

Safety Food

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Merry Christmas



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Have a question for experts in the animal nutrition or poultry meat industry? Write to us! This magazine was created to respond to the needs of our customers.



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Ladies and gentlemen:

At the end of 2022, the world's population exceeded 8 billion. This poses a huge challenge for us: breeders, farmers, and food producers. This is compounded by the realization that we must produce with reduced amounts of chemical fertilizers and pesticides, while ensuring proper animal welfare and care for the environment.

For many years, Wipasz has been following the path that is enshrined in the European Green Deal. On our 900-hectare experimental farm, we have reduced the quantity of fertilizers and crop protection products used by 25%, while increasing yield by 25%. This was made possible, among other things, by using the right bacteria and fungi.

Wipasz Green Farms allow raising chickens without the use of antibiotics and chemotherapeutic products and with the use of 100% natural feed with herb additives. The environment inside breeding facilities provides ideal conditions for chickens to thrive and allows them to exhibit natural behavior, including foraging and pecking in hygienic bedding or hopping up onto perches. The microclimate, including air humidity, natural light penetrating into the buildings through windows, and heated flooring, is controlled by a computer to promote the health and well-being of the birds. Such farming further improves the flavor of poultry meat. Thanks to their unique architecture, The Green Farms are part of the natural landscape of the Polish countryside.

Agriculture and animal husbandry are a large part of Poland's economy. Together we should make sure that it develops in the right, pro-ecological direction, with respect for the environment, animal welfare, and human health.

My wish for you is that the coming year, 2023, brings economic stability and political peace to the world.

A handwritten signature in blue ink, reading 'Józef Winiarski'. The signature is written in a cursive, flowing style.



Wishing you a warm and Merry Christmas,
good luck and successes in the New Year
to all our clients, partners and friends.

A handwritten signature in blue ink that reads 'Józef Mikusowski'. The signature is fluid and cursive, with the first letter 'J' being particularly large and stylized.

CEO



Merry
Christmas

Wipasz

NEWS

- 8 Ready, Set, GO!
- 12 Rising prices and agricultural production costs
- 16 SIAL International Trade Fair 2022

Wipasz Vademecum

POULTRY MEAT

- 22 Retail chains and restaurants – the product offer of Wipasz S.A.
- 26 Growing consumer demands to breed poultry without antibiotics

Wipasz Vademecum

RAW MATERIALS

- 34 Summary of the 2022 harvest in Poland

Wipasz Vademecum

RESEARCH AND DEVELOPMENT

- 40 Feed expanding – a new technology at Wipasz S.A.

Wipasz Vademecum

POULTRY FEEDING

- 46 How not to lose the possibility of receiving compensation for avian influenza in your flock?
- 50 Antibiotic – free poultry breeding is the future and a duty!

Wipasz Vademecum

PIG FEEDING

- 54 Nutritional supplements and the economics of piglet breeding
- 58 The role of vitamins in pig nutrition

Wipasz Vademecum

CATTLE FEEDING

- 64 Improving milk production performance by increasing the digestibility of the ration
- 68 Do not compromise on selenium supplementation

Wipasz Vademecum

LAW

- 74 What is the net weight declaration?

Our Experts

- 80 What challenges does the grain market face in 2022/2023 season?
- 81 The soybean meal market – is a third consecutive drought in Argentina possible?
- 82 How can one achieve the right egg yolk color?
- 84 What factors should be considered when introducing an alternative bulk raw material into an animal's feed ration?
- 85 What is the *in ovo* chick feeding method? Can it have a commercial application?
- 86 Is it possible to complete a broiler production cycle with compound feed containing coccidiostats?
- 87 Why do not sows manifest symptoms of estrus?
- 87 What are the causes of aggression in fattening pigs?
- 88 How should soybean cake be used in porker feed?
- 88 Is it a good idea to use additional enzymes in compound feed for fattening pigs?
- 89 This year's corn for silage has cobs with a small amount of grain. What can be done to take the best advantage of it?

Recipes

- 90 Try our Christmas recipes

Foundation

WIPASZ HELPING HAND

- 96 Letter from the Wipasz Helping Hand Foundation

Retail chains and restaurants – the product offer of Wipaz S.A.

Maciej Kowalski – Deputy Sales Director, Wipaz S.A.

Each year we see a high level of opportunity to enter a new market. This is because of the increasing demand for fresh products, especially in the retail sector. A lot of attention is paid to the quality of the products offered. This is why we are constantly developing our product range to meet the needs of our customers. We are particularly focused on fresh products, which are in high demand in the retail sector. We have been successful in this regard, as evidenced by the fact that our products are sold in over 1000 retail outlets across Poland.

The high level of demand for fresh products is also reflected in the fact that our products are sold in over 1000 retail outlets across Poland. This is a testament to the quality and variety of our product range. We are constantly working to improve our products and to meet the needs of our customers. This is why we are so successful in the retail sector.

Our products are sold in over 1000 retail outlets across Poland. This is a testament to the quality and variety of our product range. We are constantly working to improve our products and to meet the needs of our customers. This is why we are so successful in the retail sector.



22 25

Summary of the 2022 harvest in Poland

Sebastian Bieganski – Commodity and Currency Markets Analyst, Wipaz S.A.

The year's harvest of staple crops in Poland was good. Thanks to favorable weather conditions, the grain harvest met or even exceeded the target. The harvest of oilseeds was also good, although it was slightly below the target. The harvest of vegetables and fruits was also good, although it was slightly below the target.

Thanks to the good weather conditions, the grain harvest was good. The harvest of oilseeds was also good, although it was slightly below the target. The harvest of vegetables and fruits was also good, although it was slightly below the target.

crop	2016	2017	2018	2019	2020	2021	2022
wheat	41.1	46.7	46.8	52.2	52.2	48.4	42.6
barley	15.7	17.6	17.1	17.0	16.8	16.2	16.2
oats	2.0	2.2	2.2	2.2	2.2	2.2	2.2
rye	0.3	0.3	0.3	0.3	0.3	0.3	0.3
corn	1.0	1.0	1.0	1.0	1.0	1.0	1.0
sunflower	1.0	1.0	1.0	1.0	1.0	1.0	1.0
soybean	0.1	0.1	0.1	0.1	0.1	0.1	0.1
rapeseed	0.1	0.1	0.1	0.1	0.1	0.1	0.1
oilseed rape	0.1	0.1	0.1	0.1	0.1	0.1	0.1
potatoes	0.1	0.1	0.1	0.1	0.1	0.1	0.1
vegetables	0.1	0.1	0.1	0.1	0.1	0.1	0.1
fruits	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Table 1. Total yields of cereals, oilseeds and vegetables in 2016-2022. Source: Preliminary estimates of the Agricultural and Horticultural Center in 2022. Estimate Poland 2022.



34 37

Antibiotic-free poultry breeding is the future and a duty!

Maciej Barasz – Manager of Poultry Cabinets, Wipaz S.A.

The increasing pressure from consumers and regulatory bodies to reduce the use of antibiotics in poultry breeding is a challenge for the industry. However, it is also an opportunity to improve the quality and safety of the products. We are committed to providing high-quality, antibiotic-free products to our customers. This is why we have invested in advanced breeding technologies and strict quality control measures.

Antibiotic-free poultry breeding is the future and a duty! We are committed to providing high-quality, antibiotic-free products to our customers. This is why we have invested in advanced breeding technologies and strict quality control measures.



50 51

Improving milk production performance by increasing the digestibility of the ration

Filip Kula – Product Manager, Cattle Sales Department Wipaz S.A.

The key to improving milk production performance is to increase the digestibility of the ration. This can be achieved by using high-quality feed ingredients and advanced feeding technologies. We offer a range of products designed to improve the digestibility of the ration and increase milk production performance.

Improving milk production performance by increasing the digestibility of the ration. This can be achieved by using high-quality feed ingredients and advanced feeding technologies.



64 67

Nutritional supplements and the economics of piglet breeding

Maciej Barasz – Pig Nutrition Advisor, Wipaz S.A.

Nutritional supplements play a crucial role in improving the economics of piglet breeding. They can help to improve the health and performance of the piglets, leading to higher survival rates and faster growth. We offer a range of nutritional supplements designed to improve the economics of piglet breeding.

