Scottish Egg Producer Retailers Association

MARKET REPORT

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	Size	V. Large	Large	Medium	Small
Farm to Shop	Prices	£1.49	£1.25	£1.15	80p
Scottish Wholesaler	Colony F/R	£1.20(+5p) £1.50	£95p(+5p) £1.40	85p(+5p) £1.30	
English Wholesaler	Colony F/R Colony F/R	£1.40 £1.70 £1.50 £1.45	£1.10 £1.50 £1.25 £1.45	95p(-5p) £1.40 £1.20 £1.20	80p 80p 85p 75p
Packer / Producer Contracted average Price					
		Organic	**FreeRange**	**Barn**	**Colony**
		£1.20/£1.45	90p/£1.15	75p/95p	65p/85p
Producer / Consumer		V. Large	Large	Medium	Small
- Colony	Prices	£2.00	£1.85	£1.40	90p
- Free Range	Prices	£3.00	£2.35	£1.93	£1.05
Free-Range to Farm Shop	Prices	£1.75/£2.25	£1.31/£1.91	£1.15/£1.45	95p
Central Egg Agency	Colony F/R	£1.16 £1.43	£1.01 £1.33	91p £1.23	71p 98p
Imported Continental Prices in Bulk					
Dutch Eggs **German**	Barn	92p	78p 81p	73p 75p	60p

The market is steady and showing signs that it might firm up, there is optimism on the Continent that prices and demand will firm up and stay good until at least Christmas.

In the UK market Ex Large and Large tight in supply odd parcels of Medium on offer though, these should clear with the main holiday makers in England returned with the schools being back.

The small world, the article from Brazil is interesting in that it shows their use of meat and bone meal in poultry diets, in this day and age should the EU be looking at allowing meat and bone meal again as with the improvement in rendering the risk factor has been reduced and by reintroduction this valuable by product would reduce production costs and save on imports of expensive soya.

From a green point of view we are surprised that Germany in particular has not been looking at the inclusion of this valuable product rather than it being included as expensive waste.

This is a lot of useful information put together by David Spackman including work by our own Victoria Sandilands at SRUC.

BROWN-SHELLED EGGS & LOSS OF COLOUR

The first description of the pigment causing the brown in chicken egg shells, was in 1875 by Sorby, who called it “oorhodeine”.

The first description that this colour could be removed from the shell was by Steggerda and Hollander in 1944. When cleaning the shells of newly-laid Rhode Island Red eggs, they found the pigment could be partially removed. This did not happen, however, in glossy-surfaced eggs.

But, commercial egg producers are concerned with the causes of sudden paling, or complete colour loss in brown-shelled eggs, leading to downgrading and reduction of income if marketing through a packing station. Producers selling direct to customers generally find far less importance given to the feature.

The pigment is added to egg shells in the uterus, or shell gland, where the egg stays for some 20 hours. The pigment is incorporated throughout the shell in chicken eggs, although principally in the last 3-4 hours. This time sequence is not followed in other species of poultry, or other birds.

About 90 minutes before the egg is laid, the peak of cuticle deposition on the outside of the egg occurs. The amount varies from none to a thick layer and, since much of the pigment is incorporated in this viscous protein-rich fluid, the brownness of the egg is reflected in the amount of cuticle applied.

The pigment itself is known as protoporphyrin-IX.

This is a haemoglobin porphyrin.

Kennedy and Vevers, in 1973, also found quantities of uroporphyrin and copraporphyrin in addition to protoporphyrin-IX in brown-shelled eggs.

The blue-green colour seen in the shells of some breeds of chicken is due to biliverdin, which is a breakdown product of haemoglobin.

Protoporphyrins, on the other hand, are precursors of the haem molecule.

The main conjecture is that the porphyrins are derived from the disintegration of erythrocytes or red blood cells, in the mucus and epithilial layers of the shell gland.

Metabolism of the oviduct and shell gland is very active and over 15% of cardiac output goes to the oviduct during laying.

Levels of phosphorus increase in the shell gland close to the time the egg is laid and this phosphorous concentration stimulates prostaglandin synthesis, which causes extra pigment secretion by the shell gland.

Eggshell colour is a complex trait and many genes are involved to account for the variety of shades encountered in different breeds.

There seem to be many causes of loss of colour in brown-shelled eggs.

Diseases such as Newcastle Disease, Infectious Bronchitis and Egg Drop Syndrome, when affecting birds with certain levels of antibody to these respective pathogens, can exert an effect on the reproductive tract restricted to the epithelial cells of the shell gland and many simply remove colour-producing capability, without significant loss of shell structure.

