AND WATER

Feed should be of good quality from a trusted source with a suitable pellet size and minimal dust content. Feed and water should be readily available when ducklings are placed on farm. Adequate provision will reduce the number of starve out ducklings and will promote good growth rates and optimal kill weights at slaughter.

In addition, ensuring that all ducklings placed have easy access to feed and water will promote good flock uniformity. Encouraging good uniformity from placement will result in more even growth rates, processing weights and a more standard final product.

At placement extra water should be placed in shallow pans or bell drinkers to allow easy access for ducklings. These drinkers should be placed in addition to the standard water line.

This additional water can be removed over a few days post placement when the birds have settled into their environment.

SPOT BROODING

Spot brooding is the most traditional method of brooding where ducklings are placed within a ring surround typically heated with a gas brooder. Temperatures are higher underneath the brooder heat source and fall away towards the edge of the ring.

The range of temperatures within the ring allows the ducklings to move around to find their comfort zone. Brood rings should be extended as the birds grow and birds should be released into the whole house when they become less reliant on the heat source.

It is important that the heat source is temperature controlled and does not run constantly but on a cycle.

WHOLE HOUSE BROODING

In whole house brooding the whole air space is heated, and birds are not held to the heat source in rings. There are fewer hot or cold spots in sheds with whole house brooding.

Heating a whole house requires more energy than spot brooding and for some customers it can be expensive and impractical, depending on local climate, fuel price or housing type.

The principles remain the same as with spot brooding; temperatures should be adequate to promote activity in the ducklings allowing them to quickly find feed and water post placement.

DUCKLING BEHAVIOUR

Regardless of brooding method it is key to monitor the ducklings closely. Ducklings will be quiet and huddle together if the temperature is cold but will be sitting far away from the heat source, panting and lying with legs and wings outstretched, if the temperature is too warm.

An experienced stockman will be able to monitor chick behaviour and adjust temperatures accordingly. When the temperature is correct birds will be evenly spaced, active and seeking feed and water.

The investment of time and effort during brooding will pay dividends when the flock comes to processing age. ■

Fig. 1. Growth and FCR for as-hatched Cherry Valley SM3 growers.

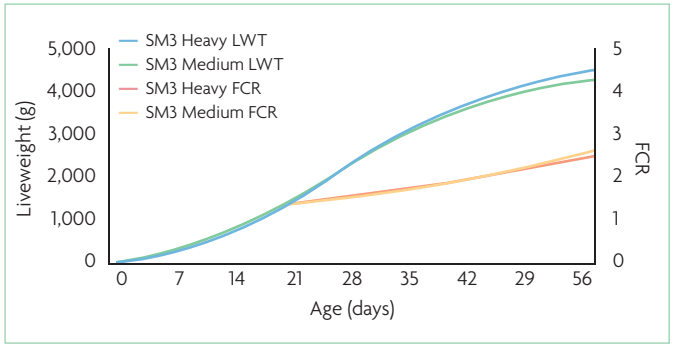
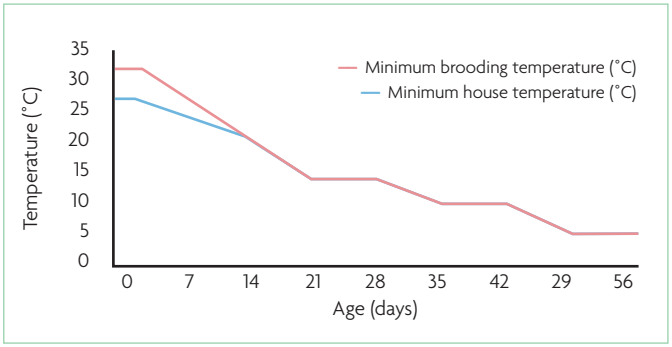


Fig. 2. Environmental temperature for ducks.



