



Frequently asked questions and answers about the SELEGGT process

1 Why are chicks killed in the first place?

Nowadays, breeding focusses almost exclusively on very specialized and highly performing poultry breeds. On the one hand, there are specialized broiler breeds, characterized by fast growth and high proportion of breast meat. When using these broiler breeds, both male and female chicks are reared until reaching slaughter age.

On the other hand, there are laying hen breeds, that lay about 300 eggs per year, but grow only very modestly. For these reasons, the male animals (brothers) of laying hen breeds are neither suitable for egg production nor for economically viable meat production and are mostly killed immediately after hatching.

2 How many animals are killed each year in Germany and what happens to them?

Statistics show that about 45 million male day-old chicks of the egg-laying breeds are killed each year in Germany alone. These are, amongst other things, used in zoos, for example as reptile food.

3 With its layer brother initiative („SPITZ & BUBE“ at REWE and „HERZBUBE“ at PENNY), the REWE Group has already taken an alternative approach and is currently already rearing male chicks. Would it not make sense to extend the commenced path to the whole sector?

This method is considerably more expensive than rearing broilers since brother layer takes much longer due to their very slow growth, the feed conversion of these animals is much poorer, and their breast meat is not of the type sufficiently preferred by the consumer. Consequently, layer brother fattening will remain a niche solution also in the future.

4 Is it not possible to breed a so-called cost-effective dual use breed?

Poultry breeders worldwide are currently working on this to the greatest extent possible. However, corresponding progress in breeding can only be expected – if at all – in the long term. This is particularly true when considering that egg production correlates negatively with muscle growth in the genetic material of poultry – i.e. they practically exclude each other.

5 How does gender identification in the hatching egg work using the SELEGGT process?

In the SELEGGT process, the hatching egg that has been in the incubator for nine days, is firstly taken out of the incubator and placed in a specific position. Here, a sensor first checks if the hatching egg contains an embryo. A fine needle is then used to extract a few drops of allantois liquid from all the fertilised eggs. The embryo remains untouched and unharmed in the process. If the embryo is female, the allantois liquid will contain estrone sulphate, a female reproductive hormone. The drops are then placed into a patented marker outside of the hatching egg. The marker reacts to the estrone sulphate with a change of colour – similar to a pregnancy test. The hatching eggs can now be sorted



according to the colour change. The male hatching eggs and unfertilised hatching eggs are turned into high-quality feed, and the female hatching eggs are returned to the incubator. The small needle puncture does not need to be sealed as the inner membrane reseals on its own. Consequently, only female chicks hatch on the 21st day of the incubation.

6 Is it necessary to kill off the male hatching eggs after sorting them out?

In principle, a chick is viable only from day 21, i.e. on the day of hatching. Nevertheless, it should be noted that ongoing embryonic developmental processes take place during the incubation phase. These can be stopped by briefly shock freezing after sorting, which definitely terminates the development of the male hatching eggs.

7 What additional costs arise with the introduction of the SELEGGT process in the hatching egg?

In general, two primary expenses must be considered by hatcheries using the SELEGGT process in the future: On the one hand, technology must be acquired and integrated into the production process to allow extraction of the required amount of allantois liquid from all hatching eggs at a sufficiently high speed and accuracy, followed by its consistent application on a marker assigned to the respective hatching egg. The investment or leasing costs of future production models cannot yet be calculated at the present time.

On the other hand, the markers will have to be calculated as consumables per hatching egg in the future. It should be noted that two markers are spent for each sexed hen, since, as is known, all hatching eggs must undergo the SELEGGT process in order to subsequently sort out the male hatching eggs. Also with regard to the marker, a purely volume-dependent consumable, no serious cost calculation can be currently presented.

These additional costs are counterbalanced by a considerable savings potential: By applying the SELEGGT process to breeding, only about half of the incubators will be needed in the future for the second part of the incubation phase (days 9 to 21). This not only reduces the space and investment requirements of the hatcheries, but also significantly reduces the energy expenses. The SELEGGT process will also render manual sexing unnecessary in the future. At their currently available incubation capacities, existing hatcheries can increase their output by up to 1/3 by additionally using the SELEGGT process.

Finally, consideration should also be given to the fact that the overall residual costs of the SELEGGT process will initially be reflected in the future price of laying hen chicks. As these lay about 300 table eggs during their lifetime, the costs marginalize. It may be presumed that the future costs of table eggs may increase by 1–3 Eurocents per table egg by eliminating the chick culling using the SELEGGT process.

In brother layer initiatives the costs of the sister hens table eggs increase by 2,5 – 3 Eurocents each. This is because the uneconomic fattening of the brother has to be financed by the table eggs of the sister hen.