I have examined in the past, a condition which mimics Egg Drop Syndrome, in that it gave fairly high antibody response levels, but only completely removed the colour from the shell with no other symptoms. One bird, in fact, laid 49 consecutive white eggs, with perfectly sound shells and internal quality, before pausing production.

A dose of 5mg Nicarbazin anticoccidiostat will remove colour from brown-shelled eggs in 24 hours.

As the bird ages, the same amount of pigment is spread over a larger shell area, thus giving the appearance of paling, but not colour loss.

But, the major factor involved in sudden paling, or colour loss, is stress, which comes from many sources, including red mite infestation.

It will be noticed that when chickens are stressed, the glossiness goes off the shell. In other words, the amount of cuticle deposition is interfered with, and consequently, the depth of colour.

Stress causes the release of the hormone epinephrine, which is responsible for a delay in oviposition , i.e. time of laying, and also cessation of cuticle formation.

It has been shown experimentally, when brown-shelled layers are stressed by handling, vaccination, weighing and other traumatic events close to time of oviposition, eggs resulting will be paler-shelled than on days when no such things are happening to them.

High temperatures and strong sunlight have been suggested as causes of colour loss in brown shells, especially if the hens are partially defeathered on their backs.

The temperature effect may be why Australian workers have reported provision of drinking water at 5° C prevented shell colour loss. It is relieving a stress.

Similarly, the strong sunlight is also causing a stress. This has been put down as the effect of UV light on the haemoglobin in the blood directly.

However, German workers have subjected birds to 3 hours UVB light a day for 4 weeks with no effect on shell colour.

However, consideration should be given to the indirect effects of both UVA and UVB light through stressor effects on skin. Changes can occur to enzymes as a result of a type of sunburn, through the action of protoporphyrin-IX produced. These enzymes have severe effect on erythrcytes.

Alteration of the haem pathway as a result of these cutaneous porphyrias leads to an excessive accumulation of porphyrins.

Not yet researched, is the possible effect of infra-red radiation, which accompanies the UV light falling on the skin.

Free-range birds which do not go out onto range at all, but who indulge in severe feather-pecking, also produce eggs with limited or no cuticle and hence, paler or even white, instead of brown, shells, identical to those produced by bald birds out on range.

It follows, therefore, that it is stress reaction of “sunburn” effects on skin, rather than effect of sun directly on blood, which gives colour loss.

So, any management to limit access to direct sunlight by provision of more shade, as well as a behavioural control of feather-pecking, are the pre-requisites for control of loss of shell colour.

3) **BIRD BEHAVIOUR**

In light of the above advice to keep birds occupied so that they are not exposed to an assort-ment of stressful situations, it is useful to remind ourselves of what chickens actually do when left to their own devices.

This may act as a guide as to where and to what extent countermeasures are applied to relieve stress, and hence, improve productivity and egg colour.

Work by Sandilands and co-workers in 2007 gave the following average percentages:-

Standing	41 +/- 1%
Feeding	35 +/- 1%
Drinking	8%
Sitting	7.5%
Dustbathing, Preening, etc	8.5 +/- 1%

The Standing figures represented 55% on the floor and 26% on perches, the remainder being on other objects.

Remember also with layers, that the drinking occurs in two main peaks - just after laying and in the 2 hours before lights out.

4) **EGG NUTRITION**

Last month we outlined how eggs contributed to the human need for iron.

This month we need to consider another essential nutrient - iodine. Intake of this is likely to be more deficient than Calcium or Vitamin C.

Although the recommended intake is 150mcg (micrograms) per day for adults, it is calculated that the average intake for women is 140mcg, with over half having less than 130 mcg.

Even worse, one in 40 have only 48mcg or less. Men have a little more, but still over 50% do not achieve the recommended daily intake.

The Lancet Diabetes and Endocrinology journal recommends that all pregnant women should be given iodine supplements. As iodine is essential for the developing brain, this approach would help boost babies cognitive power.

Iodine is also needed for production of thyroid hormones, and deficiency can lead to goitre.

Because many people are reducing their intake of dairy products, for dubious dietary reasons, iodine deficiency is on the rise again. Again Vegans and Vegetarians (who limit their dairy intake) are most at risk.

It is difficult to get enough supplemented iodine from vegetables, nuts and cereals alone, so emphasis must be moved to seafood, seaweed or indeed eggs.

