



Dr. Carolina Díaz
Chick Master
Hatchery Specialist

Chick Digestion Requires Development: The Importance of Yolk Sac Absorption

Good chick quality depends on the hatch. A good hatch allows the chick to tap into its maximum genetic potential on the farm and is essential to good productivity. All of the nutrients needed for embryonic development except oxygen are found in the egg. That is why good incubation, which is the product of a well-balanced environment, is extremely important.

The yolk is 30% of the total egg weight and is composed of about 50% water, 15% protein, 33% fat and less than 1% carbohydrates. The albumin/egg white (60% of egg weight) is 88% water and 11% proteins, as well as trace minerals, vitamins and glucose. The composition may vary, depending on egg weight, genetic line and hen age. Embryos utilize egg materials for development from the start to the finish. The yolk is the main energy source for embryonic tissue growth. The nutrients are transferred through the yolk sac membrane and the surrounding vascular system. This process is accelerated around the 12th day of incubation; this is when there is a rapid transfer of fats from the yolk to the embryo. The yolk sac is drawn into the body cavity on the nineteenth day of incubation and the entire yolk residue is located within the abdomen at the end of day 20. At hatch, approximately 30% of the original nutrients in the yolk are still present in the yolk residue, and these nutrients function as a major source of energy for the chick during the first few days of life. At the time of the hatch, the yolk sac may comprise of about 15% of body weight. The absorption of the yolk sac is the tool that allows for the successful hatch of a good chick.

Embryos use the fats in the yolk to initiate body growth and develop the intestine as well as the rest of the organs. Regarding the formation of the immune system, lymphocytes are disbursed in the bursa between days 10 and 15, and its development as well as the thymus gland may be affected by high temperature. While the secondary

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Greetings from the President

In this newsletter, we are focusing on the value of using touchscreens for incubator control. Touchscreens were a novelty only a few years ago and not necessarily friendly to use. Now these touchscreens are on every control we use, both at work and at home. They give us a vision of what is going on with a mere contact of a fingertip.

The value of the incubator touchscreen is that it offers current information that can allow operators to make quick decisions to improve the hatch results. Whether it be on the setter, hatcher, CC3, or via a remote laptop, using touchscreens is a tool to improve feedback and to impact performance. That is why upgrading older controls using this technology offers the ability to do more because you can know more. Of course these screens also need proper care and maintenance. In our parts section, we are giving some helpful tips to keep the screen in good working condition.

We continue to commission more hatcheries with Avida Symphony models and ROCK controls. We are proving the advantage of more precise control of temperatures and intelligent technology like our modulating cooling valves. We are commissioning many new CC3 and Aria ventilation systems as well. When incubators are combined with a CC3 we are getting the praises of how a Hatchery in Harmony produces more and better quality chicks. We are showing when you can sync incubation with ventilation, the return on investment becomes fast and obvious. The ultimate goal is to be more efficient and create greater profits.



Robert Holzer
President

Marjac is now **ROCKIN'**



Incubators pictured: Avida Symphony with ROCK controls

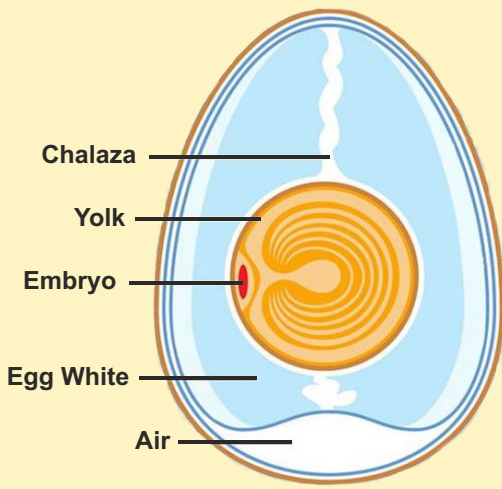
Genesis Plus Upgrade

For many years we offered the Genesis III control that featured OMRON components and PLC's. Several years ago OMRON announced that they would discontinue offering the main controller that was used in the Genesis III, making all components obsolete. We advised customers through our website and e-News about the planned obsolescence to prevent a future problem of having a good working control with no available replacement parts. That is what has happened and OMRON does not appreciate the useful life of incubators and how these controls are on multiple units in hatcheries. To help address the issue, we developed the **Genesis Plus** upgrade. It is a lower cost solution to a full control replacement.

The kit continues to utilize most of the original components, but replaces those that are now obsolete with currently available parts. This kit is for Avida or SS models that have Genesis III controls as well as the associated hatchers. Users of Classic setters and CVH hatchers can use the GeMeric 3 which is designed for one or two zone setters. The Avida and SS models require more complex controls so the Genesis Plus is the best solution. One of our customers in the UK commented;

“The Gen3 upgrade panel since installation we have found to be an attractive self-explanatory screen. The setup is pleasing to the eye, and the additional information at a press of a button such as the option to view graphically the machine’s historic environmental data is an added bonus. With today’s current high bio-security levels, thorough wash down and disinfection procedures the sleek white unit the screen is housed in we have found to be resilient and water tight.”