Nutritional supplements and the economics of piglet breeding. They can help to improve the health and performance of the piglets, leading to higher survival rates and faster growth.



54 57

Dear Friends of our Foundation:

Wielki 1, November 2022

We feel that it is our duty to thank you for your support, report on the tasks we have accomplished, and present a plan of further action.

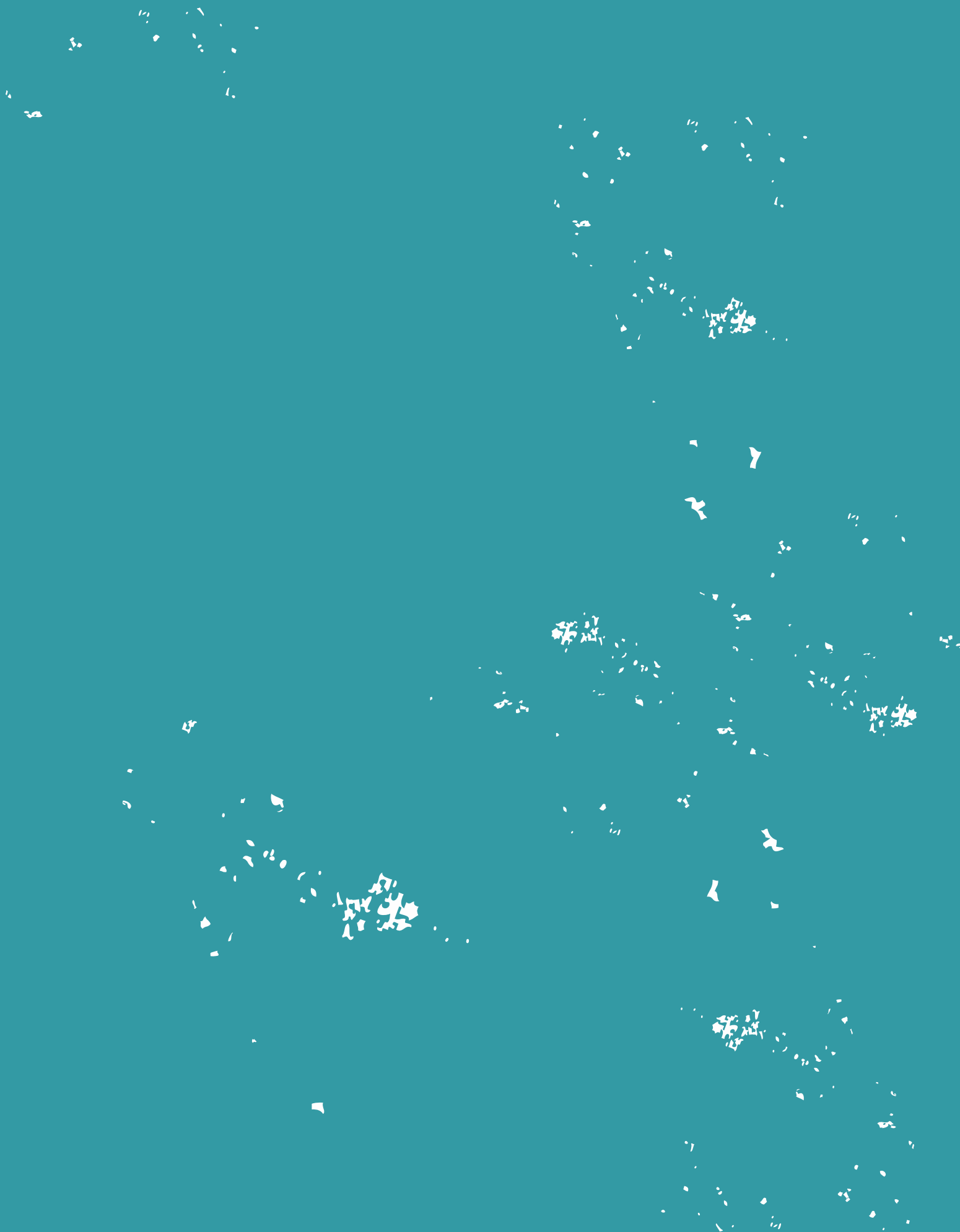
In 2022, a total of PLN 315,200.00 was credited to our account.

Thanks to the support of our donors, we were able to purchase a new car for the Foundation. This will help us to transport the children more easily and safely.

We are grateful to all our donors for their support and contribution to the Foundation. We will continue to work hard to improve the lives of the children in our care.



96 97



In this section you will read:

- Ready, Set, GO!
- Rising prices and agricultural production costs
- SIAL International Trade Fair 2022



Ready, Set, GO!

Rafał Kacprzak – Marketing Specialist Wipasz S.A.

At the end of August this year, Wipasz S.A. organized the #WIPASZ AKTYWNIIE w Biegu! 1st Relay Run for Women and Men in Olsztyn's Central Park. This sports and recreational event was aimed at promoting the Chicken from The Green Farms product and a healthy lifestyle. The event ended with a family picnic to celebrate the end of the summer vacation and a grand lottery with prizes.

Wipasz S.A. has been supporting special and sports events organized for local communities for years. As one of Poland's largest animal feed producers and a leader in the production of top-quality fresh chicken meat, Wipasz knows how important a balanced diet is to people's health, especially for those who train on a regular basis. The Green Farms project is a long-term investment by Wipasz S.A. that combines animal welfare, care for the environment, and concern for consumer health.





The #Wipasz Aktywne w Biegu event was held under the Honorary Patronage of the President of the City of Olsztyn – Piotr Grzymowicz. In addition, the special guest was Aleksandra Lisowska, a gold medalist of the marathon during the European Athletics Championships in Munich. Radio Eska Summer City, which became a media patron of the event, was not to be missed at the event's location. In addition to the excitement related to the athletic competition, the runners and their families received tasty treats in the form of grilled Chicken from The Green Farms prepared by the Wipasz S.A.'s kitchen. All runners also participated in a lottery with prizes, with a Trek Marlin 7 sports bike as the grand prize and many other gifts!





Nearly 200 people took part in the relay run, forming 36 five-person teams. One of the men's relay teams composed of members of the Management Board of Wipasz S.A., headed by President Józef Wiśniewski. A large number of Wipasz employees participated in both the men's and women's relay runs. In the women's classification, the winner was Dream Team, with the Pszczółkowski Team – Paweł's Angels and the Crazy Mothers just behind it. In the men's classification, the Najmowicz Triathlon team took first place, the Partridge Team took second place, and the third place

on the podium went to the athletes of the Pszczółkowski Team – Chariots of Fire. Regardless of the result achieved, all participants received a commemorative medal at the finish line.

We are proud to have participated in the creation of another unique project aimed to promote a healthy lifestyle. Make sure to participate in next year's edition of #WIPASZ AKTYWNIEM w Biegu! See you at the start line!



Rising prices and agricultural production costs

Łukasz Szulczak – Financial Director Wipasz S.A.

Statistics Poland has reported that consumer prices in October 2022 increased by 17.9% compared to October 2021 and by 1.8% compared to September 2022. This is a continuation of the trend that started in March 2021, shown in the chart below.

Inflation in October was mostly due to the price increases of:

- ▣ energy carriers: +41.7%;
- ▣ food and non-alcoholic beverages: +21.9%;
- ▣ fuels for private means of transport: +19.5%.

Inflation usually has multiple causes. Economists believe that the main causes of the current inflation are the COVID-19 pandemic and the war in Ukraine.