Eggs are a good source of iodine; 2 eggs providing 54mcg. They can be boiled, poached or fried, as iodine levels are largely unaffected by cooking method.

5) **THE LAYER OF THE FUTURE**

Dr. Neil O'Sullivan, geneticist for Hyline International, has recently given his thoughts on where poultry genetics are going and what the likely outcome will be.

He emphasised that increasingly emphasis would be put on Genomic Selection. This is where the actual gene make-up of individual birds is used rather than average performance of siblings or offspring, as has been followed for years.

Genomic Selection allows potential breeders to be identified at a much earlier age and so eliminate the need to maintain larger populations for longer periods before selecting potential breeders.

Liveability and bird behaviour traits particularly respond to this method of selection.

The aim is to mate the top 2-3% of males to the top 8-15% of selected females, to reproduce each line. Some traits will be measured in a variety of environments - fear response, mortality in group housing, nesting behaviour and feather loss in group housing.

Currently, Hyline improve egg numbers by 3 eggs/year. Using Genomic Selection should improve this by 15%, so increasing gain to 3.5 eggs/year.

Similarly, liveability is expected to improve by 1-2% per decade, genetic resistance to Mareks Disease evolve faster than the virus mutates, fully feathered hens become the norm at 100 weeks, no social vices, pecking or smothering, all eggs laid in the nest and finally, production of a 'bomb-proof' hen. This could not be achieved following traditional selection methods.

Hyline was founded in 1936 and by 2036, i.e. 100 years later, they expect the birds to be laying 550 eggs to 100 weeks of age, cf. the current 460.

Also, feed conversion is expected to be 1.15kg feed per kg egg, cf. current 1.7kg:1.

Liveability will have risen by 2036 to 97% to 100 weeks of age, cf. current 91%.

Dr. O'Sullivan emphasised the current situation where bodyweight at 16 weeks has a direct effect on egg numbers.

Increase of 0.03lb = 5 more eggs

Increase of 0.07lb = 7 more eggs

Increase of 0.1lb = 8 more eggs

That increased weight must of course be muscle. Muscle contains glycogen, a source of energy during egg production, and layers lacking proper muscle development cannot sustain production

This emphasises that, even with improved selection methods, the quality of the eggs produced is still largely in the hands of the producer

By David Spackman

Ukrainian Ovostar to export eggs to Israel

Ukraine's largest poultry producer Ovostar has recently received permission to export eggs to Israel, says the country's agricultural ministry.

"This is more proof that Ukrainian producers have improved their product quality and are able to compete in international markets. We are interested in intensifying trade relations with Israel and we are ready to expand the range of products we export", commented the minister of Agrarian Policy and Food Alexey Pavlenko.

According to him, representatives of Israelian veterinary services inspected seven companies, egg producers in Kiev, Khmelnitsky, Chernigov, Sumy and Zaporozhye Oblasts.

The Deputy Chairman of the State Veterinary and Phytosanitary Service of Ukraine Alexander Verzhihovsky said that currently egg and broiler producers in Ukraine are being inspected by the veterinary service of Moldova.

Enterprises in the nine different regions of the country have already been inspected. "In Moldova European legislation with regard to food safety is implemented. After completion of the inspection experts will draw their conclusions about the quality of Ukrainian products, and the possibility of granting an export permit", said Alexandr Verzhihovsky.

By Vladislav Vorotnikov

New horizons for animal rendering

With sustainable production being foremost on everyone’s mind, the possibilities for rendering animal

by-products are enormous. How to further lessen the environmental impact of animal protein production in the pig and poultry as well as in the fish and pet animal sector, that was on the agenda of the Brazilian Renderers Association (ABRA) during their symposium ‘New horizons for animal rendering’ during the trade fair FIPPPA in Curitiba Brazil.

Renowned speakers Gilson Spanemberg from Apex Brazil, Dutch rendering expert Jacques Wijnoogst and American professor Charles Gooding zoomed in on the sustainability aspect of animal rendering. Chemical engineer Spanemberg stated that if we want to meet the needs of the growing world population, with the little resources we have, we have to do the utmost to use every source we have. “As it is, the earth cannot sustain everyone. If we demand that all the people in the world have a decent food supply, we would need a second and even a third earth.” But according to Spanemberg sustainability is more than just environmental preservation. “Social and economic needs are also part of the equation when it comes to sustainability. We have to preserve resources, caring for the needs of people while also creating revenue. Only profitable companies can ensure the other aspects.”

