

New trends in Russian poultry production

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In 2005 Russian meat production was some 7,500 thousand tonnes and this was accounted for as follows – 35% poultry, 29% pork, 33% beef and 3% byother meats. Of these figures poultry meat produced locally accounts for 28% of the 35% and the corresponding figures for beef and pork were 36 and 32% respectively.

This equates to a per capita consumption of 52kg of all meat types and local production accounts for 34.3kg of this total. Of this, beef provides 12.5kg, pork 11kg and poultry 9.3kg. Some 40% of all animal protein consumed by Russians comes from poultry.

All imported meat comes to Russia deep frozen, 70% of it as joints or portions, and its quality is often lacking. Local buyers prefer cooled local meats which are ready to use. For this reason Russian producers face stiff price competition from deep frozen meat products and so they need to focus strongly on creating strongly branded products that the Russian consumers will buy and eat.

The egg and egg products market in Russia is met by local production and a few imports from Belarus and Ukraine (0.7%).

On average each Russian consumes 242 eggs per year.

Quality requirements

Quality requirements are continually increasing and eggs enriched by selenium, iodine and vitamins as well as eggs without their shells are increasing in popularity. At the moment the production of enriched eggs is not more than 20% of all production.

Some 31% of poultry meat production is in Central Federal Okrug and the figures for other regions are Privolzhskij 20%, Juzhnyj 17%, Sibirskij 11%, Severo-Zapadnyj 10%, Uralskij 9% and Dalnevostochnyj 2%.

The biggest region for egg production is Privolzhskij Federal Okrug with 25% and figures for other regions are Central 21%, Sibirskij 15%, Juzhnyj 14%, Uralskij 11% and Severo-Zapadnyj 11%.



A poultry farm in the former USSR.

The vast majority of eggs come from large, integrated table egg operations. These integrations are using new technologies and highly productive modern poultry hybrids and are becoming more and more competitive. As a result, broiler production has increased by more than 40%, with a productivity level of more than 45g, and egg production has increased by more than 22% with a productivity level of more than 300 eggs per layer. On average, broiler productivity has increased by 2.9g and the productivity of table egg layers by some eight eggs per year in Russia.

At present 10.3% of broiler production is from broilers with a productivity of more than 50g live weight growth per day and 43.5% from birds achieving 45-50g. Still over a third of production (34.2%) is from birds achieving just 40-45g average growth per day.

The Russians have already experienced highly productive broiler farming (more than 50g liveweight gain per day) and growing periods have been reduced to 35 days with a food conversion rate of 1.6-1.7kg of feed per kg of weight gain.

On the egg production front 17.2% of eggs are produced by birds that are laying more than 330 eggs, 57.2% from those laying 300-330 eggs, 18% from birds laying 270-300 eggs and 7.6% from birds laying less than 270 eggs.

The largest farms produce huge numbers of eggs. These include Sverdlovskaja Farm (egg production 711.2 million eggs per year) and Chelabinskaja Poultry Farm (524 million). The profitability of these farms is approximately 20%. The average profitability in Russia is 11% for broiler production and 20-22% for table egg production.

Russian poultry farms strongly cooperate with the major foreign breeding companies, such as Aviagen, Lohmann, Hubbard, Hendrix Poultry Breeders, Hybro, Hy-Line, Dominant, Cherry Valley, Grimaud and BUT.

A locally produced meat bird that was developed over the last 5-10 years has a growth rate of 56g per day and an FCR of 1.7. At the

breeder level this bird produces some 130-135 chicks which is ultimately equivalent to 270-290kg of meat.

Modern Russian egg layers produce up to 330-340 eggs during their 72 week life with a FCR of 1.15-1.20kg feed per 10 eggs. Good feeding and management gives a livability of 96-97%.

The base for Russian layer and broiler diets is maize which is the perfect energy source and soya is used to provide the protein. Climatic conditions in many of the Russian agricultural regions are not suitable for growing the above mentioned crops. This means that Russia is subjected to the steadily rising international prices for these two commodities.

Available nutrients

The basic grains used in Russian poultry diets are barley, wheat, rye, oats and peas – ingredients with a low level of metabolisable energy as they contain a lot of non-starch polysaccharides such as β -glucans, arabinoxilans (pentosans) and fibre, which increase intestinal viscosity and decrease nutrient absorption and utilisation.

Naturally, birds suffer a digestible nutrient shortage when normalisation of the gross nutrient content of the feed takes place. This shortage is intensified by the fact that modern poultry breeds have an increased metabolism when compared to their fore-runners.