The coronavirus has had a negative impact on many markets. As a result of sanitary restrictions, demand was reduced and factories around the world came to a standstill. The dramatic changes in demand and supply led to disturbances in many sectors of the economy, which until then had been in relative equilibrium. The governments of many countries, including Poland, also relied on demand stimulation which resulted in additional amounts of money flowing into the market. After the reopening of the economies and the lifting of sanitary restrictions, there was a sudden increase in demand, which is still ongoing. On the one hand, demand was influenced by the additional cash from government aid, while on the other hand, purchases that had been postponed due to the pandemic were being made. In addition, there were

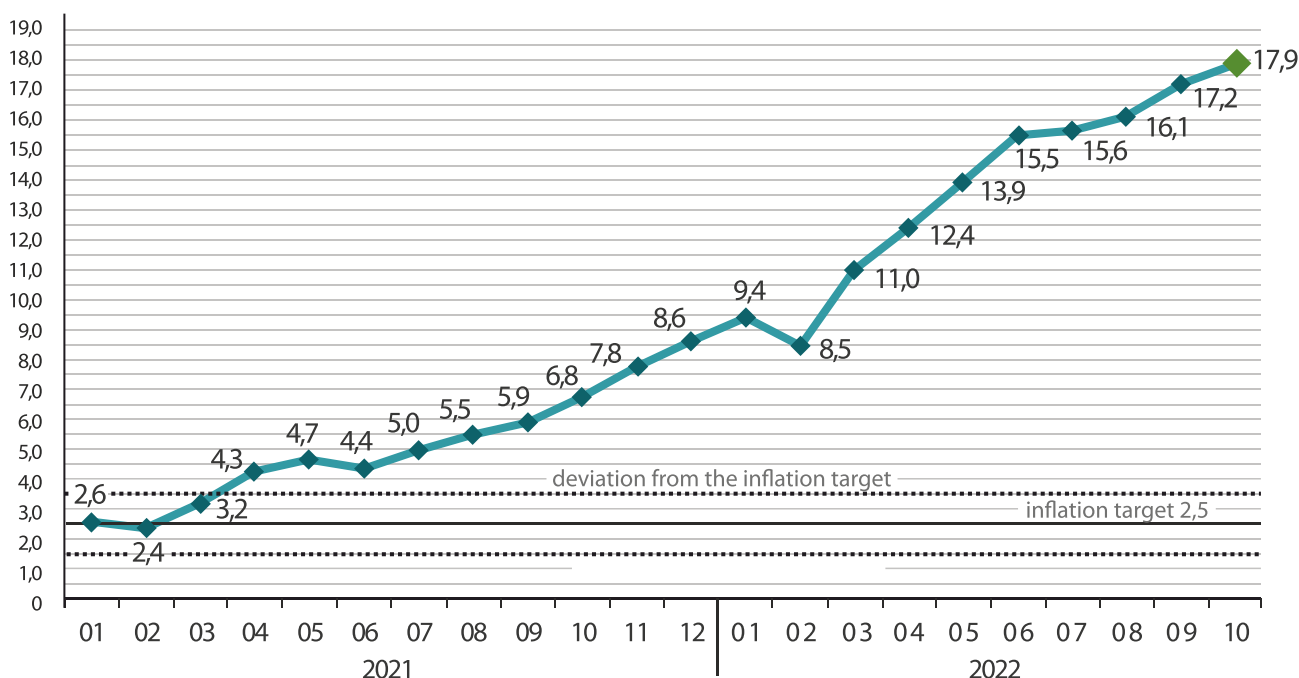


Chart 1. Changes in prices of consumer goods and services compared to the same period of the previous year (in %)

Source: Statistics Poland <https://stat.gov.pl/obszary-tematyczne/ceny-handel/wskazniki-cen/szybki-szacunek-wskaznika-cen-towarow-i-uslug-konsumpcyjnych-w-pazdzierniku-2022-roku,21,6.html>

problems with the supply of products. The shutdown of factories during the pandemic and the disruption of supply chains resulted in an insufficient supply of components for such products as electronics and cars. Consequently, many plants are manufacturing fewer products than they did before the pandemic and are facing a shortage of feedstocks for production.

As a result, there is a significant excess of demand over supply, which means that there are more buyers than there are available products to buy. The response to such a situation is an increase in prices.

The second cause of inflation is the war in Ukraine. The exchange of goods with Ukraine, Russia, and Belarus has been halted due to the warfare, the destruction of manufacturing facilities, and the introduction of sanctions. The products that Ukraine, Russia, and Belarus had produced and exported include:

- ☒ coal;
- ☒ corn and wheat;
- ☒ wood and furniture;
- ☒ potassium fertilizers;
- ☒ natural gas and propane;
- ☒ oils, including sunflower oil;
- ☒ crude oil and its derivatives;
- ☒ cast iron, steel, and iron ore.

The reduction in grain exports has definitely translated into an increase in grain prices in Poland and Europe. Before the war, Ukraine accounted for a half of the world's sunflower oil exports, 16% of corn exports, and 10% of global wheat exports. The most important buyers of grain from Ukraine were China, Egypt, Turkey, Indonesia, and Spain.

A similar situation has occurred and continues to occur with energy resources. The prices in contracts for purchase of electricity have exceeded 2 600 PLN/MWh for Q4 2022 and 2 800 PLN/MWh for Q1 2023. By comparison, in 2021, the energy prices were a little more than 300 PLN/MWh, or 8–9 times less. The situation is similar for natural gas, which as recently as in

mid-2021 cost less than 200 PLN/MWh, while the current prices have already exceeded 1 000 PLN/MWh. Energy raw materials have an impact on all industries, including agricultural product markets.

These price increases have and will continue to have an influence on the cost of grain production and animal breeding. Expensive fuel means an increase in the cost of field work, transportation of crops, livestock, and meat. High gas prices mean higher costs of heating, fertilizer production, corn drying, and feed production. Modern livestock farms, feed plants, and slaughterhouses depend heavily on electricity and gas, and the increase in their prices has a direct impact on their production costs.

At present, it is difficult to predict further developments regarding inflation. A number of analyses are available that outline possible scenarios for the changes in inflation in Poland. Virtually all of them state that the situation will largely depend on the changes in the war in Ukraine. The prolonged conflict and the sanctions are expected to keep inflation high. Prices may drop if Europe succeeds in finding new suppliers of coal and gas, and in increasing production from renewable energy sources.

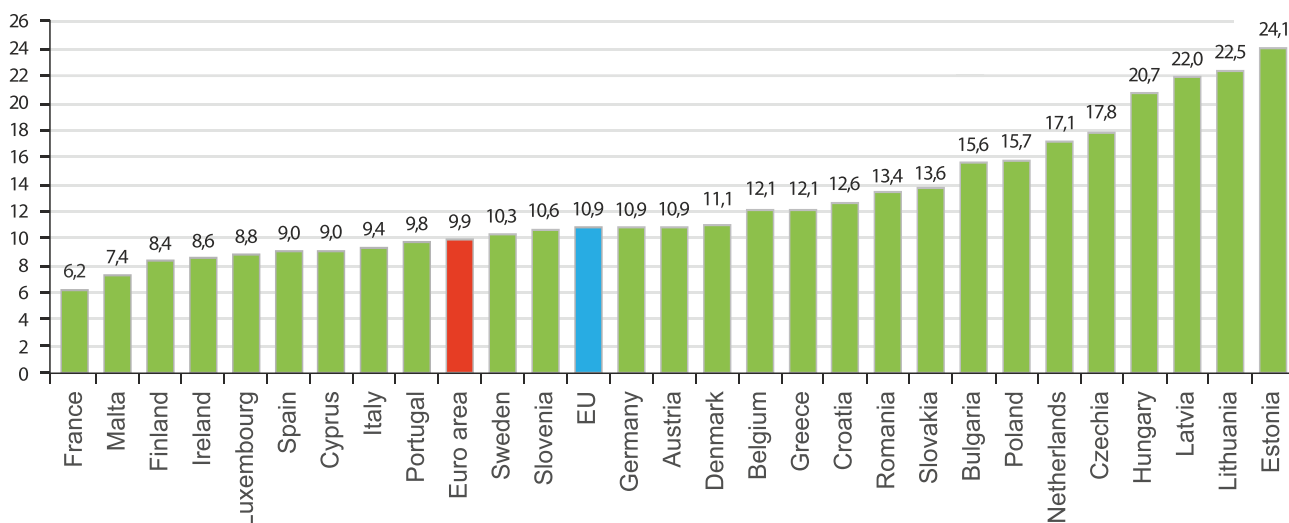
Inflation is a problem not only in Poland, but in the entire world. The mechanisms described above are global and affect most national economies to varying degrees. Countries that are facing high inflation include the United States (8.5%), Brazil (12%), Turkey (+79.6%), and member states of the European Union, as seen in the chart 2., which presents data for September 2022 calculated by Eurostat.