We suggest starting an upgrade program to replace controls and use the old components for replacement parts until all the controls are upgraded. This allows for a more staged upgrade program and allows for you to have replacement parts available until all controls are upgraded.



immunological organs, such as the spleen, the cecal tonsils, Meckel's diverticulum, the Harderian gland and the extensive tissue of lymphocytes in the intestine and the underdeveloped respiratory system form at the time of the hatch. This is one of the reasons why good maintenance, correct management and good setter design with uniform ventilation assures that they have all the right temperatures to facilitate embryonic development and produce strong, top quality chicks.

Yolk absorption can be influenced by the environment in which the eggs are incubated; environment meaning the characteristics of the eggshell and the surroundings where incubation takes place. The quantity and size of the pores influence the shell conductivity and this, in turn, the absorption of the yolk sac. High incubation temperatures or the absence of oxygen are an obstacle for transforming the energy of the yolk into useable energy for the embryo. We cannot control some aspects of the shell because each hen sets eggs with unique and unrepeatable characteristics. However, it is possible to provide a uniform environment with excellent ventilation that maintains correct and uniform embryonic temperature. The goal is to have a uniform incubation that produces a tight hatch window. These chicks need to finish the process of formation with an adequate digestive system to begin feeding on the farm. The newly-hatched chicks are not ready to feed as soon as they leave the shell and the priority is to utilize the nutrients of their yolk. Feeding starts when the digestive system is ready, several days post-hatch. A uniform lot assures us that no chicks are hatched too early, spending their natural nutrition as they wait for their companions to hatch.

Currently there is tremendous discussion regarding the value of offering feed to the chicks when they hatch. In this article, it can be concluded that there must be a post-hatch period to absorb the yolk sac correctly, an important resource in the process. For this reason, there should be a time of waiting prior to feeding the chicks. This is the guarantee that the required nutrients deposited by the hen in the yolk be absorbed by the chick; that there will be better performance on the farm and a greater expression of genetic potential, improving productivity.

References available on request

GeMeric 3 is a Proven Upgrade

The GeMeric 3 control was introduced almost two years ago. It is now running in hatcheries all over the world giving users improved hatchery results and performance. When the GeMeric 3 was designed, we looked at all the benefits of its predecessors. We also heard the request from users that they wanted a controller that could be put inside the existing control panel rather than a separate unit. Not only did we listen but we also added the following features to make this the best control upgrade for Classic setters and hatchers:

- **5.7 Inch (14.5cm) color touchscreen with simple icon navigation**
- **More precise temperature control with PID control loops**
- **Ten stage programming capability for superb hatcher management**
- **Fan and turn failure detection and alarm**
- **Greater security features**
- **On-screen graphing**
- **Connectable to Advisor, Maestro and OrAlarm**
- **Hatcher fumigation control**
- **Replaces older controllers with outdated circuit boards**



Gain the benefits of more efficient control, reduced energy consumption, better hatchability & improved chick quality. The GeMeric 3 will make any hatchery one step closer to having a *Hatchery in Harmony*.

Increase the Lifespan of your Touchscreens

Considering the amount of daily activities that occur during the incubation process, your touchscreens will inevitably accumulate dust, smudges and even grease marks. You may be experiencing delays when navigating through the screens, or a distorted image. Here are some tips to increase the longevity and functionality of your touchscreen.

Clean it

Before you begin, make sure your touchscreen is turned off. Take time periodically to wipe down your touchscreen and check gaskets for any possible water damage and/or cracks. Use a microfiber or soft cloth and avoid using paper towels or any coarse/harsh material as this will leave scratches on your screen. Stay away from using highly concentrated cleaners, solvents and paint thinners; these types of products will slowly erode the protective coating on your touchscreen.

Fingers should be your only tool

Make sure you are not using excessive pressure and avoid continuous pushing of the buttons on the display. This will quickly reduce the sensitivity of your screen and could deteriorate the screen making it harder to read.

Prevent collisions

During the transfer process, the touchscreen has a probability of taking a violent impact from unmanned trolleys. Take preventative measures and always position unsupervised trolleys against a wall or door bumper to avoid it from rolling away. Bumpers to protect against anything hitting the control panel is a worthwhile investment.



Upcoming Events:

Avicola Porcinos

Buenos Aires, Argentina
8-10 May 2018

Pig & Poultry Fair

Stoneleigh, Warwickshire, UK
15-16 May 2018

PIX/AMC

Gold Coast Convention & Exhibition Centre,
Queensland, Australia
3-5 June 2018

VIV Europe

Utrecht, Netherlands
20-22 June 2018

[Click here to visit our 'Events' page](#)

Chick Master Incubator Co.

945 Lafayette Road
Medina, OH 44256 USA
Tel: +1 (330) 722-5591
Parts Sales: +1 (800) 727-8726
Fax: +1 (330) 723-0233

Chick Master UK Limited

1 The Leggar, Bridgwater
Somerset, TA6 4AF, UK
Tel: +44 (0) 1278 411000
Fax: +44 (0) 1278 451213

www.chickmaster.com

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Hatchery in Harmony