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2. Improving duck welfare

by Sophie Evesque, Grimaud Frères Sélection. www.grimaudfreres.com

Duck production is an evolving world that needs to rapidly adapt to social and environmental challenges. Under pressure from consumers, major brands are committing to improving conditions in which animals are being reared and the poultry sector is the first to be concerned. Lately it is the KFC chain which, under pressure from animal welfare associations, has committed to improve animal welfare across its entire meat chain.

Grimaud Frères Sélection is also looking to improve animal welfare by reducing the use of slats.

In France we have faced two crises as a result of influenza. In response to these health crises, legislation and biosecurity standards have been strengthened to prevent the spread of pathogens. These standards make manure management increasingly difficult. For example, each farm must be able to store slurry for 60 days without input.

For Grimaud Frères Sélection, moving to a straw building is a solution to improve the comfort of ducks. Litter is more comfortable than slats and also reduces the risk of lameness. Manure from these buildings is easier to manage, store and sanitise.

However, ducks consume a lot of water and the consistency of their dung makes changing to a straw building something that requires special technical management.

With young ducks the main challenge is the maintenance of good litter without increasing the consumption of straw. In laying, it is necessary to adapt the building to keep eggs clean and limit laying off the nest.

MANAGEMENT OF AN ALL-STRAW YOUNG BIRD BUILDING

The two lines of troughs must be well adjusted pipes then bowls (height and level of water inside) and cleaned well to optimise their operation and avoid overflows. The troughs must be rigorously monitored on a daily basis.

We recommend placing the food in the centre of the building to distribute the food over a large area so that each duck can access feed at the same time. This increase in service area makes it possible to increase the homogeneity of the batch. A poorly monitored all-straw building risks being wetter and therefore impairs the feed.

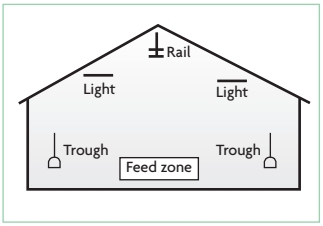
Mulching is done daily and preferably in the afternoon after digestion to have the best litter possible for the comfort of ducks.

The management of ventilation is the same as in a building with slats. As the Pekin duck is sensitive to ammonia it is important to provide good air quality.

A duck only needs to drink three times the quantity of feed. For example, with a ration of 150g of food per day for 1,000 animals, a consumption of 450L of water is sufficient.

Limiting the amount of water per day can only be contemplated in adapted climates observing the behaviour of ducks. Water must be available from the time the food is distributed. This practice saves a lot of water because the duck likes to play with water and can waste about 30%. This also allows for better litter management and avoids overnight leakage problems. In addition, ducks can very often unhook a trough, which wastes a lot of water.

Fig. 1. Diagram of the organisation of an all-straw young bird building.



MANAGEMENT OF AN ALL-STRAW BUILDING

A straw-laying building must be organised in a special way to ensure good litter, clean eggs and no off-nest laying. The bowl type waterers must be as far away as possible from the laying area. They must be well fitted and cleaned every day to avoid deposits. It is also possible to contemplate cutting off the water at night.

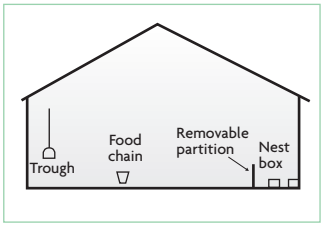


Fig. 2. Diagram of the organisation of an all-straw building.

The laying area must contain one nest for 4-5 ducks. A liftable barrier is installed to control access to the nesting area. This system avoids brooding and keeps the eggs clean for incubation.

The ducks must become accustomed to the liftable barrier from the time of their transfer. We advise the initial tests to be carried out in the presence of the producer, a few hours before the light is switched off and then delay the lifting to better match the laying period.

When the producer collects the eggs he closes the laying area. The release of the food chain helps to get the ducks off the nests. This method makes it possible to guarantee a clean and very attractive nesting area.