According to Eurostat, in September 2022, inflation in Poland was 17.1% (Eurostat's calculation methodology differs from the one used by Statistics Poland). A higher inflation rate was noted in only 6 EU member states: Netherlands, Czech Republic, Hungary, Latvia, Lithuania, and Estonia. Inflation in our largest economic partner, Germany, was 10.9%, which is on par with average inflation in the eurozone.

Central banks, such as the National Bank of Poland (NBP), are responsible for the level of inflation and intervene when price increases exceed the assumed inflation target (2.5% +/- 1 p.p. in Poland). The NBP's response to excessive price increases is to raise interest rates. The NBP's interest rate increase cycle began in September 2021 and continues to this day. The NBP's interest rates have a direct impact on the cost of money as expressed, for example, by the WIBOR 3M index, which on the day this article was written was equal to 7.61% and, for comparison, was equal

to 0.25% in October 2021. More expensive money means higher interest rates on loans, but also higher interest rates on savings accounts and deposits. This leads to a reduction in borrowing by individuals and businesses, and encourages savings. Less credit and higher savings means less money in the market. Less available money means fewer purchases i.e. less demand, which in theory leads to a drop in prices or a halt in price increases. For farmers, breeders, and businesses, this means increased operating costs, especially when debt levels are high.

Annual inflation rate (%) in September 2022



ec.europa.eu/eurostat 

Chart 2. The inflation level in member states of the European Union in September 2022

Source: <https://ec.europa.eu/eurostat/documents/2995521/15131946/2-19102022-AP-EN.pdf/92861d37-0275-8970-a0c1-89526c25f392>



SIAL International Trade Fair 2022

Michał Jeżewski – Export Business Development Manager Wipasz S.A.

For more than 50 years, Paris has hosted one of the most important food industry events in the world – the SIAL Paris Trade Fair. Its first edition was held during the International Food Week in 1964. It brought together experts and enthusiasts from 26 countries. Today, SIAL is attended by exhibitors and visitors from more than 200 countries and is the flagship event on the global food industry's calendar. Thanks to the passion, commitment, and most importantly, experience of the teams, partners, exhibitors, and visitors, SIAL Paris has been named one of the largest food industry trade shows in the world. During this event, the French capital is visited by producers, importers, buyers, and retailers, who for 5 days share their

knowledge and skills, while setting the latest trends in sales.

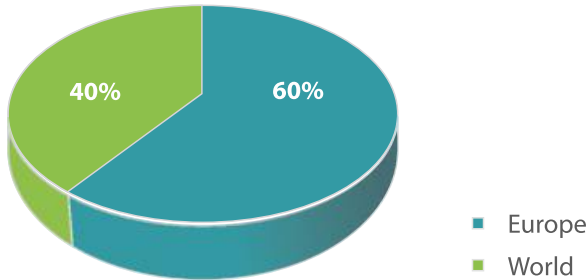
This year's fair was held on October 15–19, 2022 at the Paris Nord Villepinte Exhibition Center. It was attended by more than 260 000 professionals from around the world. In 10 halls with a total area of 250 000 sq. m., 7 000 companies from 127 countries presented their offers, including about 250 exhibitors from Poland. This was the first edition after a four-year break that was due to the COVID-19 pandemic.

The SIAL Paris trade fair can be classified in terms of specific sectors and the type of activities performed.

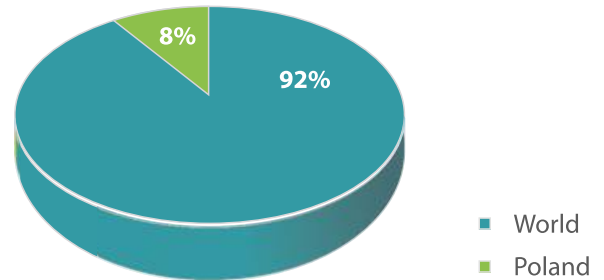
No.	Sectors
1	Food
2	Meat
3	Organic
4	Dairy
5	Ready-made meals/snacks
6	Sweet products
7	Delicatessen
8	Fruits and vegetables
9	Frozen meals
10	Beverages
11	Seafood
12	Equipment
13	Food processing

No.	Type of activity
1	Import/Export
2	Sales
3	Wholesale
4	Supplies
5	Supermarket, Hypermarket
6	Hard discount store
7	Organic brands
8	Delicatessen
9	Hotel industry
10	Food industry
11	Food processing/packaging
12	Equipment

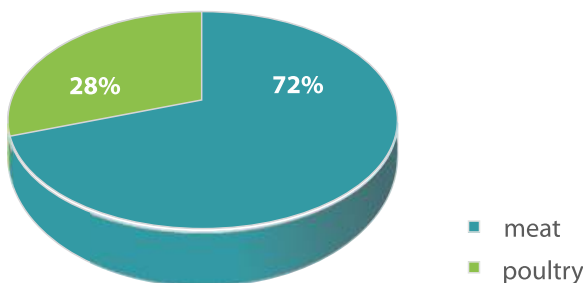
This year, a majority of the exhibitors were European companies, accounting for 60% of all exhibitors, while 40% were from outside Europe: Asia, Africa, North America, and South America.



Among all poultry-related exhibitors, there were 13 Polish companies, which accounted for 8% of all poultry companies present at this year's fair.



Each day, the employees of the Sales Department of the Meat Division and the Marketing Department of Wipasz S.A. explored the exhibition halls in search of new solutions and inspiration, and numerous business meetings resulted in new acquaintances and contacts that will deepen the current cooperation with our business partners. After the COVID-19 pandemic, it was a pleasant experience to return to normalcy and actively participate in meetings. Such experiences facilitate the development and creation of new relationships, as well as strengthening the current contacts with trading partners. Of course, the most interesting product category for Wipasz employees was meat and meat products. Poultry accounted for 28% of this category. There is a strong upward trend in the share of white meat in the market, which is related to the direct increase in poultry consumption among consumers.



In line with the slogan 'OwnTheChange' launched in 2020, the fair constantly emphasizes evolution, innovation, more environmentally and animal-friendly farming and processing, as well as new business models and start-ups.

During this year's edition, the exhibitors and visitors were able to take part in various events held during the fair.

SIAL Innovation – up-to-date expert information on innovation and market developments around the world. This is one of the most important events where the latest inventions, transformations, and consumer trends in the global food industry were discussed.

SIAL Talk – a meeting one should have attended to learn everything about the latest and future developments in the food sector. It is a platform that helps to understand, analyze, and discuss trends in our ecosystem, such as retail formats, innovative food processing solutions, and environmental impact.

SIAL La Cuisine – cuisine demonstrations and SIAL Restaurant with menus composed by world-class chefs.

SIAL Start Up – with 'OwnTheChange' SIAL Paris highlights innovative industry-specific solutions. In particular, international start-ups showcased new products that are healthier and better for a sustainable environment. There were also proposals that addressed food supply challenges and introduced new solutions in the distribution sector.

SIAL FutureLab – an event where one could learn about the main trends of the coming decade, such as:

- ☒ agriculture 2030 – meeting the food needs of the society in terms of quantity and quality, while reducing the negative impact on the environment and health;

- ☒ retail 2030 – what the 'store of tomorrow' will look like, i.e. from inventory management through consumer experience, to final purchase;

- ☒ food 2030 – what we will put on our plates in 2030.

In this year's edition, the organizers of SIAL Paris also introduced a new feature: guided tours on the key

innovation-related topics. For visitors, it was a great opportunity to discover the program from a completely different perspective and to thoroughly delve into the details. Several topics were proposed:

- ☒ consumer goods;
- ☒ innovative packaging;
- ☒ catering and food services (CFS);
- ☒ intermediate food products (IFP);
- ☒ SIAL Paris trends and innovations.