- 8 How can the smaller hatcheries afford this? Does this not lead to further concentration?
Because of the very different sizes of the relevant hatcheries, SELEGGT GmbH will in future be able to offer various technological processes adapted to their respective needs.
The SELEGGT technology has a modular structure, so that in the basic version one hatching egg is always analysed after the other. Larger hatcheries may configure several analytic modules in parallel in order to meet their individual performance requirements. In addition, there will be upstream and downstream logistics components that will provide either manual, semi-automated or fully automated loading as well as final sorting of hatching eggs by gender. This modular configurability will allow hatcheries to specifically assemble gender identification technology that precisely meets their needs and budget. Furthermore, customised leasing options allow the technology to be acquired according to the frequency of use or over time.
- 9 Will table eggs of sexed laying hens be specifically labelled?
For the time being, SELEGGT GmbH has the ambition to develop a practicable, market-mature technology for gender identification in the hatching egg. Table eggs originating from sexed hens will undoubtedly have a communicable added value with regard to animal welfare in the future. Whether and to what extent such labelling or identification takes place is up to the marketers or distributors of the table eggs.
- 10 Is the procedure safe? Will piercing allow for bacteria to invade the hatching egg?
Firstly, it must be stated that hatcheries must comply with extremely high standards of hygiene as a matter of principle. Accordingly, it is usual for every person that enters a hatchery to take a shower first and completely change to new clothes. In addition, strict hygiene plans are implemented in hatcheries. The laboratory tests we have carried out relating to piercing the hatching egg did not reveal any negative effects on the hatching egg or on the later chick. Even upon repeated piercing of hatching eggs no problems were observed. Performance tests with sexed laying hens carried out at the University of Osnabrück were also completely inconspicuous.
- 11 When will the SELEGGT process be ready for practice?
Today the SELEGGT process is feasible. This means that the technology works in a laboratory or in our small hatchery. Our next goal is to make the technology practice-ready on a larger scale. The technology will be further developed in order to set up a full-automatic machine in a commercial hatchery. We expect to achieve practical maturity in 2019/20.
- 12 Where will the future machines and technologies be produced?
One of the partners of SELEGGT GmbH is the Dutch incubation technology firm HatchTech B.V. from the Netherlands. Future machines will be constructed in the Netherlands under its leadership.
- 13 How are the hatching eggs closed again?
A closure is not required since the hatching egg shell is only pierced with a very thin needle.



14 Where do you see the disadvantage of your technology?

The fact that the SELEGGT process can only be used at the 9th day of incubation is sometimes questioned. It would be an advantage if the determination could take place earlier; however, we are not aware of any scientific approach capable of fulfilling this requirement that would, at the same time, be suitable to be developed into a practicable procedure. Because of this fact, SELEGGT GmbH has turned its full attention to the SELEGGT process. Should, however, practicable procedures emerge in the future that ensure gender identification at a significantly earlier point in time, the SELEGGT GmbH will have to deal with the market-economic structures, usually operating on the principle of „good is the enemy of great“. However, we are ready to bear this entrepreneurial risk.

In addition, the research team of the SELEGGT GmbH is constantly working on methods that would allow sampling of hatching eggs at an earlier point in time.

15 Do you consider it ethically responsible that millions of male hatching eggs may be used in the future as a constituent of animal feed?

Also from our point of view, a dual use breed would certainly be regarded as the „best practice approach“, also for the mass market; however, such a breeding success is rather unlikely at the moment due to the negatively correlated properties.

Hatching egg powder as a high-quality feed constituent can generally be regarded as very positive as it contains important nutrients and has a very favourable amino acid profile. Thus, enabling the extraction of this raw material via the SELEGGT process is a great advantage.

16 Does the procedure have consequences for the later chicks?

As described above, performance comparisons at the University of Osnabrück have shown no differences between hens bred via the SELEGGT process and hens from a conventional hatchery. Likewise, there are no significant differences in hatching rates between hatching eggs from the SELEGGT process and those sexed manually.

17 Critics fear that the embryos have already developed pain perception at that time? What is your opinion?

It is undeniable that live day-old chicks can feel pain at the time of being killed. We intensively addressed the question of whether embryonic pain perception exists in the first place, and if so, when it approximately develops. Publications of the scientific service of the Bundestag on this topic clearly show great differences among the scientific points of view. In general, however, it can be assumed that the possibility of embryonic pain sensation develops at the earliest on the 11th day of incubation.

18 Do you anticipate a strict compliance with the ban on killing chicks at the time of marketability of the SELEGGT process?

In the case of marketability, we wish for the SELEGGT GmbH as well as for the sector that legislator and courts provide sufficient time to carefully introduce the technology in the sector as well as in



the individual hatcheries under consideration of their specific needs. Here, thoroughness comes before speed.

19 To what extent (how many hatching eggs) have previous tests of the endocrinological SELEGGT process taken place? What was the accuracy of the analyzes?

Several ten thousand hatching eggs were analysed in the context of laboratory tests. These showed a very satisfactory analysis accuracy, usually of about 95%. Here, too, the aim is to bring the accuracy close to 97% within the scope of a production-ready process.