TECHNICAL, ECONOMIC AND ENVIRONMENTAL BENEFITS

Ducks have relatively fragile feet and straw bedding is very comfortable and limits the risk of injury and leg problems. By improving comfort, it is thus possible to reduce the mortality of the Pekin ducks at the end of the batch.

One of our internal studies shows a significant difference in the appearance of pododermatitis between an all-straw building and one with slats.

The removal of slurry for the benefit of manure has many advantages. First of all, the reduction of pathogenic vectors. Manure is easier and faster to sanitise and store. The French biosecurity decree provides for 60 days for manure and 42 for slurry. In a context where the pressure of bird influenza is high this advantage is not negligible.

Without manure, there is no more constraint related to spreading: date framing the practices, specific material and perception of the local residents.

This also offers economic advantages: time savings in crawl space and buildings less expensive to build. It is not necessary to provide manure pits (interior and exterior) or scrapers. On the other hand, this type of building obviously consumes more straw.

If it is necessary to count 120T of straw per year per laying batch in a straw/slatted building of 1000m², it is necessary to envisage 140-160T for an all-straw building.

This breeding technique needs to be extremely vigilant about water consumption and the fitting of drinking troughs.

Avoiding wastage preserves water resources and is part of Grimaud's 'Natural Concept' approach. ■

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3. Feeding parent stock during rearing

by Nick Lynn, Cherry Valley Farms. www.cherryvalley.co.uk

Cherry Valley provides rearing bodyweight objectives for SM3 Pekin parent stock that are based on many years' experience and deep understanding of the genetic potential of the different breeds. Analyses of industry data show that those flocks that follow the weekly growth profile with good uniformity achieve the highest output of hatching eggs and the best hatchability.

Cherry Valley SM3 Pekin Grower ducks have a high potential for growth, feed conversion and meat yield, so the parent stock cannot be fed ad-libitum.

Parent flock managers control the growth profile by controlling the amounts that the ducks eat. The process starts when the day-old ducklings arrive on the farm.

The first 21 days of life lay the foundation for growth and uniformity of bodyweight throughout the rearing period.

Ducklings have a yolk sac that supplies their nutritional requirements for about 72 hours, but a long period of travel will deplete this resource, so it is important to encourage them to eat and drink as soon as they arrive at their destination.

Between 21 and 126 days of age, the primary goal is to grow the ducks according to the bodyweight profile illustrated in the SM3 Rearing Chart.

The consequences of poor bodyweight control will be seen in their effects on sexual maturity, the onset and persistence of lay, the number of eggs produced, their size, fertility and hatchability. The growth objectives can be achieved by controlling the daily feed allowance.

BODYWEIGHT MEASUREMENT

Weigh the birds weekly and compare the average weights of the males and females with the growth objectives to make good decisions about how much to feed.

Weigh a minimum of 50 birds, but no more than 150, in each pen from seven days old. On days 7 and 14 the ducklings can be weighed in bulk lots of 10, but from 21 days they should be weighed individually.

To collect accurate measurements of bodyweight a structured and consistent procedure is needed. Weights must always be taken first thing in the morning before the ducklings have been fed, on the same day of every week.

Separate a group of more than 50 birds in each pen using a catching frame and weigh all the ducks that it encloses Record the weights individually, then calculate the average weight and uniformity for each sex.

The bodyweight objectives are given in the SM3 management handbook and the target for uniformity is for more than 85% of the sample to be within ±10% of the average. If the bodyweight seems unusually high or low, weigh the birds again.

Understanding the trend in growth is key to making good decisions on feed allowance. Keep a weekly record of the feed given and the bodyweight for each group of ducks (a graphical format is ideal for this purpose), to compare with the bodyweight targets and feed allowance in the management handbook.

Give more or less feed depending on a comparison between the actual growth and the objective, aiming to achieve a profile that is close to and parallel with the standard. Increasing the feed allowance every week will help to promote uniformity and ensure that the flock comes into lay on time with good peak rate of lay.

FEED DISTRIBUTION

The degree of bodyweight control becomes progressively stronger as the birds get older, so they will become hungrier each day and eat their feed more quickly.