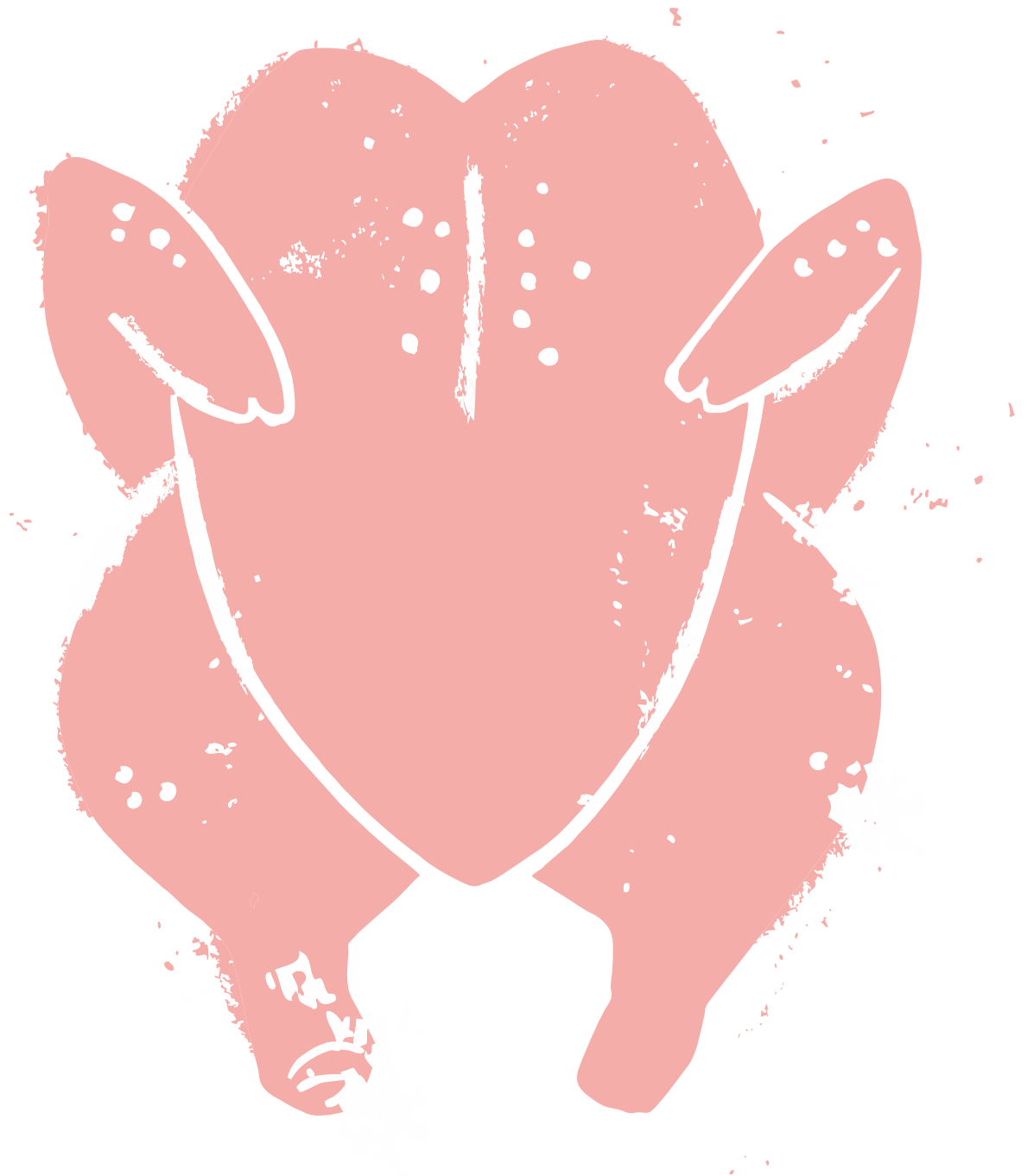
In the coming year, there are several interesting industry events to look forward to, such as IFE 2023 in London and PLMA in Amsterdam, but the most anticipated event will be the Anuga trade fair in Cologne, where Wipasz S.A. will certainly have its booth. As many as 7 000 exhibitors will appear from more than 100 countries, presenting comprehensive concepts for the entire food service sector: healthy food, fresh and frozen meat, convenience products, and private labels, but also solutions that care about the environment and sustainability in production. We highly encourage you to attend this interesting event – there will be no shortage of high-quality demonstrations, lectures, and product presentations to broaden your knowledge and experience. Such a meeting is not to be missed. See you at Anuga 2023.





In this section you will read:

- Retail chains and restaurants – the product offer of Wipasz S.A.
- Growing consumer demands to breed poultry without antibiotics



Retail chains and restaurants – the product offer of Wipasz S.A.

Maciej Stawicki – Deputy Sales Director, Meat Division Wipasz S.A.

Exactly one year ago, I had the opportunity to write an article for this magazine about the planned launch of a new production line. This investment, which addressed the market trends, allowed us to expand our portfolio of fully heat-treated convenience products. A state-of-the-art processing line with the latest molding, coating, and baking solutions determines the strength of the new project. Today we can confirm that convenience products have become a permanent part of our company's daily sales, gaining key customers with whom we are jointly developing the new category. The product range of Wipasz S.A. has been enriched with items whose production takes full advantage of all possibilities of the available technology. Starting with molded products such as nuggets, dippers, popcorn, burgers, and steak. Our product development department provides tailored solutions. We give customers the possibility to choose – from the choice of the right ingredients and the form, to all available coating systems. We are able to offer products that today's market expects. Thanks to the high quality of slaughter and cutting lines, and to the experience of our employees, the quality of whole-muscle products is a hallmark of Wipasz S.A. Therefore, our regular offer includes breaded tenderloins, whole breaded fillets, and pieces of breast fillet in various breading systems and specific weight ranges. Cut portions of breast fillet in tempura, delivered to both retail chains and restaurants as breaded strips or pieces, have been an unquestionable commercial success. We are also pleased to receive positive comments on new projects that use dark meat in combination with crispy Asian bread crumbs – this product may become increasingly popular in the future.

The flavor profile specified in our catalog is merely an invitation to prospective customers to work together to achieve exactly the kind of product the customer and the target market want. For this reason, the presentation of our portfolio of H&S, BBQ, and tempura profile products is limited only to the presentation of our flagship products. Everything else is accomplished in our R&D kitchen.

An ideal product requires an ideal packaging. Based on this assumption, we offer our customers various forms of packaging, as well as packaging formats and logistics. We are ready to manufacture products for our partners' brands and appreciate their trust in our products, which they manifest by placing them in their brand portfolios.

Production under the strictest microbiological regime with a separate high-risk zone allows our products to have the characteristic of the so-called RTE (ready-to-eat) products, which are suitable for consumption without additional thermal processing.

The objectives set in the first months are, on the one hand, to achieve full volume and product capacity and, on the other hand, to commercially define the optimal product mix and distribution channels.

Already in our first year of operation, we gained recognition and established permanent cooperation with retail chains, as well as with the hotel and catering sector. The UK market alone enables us today to perform key contracts for our partners. However, we see the synergies between production for the modern channel and the Horeca sector more clearly than



we anticipated. Recipes prepared for retail customers are used in restaurants and vice versa. Ideal examples of this are breaded H&S wings, breaded tenderloins, breaded breast fillet pieces, and the aforementioned breast fillet strips in tempura. Of course, even if the product names appear to be identical, each recipe is tailored to the customer's method of preparation. But regardless of whether the product is prepared in a restaurant by a chef or reheated in a home oven, we guarantee that it brings full flavor and satisfaction every time.

It is also no surprise that we want to prepare the dishes we have tried at our favorite restaurants in our own kitchens by ourselves. This is why Wipasz, as a conscious manufacturer, is ready to supply the same flavors to both restaurants and chain stores.

The most popular restaurant brands offer their products in supermarkets. This trend is becoming more and more common and seeing a popular restaurant logo in your favorite supermarket is definitely not a temporary situation. Just look at the shelves of retail chains in the UK, which offer products from such brands as Nando's – a restaurant chain specializing in Portuguese-style chicken dishes, a British bakery chain Greggs, an American restaurant chain TGI Fridays, Ed's Easy Diner with 1950s American cuisine, Chiquitos with its tex-mex offer, Italian restaurants Zizzi, Asian cuisine from Iitsu, Wasabi, Wagamama, and YO!, Mexican cuisine from Wahaca, and finally Harry Ramsden's with its fish & chips offer. It would be unfair to say that this trend is solely a response to restaurant closures during the lockdown caused by the coronavirus epidemic. Especially if we note that Pizza Express appeared in the shelves long before the first lockdowns. With the right alignment

of the sales strategy, the concept of this unique diversification can only be advantageous and will certainly not cause restaurants to lose their customers.