Green industry

“When it comes to rendering, we are a ‘green’ industry, but we have to prove it,” says professor Charles Gooding. He was involved in making lifecycle assessments and crunched the numbers regarding sustainability of the rendering industry. “By rendering animal by-products instead of composting it, you prevent 70% of CO2 emissions. Further when taking in to account all transport, energy and so forth, which is needed for rendering, meat and bone meal can compete with vegetable protein every time. The thing is, there is nothing more efficient than bringing an essentially waste product to value.” With the inclusion of 5% rendered material in feed to replace the same energy and protein value of soya the CO2 value is reduced from 794 to 752 kilo per tonne of feed.

“And there are even more gains to make,” is the opinion of Jacques Wijnoogst. “Especially in pet food and aquaculture feed we can be much more efficient. Nowadays we tend to use dried feed ingredients, with a relatively large CO2 footprint due to energy use in the drying process.” Wijnoogst is an active promotor of using liquid or semi liquid rendering products. “The human food business shows us there are no limitations in using liquid products, we in the animal feed industry are just not used to it.”

Also read: Rendered products beneficial to poultry nutrition

Rendering in Brazil

Embracing the idea of using liquid rendering products may be somewhat far-fetched for the Brazilian renderers, but the industry in Latin America has a really straight forward thought about how to utilise rendering products in animal feed. “Discussions, like the ones in Europe, where rendering material cannot be used in feed, we don’t know,” says Lucas Cipriano, discussion leader of the symposium on behalf of ABRA. Some 80% of meat and bonemeal and 25% of animal fat goes back into the animal protein production chain, excluding ruminants. Brazil has some 500 relatively small rendering plants throughout the country, keeping transport of processing waste to a minimum in the tropics. These plants process only waste streams from slaughter houses, all fallen stock in Brazil is destroyed on farm. The total amount of rendering material sums up to 12.5 billion kilos, after rendering some 2 billion litres and 3.4 billion kilos of meat and bone meal are left for recycling.

“By legislation we can feed anything to swine and poultry, using bonemeal instead of soy protein our poultry industry can be more profitable,” Cipriano states. Even sitting on top of the largest pile of soy in the world, replacing soy with meat and bonemeal an extra saving of 7% can be achieved. “And on top of

that, rendering products have phosphor, calcium, protein and energy, which makes it much easier to formulate good feed."

Also read: IPPE: Rendering symposium to focus on high feed costs

The Europe situation

According to Cipriano there is more to the use of meat and bonemeal than just cost saving. "Protein is scarce, we should use everything we can get our hands on." He has some understanding for the European situation where no meat and bonemeal is used for feed, but: "Europe has come a long way since the BSE crisis, everyone knows the product is safe. Instead of using it as we do, Europe is wasting energy and money to ship rendering products overseas and import poultry meat from countries where they feed their own exported meat and bonemeal. In my opinion that is a crazy situation." The rendering expert sees opportunities for re-introducing meat and bonemeal in European feed in the near future. "Of course that is a political issue, more than a safety one. That said, making feed as sustainable as possible, using rendered by-products is something Europe nor the rest of the world can ignore."

The first edition of the three day event FIPPPA in Curitiba Brazil, a partnership between existing fairs Avesui and Tecno food Brazil, highlighted the importance of animal protein production in Latin America. World Poultry went to Brazil to join the experience. Some 20,000 visitors from all over the world visited the exhibition and took part in the scientific programme. The quest for knowledge was highlighted on the first day of the three day International Fair of Animal Production and Protein Processing (FIPPPA). Specific audiences and stakeholders took part in various seminars, ranging from ways to ensure better productivity on farm, the environmental gains achieved through rendering, to the Seminar on Public Policies for the Development of Animal Protein Chains. Francisco Turra of Brazilian producers organisation ABPA explained: "There is a clear future on the horizon for the production of animal protein in Brazil. At the moment we export huge amounts of poultry, some 4.1 million tonnes a year, but mainly whole chicken. Adding value through further processing before export is one of the developments which will be a hot topic in the years to come." Turra sees a lot of challenges too, from high energy prices all the way to complicated logistics. That said: "Brazil is a natural source of good and the potential is huge." Showfloor manager and editor of the Brazilian magazine Avicultura industrial Humberto Luis Marques added: "The main goal of our fair is to present to everyone involved in the industry the latest technology to be able to make their operation more profitable. It is a one stop shopping address for integrators as well as independent operations. The seminars are more of a strategic nature, making FIPPPA a qualified business event."

By Fabian Brockotter