The expected eating time is less than one hour once the flock has reached 35 days of age.

Competition at feeding time can create a number of problems. Birds may be scratched or injured if the feeding space is too small or if it takes too long to distribute the feed. Such injuries can lead to increased mortality later in life.

Competition during feeding can result in unequal feed consumption and some birds eating much more or less than others. As growth is controlled by feed consumption this can lead to a loss of uniformity and the development of sub-populations of very small or overweight ducks.

Historically, ducks have been fed by hand broadcasting grain or pellets onto the floor. This system is still used successfully where the flock size, the number of ducks in the pen and the stocking density are low.

Spin feeders are a modern alternative to hand feeding that allow large flocks of ducks to be fed in a short period of time. The system distributes pelleted feed on the floor using a spinning disc, it is inexpensive to install and simple to operate.

Many equipment manufacturers offer spin feeders including simple mechanical operation to fully automatic feed weighing and distribution options. The design of the disk is a point of difference between manufacturers.

Cheaper models have a simple disk that may provide quick and even distribution, but often gives a donut spin pattern, with the feed falling in a band around the feeder. More sophisticated designs spread the feed evenly underneath and around the feeder. The majority of systems incorporate the option to control the diameter of the spin pattern. In the case of simple models this can be done by changing the size of the drive pulleys. Modern versions have direct drive motors that allow the speed of the disk to be adjusted automatically.

A good rule of thumb is to provide one spinner for about 500 birds. The cost of one spinner being low, it is best to have more spinners with less feed per spinner to obtain faster and more uniform feed distribution. The maximum number of birds per spinner will depend on the design and capacity of the hopper.

Spin feeder systems demand a hard, durable pelleted feed, with a low level of dust. Soft pellets will be broken during distribution and the fine particles will be lost in the litter. These specifications match the normal requirements of duck feed manufacture.

KEY POINTS

- The first 21 days lay the foundation for parent stock flock performance.
- Making good decisions on feed allowance depends on making regular and accurate measurements of bodyweight.
- Good feed distribution will produce flocks that are uniform in bodyweight and capable of outperforming the production objectives. ■

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4. Parvovirus infection of ducks and its control

by Dr Vilmos Palya, Ceva-Phylaxia Veterinary Biologicals Co., Budapest. www.ceva.com

There are many viral diseases that can affect ducks. The disease described here is the most common one seen in domestic ducks. Waterfowl parvoviruses – goose parvovirus (GPV) and Muscovy duck parvovirus (MDPV) – cause the most dreadful disease of goslings and Muscovy ducklings. Occasionally the disease accounts for mortality of 70-100% in susceptible flocks when the infection occurs at an early age.

GPV and MDPV differ in host range and antigenicity, while geese are fully resistant to MDPV infection, in Muscovy ducks both viruses can cause severe disease. In addition, in mule duck and certain breed of Pekin duck GPV infection can cause the so-called 'short beak and dwarfism syndrome' (SBDS), where animals have strong growth retardation with smaller beak and shorter tarsus.

The diseases caused by waterfowl parvoviruses are strictly age dependent. In susceptible Muscovy ducklings less than one week of age 100% mortality may occur, while the losses above this age are decreasing with age. Parvovirus infects rapidly dividing cells; which is why the clinical form of the disease occurs only in young birds, up to approximately 6-8 weeks of age.

After this susceptible period the birds can still be infected, which causes serological response without clinical symptoms. Depending on the age when infection occurs, the disease may be present in either acute or subacute or chronic forms in Muscovy duck, while SBDS always takes the chronic form.

During the acute phase of the disease, infected animals excrete huge quantity of virus into the environment via their faeces, which disseminates the infection rapidly in the flock. Recovered animals or those infected at a later age can become healthy carriers.

Due to its resistance in the environment parvovirus can persist in the buildings and on poorly cleaned and disinfected surfaces, which results in transmission between subsequent flocks. Vertical transmission and egg shell contamination also play an important role in introducing the infection into disease-free flocks.