For restaurants, this is undoubtedly an important promotion, whether they choose to offer a wide range or only one or two products. Each time, however, they should be flagship products that the brand is famous for. Regardless of whether a store offers a wide range of ready-made meals like TGI Fridays or only sauces and supplements like Nando's, there can be no shortage of flagship concepts, which is why there are boneless wings from TGI and Nando's peri-peri sauce on every shelf. In addition to the obvious reinforcement of a brand's strength, this approach provides an opportunity to reach places with the product where there is no restaurant of the brand.

For retail chains, the clear benefit is the diversification of their commercial offer. A recognizable restaurant brand is a conspicuous differentiator of the offer presented on the shelf. Seeing well-known brand in a store triggers a quick purchase decision in consumers, which is based on good experiences. Even if it seems unrealistic that chips strips from KFC will soon be available in every store, one can note that the brand's logo is already present on store shelves (in the form of Original Recipe chips, right next to another brand – teriyaki-flavored chips with the Subway logo).

However, regardless of the scale of cooperation, there is one condition that must be met – the product must be perfect. An established brand will choose cooperation only with a proven supplier who will guarantee the repeatability of the highest quality product, and Wipasz definitely meets this requirement!



Growing consumer demands to breed poultry without antibiotics

Marta Bilko – Regional Veterinarian Wipasz S.A.

The types of goods present on store shelves depends on the needs, expectations, and financial capabilities of consumers. In recent years, there have been clear changes not only in the quantity of products, but also in their quality, confirmed by certificates placed on the packaging. This trend is due to the growing awareness of the public concerning the importance of food quality in maintaining health and fitness.

Meat, especially poultry meat, is one of staple foods. It is chosen particularly often because of its availability, price, and ease of preparation. Poultry meat in the diet provides a large amount of protein while minimizing the quantity of fat. Chicken can be cooked easily and quickly, and can be given almost any flavor, from hot to sweet and sour, depending on the customer's taste.

A noticeable trend is the growing importance that consumers attach to the origin of the meat they purchase. In recent years, the word 'welfare' has been used very often, and rightly so, since animal welfare largely determines the final quality of meat.

As a responsible food producer, Wipasz S.A. operates according to the principles of the so-called Vertical Integration System. This means that we control the en-

tire production chain from the field to the consumer's table. We use carefully selected raw materials to produce feeds, which then go to our farms. Our veterinary staff is committed to maintaining the highest level of animal welfare, so that chickens grow properly and naturally. Livestock from the contract farms is sent to our two slaughterhouses located in Mława and Międzyrzec Podlaski. We constantly undergo numerous audits, passing of which enables us to sell meat in Poland and in foreign markets.

The types of certification and the criteria associated with them vary in terms of the use of antibiotics on poultry farms. Below is their breakdown according to the level of sophistication of these requirements.

1. Monitoring (QS – Quality System)

An example of a certification system that monitors the amount of antibiotics used during breeding is the Quality System (QS). During the entire breeding process, the veterinarian who supervises the farm (and is also registered in the system) is required to enter the drugs used into the appropriate register, thus feeding the system with data for further analysis. Monitoring of antibiotic consumption is carried out in the form of a so-called therapeutic index.

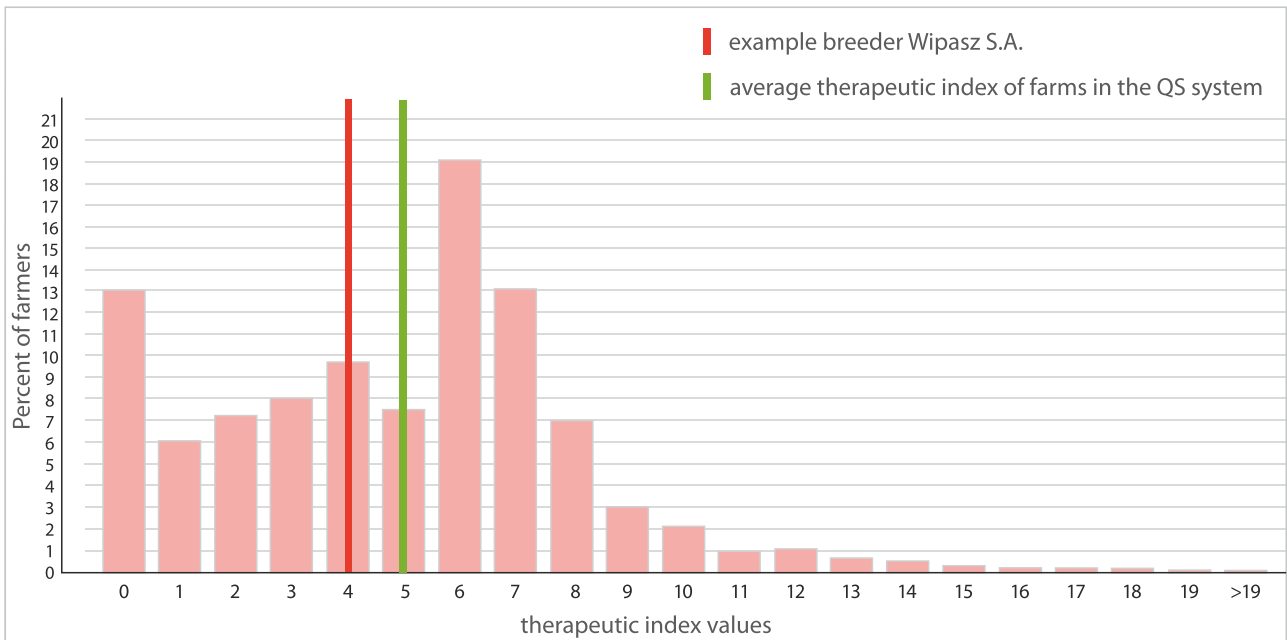


Chart 1. Average therapeutic indices of broiler farms registered in the QS system (period 01.01-30.06.2022)

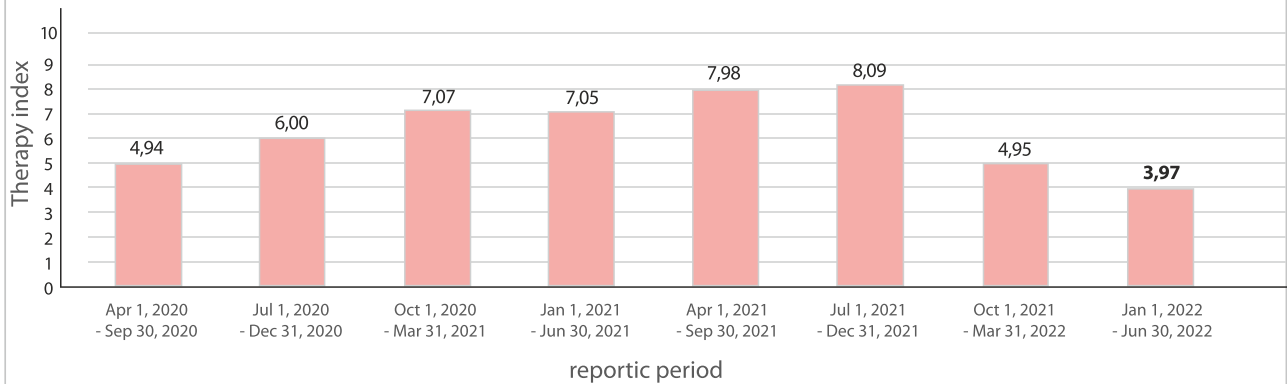


Chart 2. Therapeutic index of the Wipasz S.A. selected farm

Therapeutic index: 3,97 – an example of the monitored Wipasz S.A. farm

Therapeutic index: 4,88 – calculated average index in the QS system on broiler farms in Germany

On the first chart, the green line shows the therapeutic index of all farms whose data on antibiotic consumption during each production cycle is available in the QS system over a period of two quarters. The second chart presents the therapeutic index of a selected farm whose data on antibiotic consumption during each production cycle is available in the QS system over a period of two quarters.