Sunflower byproduct is used in Russia as natural protein. But sunflower, which is a popular crop in Russia, has a high quantity of fibre and non-starch polysaccharide. For this

Continued on page 29

Continued from page 27
reason the nutritional value of sunflower as a main protein source is decreased.

In recent years the use of in feed enzymes has become popular. These hydrolyse β -glucans and pentosans in the bird's digestive tract and this enhances protein and lipid digestion.

Priorities for research

There are many aspects of modern poultry production requiring scientific research. Below are some of the perceived priorities for research in Russia.

- The new trend in poultry farming of producing eggs and poultry meat with medicinal qualities, such as eggs with a high iodine content, products enriched by certain vitamins, low cholesterol content products and those with a decreased fat content.

- Mycotoxins in feed and how this affects the quality of end products.

Mycotoxins decrease the bird's viability, its immune status and productivity and the residues in poultry products are dangerous for human health.

There is a need to develop new mycotoxin adsorbents. Specific probiotics which are able to metabolise mycotoxins in the intestinal tract of the bird into non-hazardous products are essential.

At the same time, there are a lot of ingredients of plant, animal and microbial origin which do not exist naturally as feed ingredients that are used for balancing the diet.

There are a lot of different toxins in these ingredients and livestock are very sensitive to them because they lack natural defence mechanisms.

However, tolerance of different animal types to many natural toxins varies a lot.

Research shows that quails, guinea-fowls, hens and turkeys have high tolerance against

trichothecenes, which accumulate in cereals as a result of fusarial fungal activity.

These are often present at high or very high levels. Ducks and geese are two to five times more sensitive to these mycotoxins than other poultry types.

- Layers are also very sensitive to poor quality fish and meat bone meals which can contain a lot of bacterial toxins and other chemical breakdown products.

- Modern poultry breeds require more vitamins and we need to utilise new knowledge to make necessary adjustments to rations.

More attention is being given to increasing vitamin E levels in broiler and layer diets because vitamin E has apparent antioxidant properties that protect the animal from the deleterious oxidation process.

Intramuscular fat is more sensitive to oxidation in poultry meat and fish and less so in pork. It is even less susceptible in mutton and beef. Meat susceptibility to oxidation is directly correlated to the tocopherol concentration in it.

Moreover, there is a clear correlation between vitamin E in the diet and the vitamin E content in the bird's liver and tissues. Vitamin E contents are usually adequate when poultry feed is fortified by vegetable oils, which are full of polyunsaturated fatty acids. For this purpose different vitamin E levels in broilers have been studied in Russia. Trials showed that feed with a higher vitamin E level (100-150g per tonne) during the whole fattening period or just for the last 2-3 weeks before slaughter benefits production by increasing live weight by 3.0-6.8% and improving FCR by 1.1-3.5%.

Adequate vitamin A and E in chicken liver, tocopherol accumulation in meat and fat are needed for reliable storage of meat for 15 and 120 days. The meat of birds receiving an extra 50g vitamin E per tonne when compared to controls that received 30g of vita-

min E per tonne had less (1.6-3 times) oxidation and better meat palatability.

Vitamin E is just as important in layers. This is especially so for breeders with high egg laying qualities, hatchability and day old chick numbers. Such birds need a much higher level of vitamin E in their diet.

Tocopherol content in egg yolk increases with its increase in the feed. Vitamin E improves the keeping quality of eggs. It also enables birds to better withstand toxicoses and poisonings. Vitamin E is needed for selenium-protein and ascorbic acid synthesis and this stabilises immune status.

- Natural growth promoters are needed for use in poultry feeds as the feeding of antibiotics for this purpose has been banned because of their perceived risks to human health. Thus we need to source ecologically safe products for use in poultry diets that do not adversely affect consumers or their perception of our industry. In this context very interesting applications of herbal extracts, probiotics and also organic acids are being developed.

Create favourable conditions

At present organic acids are used in poultry feeding primarily to preserve feedstuffs and grain because they decrease pH level and counter micro-organism growth.

Organic acids alone and in blends acidify the bird's intestinal tract, slow down pathogenic growth of micro-organisms and create favourable conditions for beneficial microflora development and all this aids digestion.

One such product is Biomin's Biotronic Se Forte and it was evaluated using Cobb broilers at an inclusion level of 1.0 or 2.0kg per tonne of feed. Its use improved broiler live weight (+5.9-6.97%) compared to the control group. FCR was also improved by 10.4-5.3%. ■