CONTROL

It has been shown that there is a clear antigenic distinction between GPV and MDPV. Cross-protection studies indicated that only bivalent vaccine containing both goose and Muscovy duck parvovirus antigens provide adequate protection against the two waterfowl parvoviruses which can cause diseases in ducks.

Two main categories of vaccines can be distinguished: live and inactivated vaccines. Live vaccines contain attenuated goose or Muscovy duck parvovirus which can stimulate rapid immune response and protection in maternal antibody-free animals. However, MDA even at a very low level, is able to neutralise the live vaccine thus preventing it from stimulating an immune response.

Inactivated vaccines (also called 'killed') contain the whole parvovirus antigens either in the monovalent (goose parvovirus) or bivalent (both goose and Muscovy duck parvovirus) form.

Breeder Muscovy ducks that have been naturally infected or vaccinated transfer maternal antibodies via the egg yolk to their progeny. This passively acquired antibody may persist until 2-4 weeks of age depending on the day-old antibody levels of individual birds.

Since the disease is confined to ducks infected at a young age, control measures have been aiming to provide adequate immunity during the first 6-8 weeks of life. To achieve this, different methods have been applied. These include: (i) active immunisation of adult breeding Muscovy and Pekin ducks with inactivated vaccine, or (ii) the use of attenuated vaccine alone or in combination with an inactivated one for the active immunisation of both adults and young animals. The attenuated vaccines can confer good protection in young animals but only when it is given to birds with no or very low levels of maternally derived antibodies to parvoviruses.

When using live vaccine at a young age it is a regular observation that the presence of passively acquired antibodies interferes with the development of an active immune response. On the other hand, inactivated vaccines with a high antigen content are able to induce active immunity and protection in the face of maternal antibodies.

The immunisation of breeders against parvovirus has two objectives:

- To protect the breeders from infection and, in this way, prevent virus transmission to the progenies.
- To supply the progenies with passive immunity.

The level of MDA transmitted by breeders determines the level of protection (morbidity and mortality) of ducklings in case of field virus infection. A positive correlation has been demonstrated between the number of immunisations of breeders with inactivated vaccine and the amount of transmitted maternal antibodies, including level of MDA, persistence of MDA in the young birds and protection offered by the passive immunity. MDA may persist in goslings and ducklings at a relatively high level, which protects them from clinical disease for approximately 2-3 weeks.

An optimal vaccination strategy must protect goslings and ducklings against both the early and the late forms of the disease.

The specificities of parvovirus infection of ducks requires the elaboration of a coherent and efficacious vaccination strategy. This strategy must take into account the presence or absence of maternal antibodies, their levels and heterogeneity within a flock and the susceptible period of ducklings to the disease. ■

SBDS in a mule duck compared to an unaffected mule duck.

Sero-fibrinous perihepatitis and ascites in subacute form of Derzsy's disease in a Muscovy duck.

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5. The importance of optimal duck health and performance

by Lucy Brimble, Technical Writer, Anpario, with comments from Dr Sylwia Sobolewska, Anpario Technical Sales Manager. www.anpario.com

Maximising gut health is of vital importance to ensure optimal performance and productivity and secure duck producer profitability. There are billions of bacteria within the gut. The vast majority of these are beneficial and help in digestion, nutrient release and in defence against harmful compounds or pathogens. Many of these 'good' gut bacteria can also help improve duck health, however there are instances when the gut microbiota can be disrupted and 'harmful' bacteria proliferate when birds are under challenge. This imbalance of microbiota can have negative implications on duck health, performance and producer profitability.

SALMONELLA IN DUCKS

The most common duck diseases can usually be dealt with through good biosecurity management practices. Despite this, Salmonella enterica Serovar enteritidis (S. enteritidis) can be a major issue in duck production systems, leading to reduced egg production and increased risk of salmonella transmission into eggs and meat.