The record below the charts concerns a comparison of the therapeutic index of the aforementioned farm with the average therapeutic index of QS farms in Germany. The register of allowed therapeutic agents and the withdrawal times assigned to them is available on the official website (<https://www.q-s.de>) in the form of a specific appendix and is regularly updated.

Active agent	Waiting period [days]		
	Broilers	Turkeys	Peking duck
a) antibiotic active agents			
Amoxicillin	2 ^b -6	5	9
Ampicillin	6	a	a
Ampicillin Cloxacillin comb., Ampicillin Oxacillin comb.	a	a	a
Apramycin	2 ^b -6	–	–
Benzylpenicillin	2 ^b -6	2 ^b -2	a
Benzylpenicillin Neomycin comb.	a	a	a
Chlortetracycline	10	a	a
Cloxacillin	a	a	a
Colistin	2 ^b -2	2 ^b -2	a
Danofloxacin*	a	a	a
Doxycycline	5-12	9-12	a
Enrofloxacin*	7	13	a
Erythromycin	3	3	a
Florfenicol	a	a	a
Kanamycin	a	a	a
Lincomycin	5	a	a
Lincomycin Spectinomycin comb.	5-8	a	a
Neomycin	7	7	a
Oxacillin	a	a	a
Oxytetracycline	14	7	14
Paromomycin	a	a	a
Phenoxymethylpenicillin	2	a	a
Spectinomycin	a	a	a
Sulfadiazine Trimethoprim comb.	a	a	a
Sulfadimethoxine	14	a	a
Sulfadimethoxine Trimethoprim comb.	a	a	a
Sulfadimidine	14	a	a
Sulfadimidine Trimethoprim comb.	a	a	a
Sulfadoxine Trimethoprim comb.	a	a	a
Sulfamethoxazole Trimethoprim comb.	5-18	a	a
Sulfamethoxypyridazine	a	a	a
Sulfaquinoxaline	14	14	a
Tetracycline	14	a	a
Thiamphenicol	a	a	a
Tiamulin	2 ^b -3	3-6	–
Tilmicosin	12	19	a

Trimethoprim	a	a	a
Tylosin	2 ^b -5	2-5	a
Tylvalosin	2	2	a
b) anticocidia			
Amprolium	2 ^b	2 ^b	a
Sulfaclozine	16	21	a
Sulfadimethoxine	14	a	a
Sulfadimidine	14	a	a
Sulfaquinoxaline	14	14	a
Toltrazuril	16-18	16	a
c) antiparasitics			
Albendazole	a	a	a
Fenbendazole	9	-	-
Flubendazole	2	a	a
Fluralaner	14	-	-
Levamisole	14	14	14
Phoxim	a	-	-
Piperazine	2	-	-
d) other active agents			
Acetylsalicylic acid	a	a	a
Bromhexine hydrochloride	2 ^b	2 ^b	2 ^b
Ketoprofen	a	a	a
Natrium-Salicylat	a	2	a
Siliciumdioxid, highdispers.	2 ^b	a	2 ^b
Vitamin A	2 ^b	a	a
Vitamin ADE comb.	2 ^b	2 ^b	2 ^b
Vitamin ADEC comb.	2 ^b	2 ^b	2 ^b
Vitamin D3	2 ^b	a	a

Table 1. Active agents in veterinary medicinal products that may be used for the treatment of poultry in the QS scheme

* So-called critically important antibiotics or reserve group antibiotics

a) There are no formulations with this active agent approved for this species. When a product is used that does not have a withdrawal period provided in its summary of the product characteristics for the animal species in question following Art. 113 and 115 of the Regulation (EU) 2019/6, the withdrawal period may not be less than

- the longest withdrawal period provided in its summary of the product characteristics for meat and offal multiplied by 1.5;
- 1 day, if the longest withdrawal period is 0 days and if the product is used in a different taxonomic family;
- 28 days, if no withdrawal period for meat and offal is provided in its summary of the product characteristics. Relevant taxonomic families are e.g. *Anatidae* like geese and ducks or *Phasianidae* like chicken and turkeys.

b) The shortest waiting period of this active agent is shorter than 48 hours. Applying this to QS-poultry, compliance with the waiting period of 48 hours is nevertheless mandatory.

2. Quality restrictions

Another aspect evident in the standards, which is aimed at reducing the amount of antibiotics used, is the elimination of the possibility to use so-called critical antibiotics according to the WHO list (Highest Priority Critically Important Antimicrobials; HPCIA).

For verification purposes, meat buyers require reporting of antibiotics used at the farms where their meat is produced. The information provided is verified during annual audits. The drugs are assigned to specific farms and deliveries. This is fully traceable on the basis of slaughter data, medical treatment cards, and other documents checked during the audit.

Usage of Antibiotics in first 7 days [Y/N]	Antibiotic 1 Active Ingredient	Antibiotic 1 Total g active ingredient given to flock	Antibiotic 1 Treatment within first 7 days [Y/N]
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A section of the monthly report that illustrates the requirement to record how many grams of an active substance were administered in a given flock and during what period. This applies to each delivery (separately for trimming and for passing of the entire flock). It is also very important to verify which antibiotics were given in the first week.

3. Qualitative and quantitative restrictions

Another element of the program aimed to reduce antibiotic use during breeding is the quantitative restrictions imposed by customers. The data sent (which also includes the total tonnage of the passed livestock) enables the determination of the number of milligrams of the active substance in each kilogram (mg/kg). The restrictions are becoming increasingly

stringent; for example, the use of antibiotics is allowed in a maximum of 27% of the birds in the flock, at the maximum rate of 8 mg/kg.

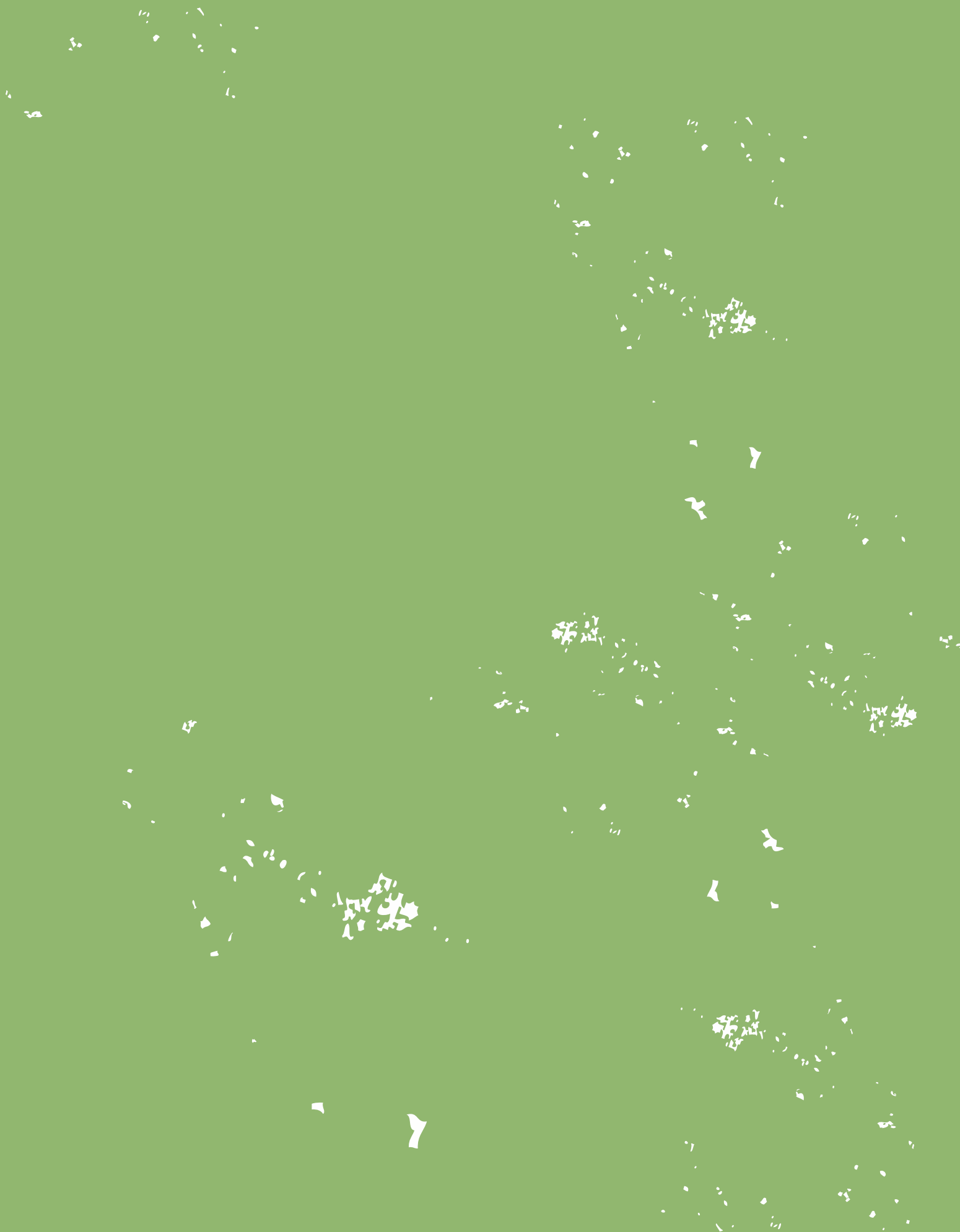
4. Breeding without the use of antibiotics