Due to the common use of straw as bedding material, alongside the need for water areas in duck production, providing higher moisture in the environment, the risk of salmonella proliferation in duck housing is enhanced.

The transmission of S. enteritidis in the reproductive tract and hence in the egg occurs via the faeces and cloaca of infected birds. S. enteritidis is identified as one of the leading causes of salmonella infection in humans, resulting in gastroenteritis and also more serious illnesses.

This disease poses serious health concerns for animals and humans alike. Therefore, the overall importance of duck gut health should not be underestimated.

The oregano plant from which oregano essential oil is produced.

BENEFITS OF OREGANO ESSENTIAL OIL

Oregano essential oil is well-documented for its antimicrobial action in vitro and its complex and synergistic mode of action when included in the diets of various poultry species. The presence of many volatile compounds within the oil, in particular carvacrol and thymol, means oregano essential oil offers many benefits to a wide range of poultry species.

It has been found to have a role in appetite enhancement and antioxidant function, as well as in both immunomodulatory and anti-inflammatory processes. The inclusion of oregano oil in the diets of ducks raised for meat production has been seen to lead to increased body weights, reduced mortality, and elevated levels of antioxidants in breast and thigh meat.

Oregano oil has also been shown to have a beneficial effect on the gut microbiota of poultry species, as a result of its strong antimicrobial activity, reducing the presence of Gram-negative bacteria, such as salmonella.

ACID BASED EUBIOTICS OPTIMISE GUT HEALTH

In addition to this, the use of acid based eubiotics (ABE) can offer extensive benefits to duck health and performance. Eubiotics are defined as products which help to regulate the microbial population of the gut, helping to restore a balanced and healthy microbiota. This offers many benefits, through a reduction in pathogen load, such as salmonella, and enabling the proliferation of beneficial bacteria.

Ensuring optimal gut health can improve feed utilisation, and with laying ducks consuming an average of 50% more feed per day than commercial laying hens, this is absolutely crucial in maximising profitability.

Anpario plc have a range of ABE available and these are based on a proprietary blend of pure liquid organic acids, primarily formic and propionic acid, formulated on their unique carrier system. In addition to optimising gut health, the use of formic acid-based ABEs can also be used to improve duck feed and bedding hygiene.

Formic acid is the only organic acid to have been classified as a bacterial decontaminating agent by the EU, reducing populations of harmful pathogenic bacteria, including, but not limited to, Salmonella species.

In a contaminated feed sample, nearly a 100% reduction in Salmonella enteritidis was achieved when an ABE (pHorce, Anpario plc) was added to the feed at the lowest inclusion rate (Fig. 1).

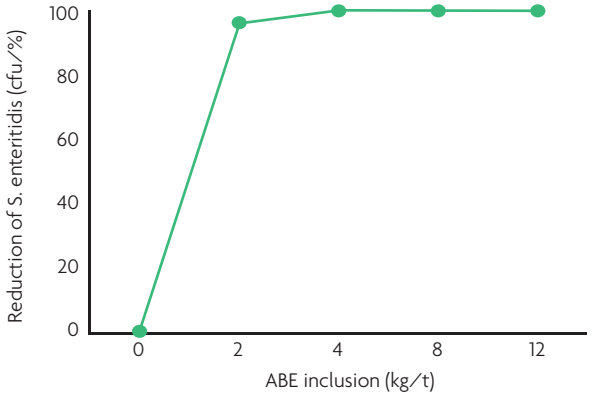

Fig. 1. Antibacterial efficacy of ABE (pHorce, Anpario plc) 24 hours after application to feed.

ASPERGILLOSIS IN DUCKS

Ducks are also sensitive to aspergillosis, caused by the presence of moulds in bedding material. Aspergillosis in ducks has been associated with increased incidence of respiratory issues, leading to elevated mortality and reduced performance. Therefore, reducing the presence of moulds in feed and bedding, through the use of acid based eubiotics and mould inhibitors can help to eliminate the impact of aspergillosis in ducks.

MAXIMISING DUCK HEALTH AND PERFORMANCE TO ENHANCE PROFITABILITY

Costs associated with duck meat and egg production are higher than that of most other poultry species. This is as a result of the exceptionally high feed costs, due to a comparably high feed intake, as well as the need for all feed to be high quality pellets with a high protein and oil content. In addition to this, the requirement for straw as bedding material for ducks further increases production costs, especially in recent years with constrained supply.

"It is essential to decrease the risk of salmonella to optimise duck performance and health as well as enhancing producer profitability," says Anpario's Technical Sales Manager, Dr Sylwia Sobolewska.

"There are many ways in which this can be achieved, however eubiotics, such as oregano essential oils and acid based eubiotics provide a natural and sustainable strategy which allows ducks to reach their genetic potential and improves bird welfare." ■

For further information please visit
www.anpario.com
or email sales@anpario.com
References available on request

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6. Pekin duck genetics on the test bench

by Grimaud Frères. www.grimaudfreres.com

The well known independent international poultry testing station in the Czech republic (MTD Ustracise) has published the results of its latest tests which compared genetics in Pekin ducks. The protocol compared several breeds in the same testing station with the same feeds and the same lighting program.

Both body weight of males and females, as well as feed conversion ratio (FCR), were measured at 25, 32 and 44 days of age. The results shown in Table 1 are given at 44 days, which is close to the average slaughtering age in the industry.

At identical product size, the Grimaud C duck can be compared to two other ducks from leading companies. The FCR measured with the Grimaud Freres product shows clear progress at a comparable weight and achieves the best performance of the three genetics on this test.

"We wanted to understand a little more about the explanation of these very good results," Magali Blanchet, R&D Director at Grimaud Frères, told International Poultry Production.

"In fact, we are having great progress in selection regarding several genetic traits. In selection, we estimate our improvement to be 40g on FCR last year on the selected breed as well as 50g of bodyweight gain.

"We invested heavily in integrating new technologies into our genetic breeding scheme, such as the CT scanner and we are the only ones in the world to use this in the duck industry.

"The research know-how is shared by the 35 scientists of the Groupe Grimaud's 'Genetech' platform (R&D multi-species platform) and allows us to go much faster with genetic progress."

Jérôme Boucherot, Export Sales Manager, added: "The investment was substantial, but it has paid off with new customers who have heard about the very good performances of our Star 53 Pekin ducks."

Following these tests, the results recorded in the field since the beginning of the year confirm the gain of FCR and mortality that is often the lowest in the market.

Grimaud have invested heavily in new technologies including this CT scanner.

Good results in Pekin genetics due to CT scan technology should also confirm progress in Muscovy and Mule ducks. ■

Table 1. Results from the independent poultry testing station in the Czech Republic.

Treatment	Average weight at age 44						Feed consumption per 1kg of live weight
	Males		Females		Average		
	Birds	(g)	Birds	(g)	Birds	(g)	(g)
Grimaud A	118	3478.00	119	3389.25	237	3433.44	2254.57
Grimaud B	119	3556.02	120	3401.48	239	3478.43	2274.51
Grimaud C	120	3632.99	120	3525.36	240	3579,18	2234.71
Duck D	240	3620.98	240	3435.45	480	3528.21	2322.19
Duck E	238	3684.90	240	3455.77	478	3569.86	2265.22
Duck F	239	3749.89	240	3535.57	479	3642.51	2230.66

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7. Waterfowl bird processing

by The Technical Team, Bayle, France. www.bayle-fr.com

Waterfowl bird processing is a very specific market. Thanks to significant experience in the French duck processing industry, Bayle are always improving and developing new solutions to facilitate and to enhance work in duck slaughterhouses with technological innovations.

As leaders in the duck market for capacities up to 5,000/hour, Bayle offers the most innovative and efficient range of duck processing equipment.

SLAUGHTERING STAGE

Because they know that accurate stunning is essential for a high-quality product, they have designed a range of water-bath stunners with adjustable frequency and recording of pre-defined programs. New models have frequency from 10 to 1500 Hz and voltage from 30 to 400 volts and are therefore compliant with the latest European animal welfare regulations.

After this important stage, they developed a unique killing machine specifically for ducks. This exclusive killing equipment is fully automatic and built for capacities up to 5,000 birds per hour. It allows the processor to have precise height adjustment to fit male or female morphologies or small and big animals for optimal results.

SCALDING STAGE

In duck processing, effective scalding is critical in achieving great plucking results. That is why Bayle have developed combined solutions with a pre-scalder and specific scalding tanks. The pre-scalder stage is a duck clean-up in order to have a better and cleaner scalding stage. This step means ducks are washed to remove the maximum amount of impurities and to begin to open the feathers.

The second step is an efficient scalding with the right temperature control to obtain high-quality plucking. In fact, in the scalding step, temperature control and the energy used to heat the tank are major factors influencing the quality of the final result.

They have developed an innovative heat insulating solution on their scalding tanks in order to obtain the optimal temperature while consuming as little energy as possible

Bayle offers a wide range of scalding tanks based on waterfall technology which offers the most efficient result for plucking. All scalding solutions are compatible with 'Bayle Smart Control' in order to maintain a constant temperature.

HIGH-EFFICIENCY PLUCKING

Plucking is a delicate operation that requires real knowledge to avoid damaging the ducks. Several variables should be considered to have a greater understanding of the plucking stage. Their significant know-how on plucking systems allows Bayle to offer high-efficiency plucking solutions with a counter-rotating system.

They propose various type of counter-rotating machines which are known around the world for their efficiency and reliability. The main purpose of this plucking system is to remove as many feathers as possible in the shortest time without compromising the quality of the product.

The counter-rotating machines are often combined with their vertical disc plucking machines in order to obtain optimal results. This second type of plucking technology is used in the second step of the plucking stage. The vertical disc machines are 'finishing machines' that operate on specific areas of the bird.

This equipment is designed with hydraulic adjustment, which greatly facilitates the operators with its ease of adjustment.

WAX PROCESS

In duck processing, wax finishing is always an essential means to obtain a perfect finish.

In fact, the duck down cannot be 100% removed by the plucking machine, the wax process is essential to achieve an optimal result.

As a specialist in waterfowl bird processing, Bayle offer various solutions in wax processing.

Ducks first pass through wax dip tanks, after that the wax is cooled in water cooling tanks. When the wax is cooled, the ducks go through a wax stripping machine to remove the wax. To ensure a perfect result, it is advisable to repeat this operation two or three times according to your needs.

In order to save expenses, a range of equipment allows continuous recycling of the wax through a centrifugal system.

The centrifuge automatically separates the wax from the feathers in order to have a constantly available supply of clean wax.

EVISCERATION

After a long period of R&D, in 2018, Bayle launched a new range of evisceration machines for Pekin and Muscovy ducks. Their 'Hygie' range is an innovative series of automatic evisceration machines.

The Bayle engineering department has developed a system entirely adapted to the specificity of duck evisceration.

Thanks to the integration of the latest technologies, they have developed a high-performance evisceration system. This new system uses electric cylinders that can be activated, with no effort, by using touch-screen technology for ease of adjustment. Thanks to a new open frame, the cleanability of the machines is greatly improved and therefore gives huge time savings for the cleaning team.

The Hygie line is compatible with their new supervision system, the Bayle Smart Control, which is an efficient supervision system for each process. To increase safety, all their evisceration machines include a Torque management security system.

Bayle's wide range of solutions in duck processing systems means they can supply equipment adapted to all stages of the process.

Thanks to 35 local agents around the world, they have an international presence in leading companies.

Due to their flexibility and family values, their entire team is dedicated to making each project a success.

They accompany the client throughout the project from design to installation.

Bayle place the customer at the heart of their strategy because customer satisfaction is their greatest achievement. For that, they propose a personalised maintenance service to make each project a success. ■