This is a goal that all growers should embrace, as it is not only possible, but necessary to achieve. Wipasz Green Farms conducts such breeding while maintaining excellent breeding results. This was possible to achieve only by investing in knowledge and cutting-edge technology, which culminated in the opening of the Polish Chicken Research Center. The studies conducted at the Research Center have clearly shown that the use of new technologies, such as heated flooring, ventilation, stabilization of temperature and humidity in the building, maintaining a high level of animal welfare, including high-quality natural plant feed, absorbent and hygienic pellets, and precise bioassurance, enables breeding without the use of a single gram of an antibiotic.

Chicken from The Green Farms products are the best proof of how the antibiotic-free breeding method and maintaining the highest welfare standards affect the quality of the final product.

The problem with drug resistance of microorganisms is increasing and, as a sector that depends on animal breeding, we need to be mindful of this. The widespread use of antibiotics has contributed to significant changes in drug susceptibility in populations of pathogenic bacteria, which can be described as qualitative (multiresistance that determines resistance to antibiotics from different groups) and quantitative (a significant increase in the number of resistant strains within a given bacterial species). No new antibiotic has been invented for many years. Therefore, we should act so that medicine can use the antibiotics available today for as long as possible. It is possible to raise a broiler without the use of antibiotics, but with a profit and high production results. Let us work to ensure that antibiotic-free breeding becomes a standard.





In this section you will read:

- Summary of the 2022 harvest in Poland



Summary of the 2022 harvest in Poland

Sebastian Węgiński – Commodity and Currency Markets Analyst Wipasz S.A.

This year's harvest of staple cereals in Poland was good. Thanks to favorable weather conditions, the grain harvested in most regions seems to be satisfactory in terms of quality and yield.

Harvest reports indicate much higher grain yields achieved by farmers compared to last year's. Despite a smaller cultivated area (by about 7%, equal to 5.9 million hectares in 2022), the yields (efficiency per hectare) of staple cereals with mixtures were estimated to be 8% higher than last year. The yields of all staple cereals were estimated to increase, most importantly rye (up by 9% y/y), spring triticale, winter triticale, rapeseed (up by 6%), and spring wheat (up by 8%).

Thanks to higher yields, it is estimated that this year's production could reach 27.1 million tons, which is 0.4% more than in 2021. Wheat production will reach a record high of 13.5 million tons, up 11% from the previous year, with triticale production up 3% and rapeseed production up 15%. Harvests of some cereals will be smaller than last year, including rye harvests by 5% and barley and oat harvests by 7%.

Although a lot of grain has been harvested, this is not visible on the market, as most farmers have stored the harvested grain, hoping for an increase in prices. By far more offers to sell grain came from trading companies than from farmers. For the time being, how-

Designation	2010	2015	2017	2018	2019	2020	2021	2022 ^{a)}	2021 =100
	in decitonnes from 1 ha								
staple crops with crop mixes	35,1	36,7	40,0	32,3	35,2	44,8	42,6	46,0	108
winter wheat	45,7	47,6	51,1	43,0	46,4	54,2	51,8	54,5	105
spring wheat	34,3	33,5	38,5	31,5	32,6	41,7	39,6	42,7	108
rye	26,9	27,8	30,6	24,2	27,2	35,1	33,1	35,9	109
winter barley	40,7	41,3	47,1	37,8	43,0	51,1	47,7	49,8	104
spring barley	33,0	33,0	38,0	29,5	32,1	40,0	37,8	39,5	105
oat	26,4	26,5	29,8	23,5	24,9	33,2	31,4	32,8	105
winter triticale	35,2	36,3	40,4	32,8	35,9	45,0	43,1	45,7	106
spring triticale	28,4	28,4	32,9	25,1	27,5	36,4	33,7	35,8	106
spring crop mixes	30,9	30,9	34,4	28,2	30,6	38,1	36,6	37,7	103
winter crop mixes	30,5	27,2	32,2	25,0	26,2	34,5	33,7	33,8	100
total rapeseed and agrimony	23,6	28,5	29,5	26,1	27,1	31,9	32,1	34,0	106

a) pre-harvest estimation of yield in 2022

Table 1. Total yields of cereals, rapeseed, and agrimony in 2010–2022

Source: 'Preliminary estimates of the key agricultural and horticultural crops in 2022', Statistics Poland 2022

Designation	2010	2015	2017	2018	2019	2020	2021	2022 ^{a)}	2021 =100
staple crops with crop mixes	25,1	24,7	27,8	22,8	25,1	28,6	27,0	27,1	100,4
winter wheat	8,5	9,9	10,0	8,3	9,5	12,0	11,3	12,6	112
spring wheat	0,9	1,1	1,7	1,5	1,6	0,6	0,9	0,9	101
rye	2,9	2,0	2,7	2,2	2,5	3,0	2,5	2,4	95
winter barley	1,0	1,0	0,9	0,8	1,0	1,4	1,4	1,5	109
spring barley	2,4	2,0	2,9	2,3	2,4	1,6	1,6	1,3	82
oat	1,5	1,2	1,5	1,2	1,2	1,7	1,7	1,5	93
winter triticale	4,2	4,7	4,7	3,6	4,1	5,9	5,2	5,4	103
spring triticale	0,4	0,6	0,5	0,4	0,5	0,3	0,2	0,2	90
spring crop mixes	0,3	0,3	0,3	0,2	0,2	0,4	0,4	0,2	63
winter crop mixes	3,0	1,9	2,6	2,3	2,3	1,7	1,9	1,0	56
total rapeseed and agrimony	2,2	2,7	2,7	2,2	2,4	3,1	3,2	3,7	115

a) pre-harvest estimation of yield in 2022

Table 2. Total harvests of cereals, rapeseed, and agrimony in 2010–2022

ever, the reported decreases in grain prices on global commodity exchanges and the reluctance of processors to raise grain purchase prices are contributing to the persistence of a small number of grain sales offers on the domestic market. According to data from the Ministry of Agriculture and Rural Development, during the harvest period, the average purchase price of wheat was equal to 1 557 PLN/tonne, which was 70% higher than in the same period of 2021. On the other hand, the average price of rye was 1 181 PLN/tonne, which was 68% higher than last year, as was the case with triticale, whose average price was 1 326 PLN/tonne.

In July/August this year, the average purchase price of barley was 1 263 PLN/tonne, which was 72% higher than during the 2021 harvest. The dry corn price increased by 40% and was equal to 1 427 PLN/tonne this year, while the largest year-on-year increase during the harvest concerned oat (80%), the price of which was 1 100 PLN/ton.

Grain type	July – August 2021	July – August 2022	% y/y change
wheat	914	1557	↑ 70%
triticale	789	1326	↑ 68%
rye	701	1181	↑ 68%
barley	736	1263	↑ 72%
dry corn	1022	1427	↑ 40%
oat	611	1100	↑ 80%

Table 3. Average prices for feed grains during the 2021–2022 harvest

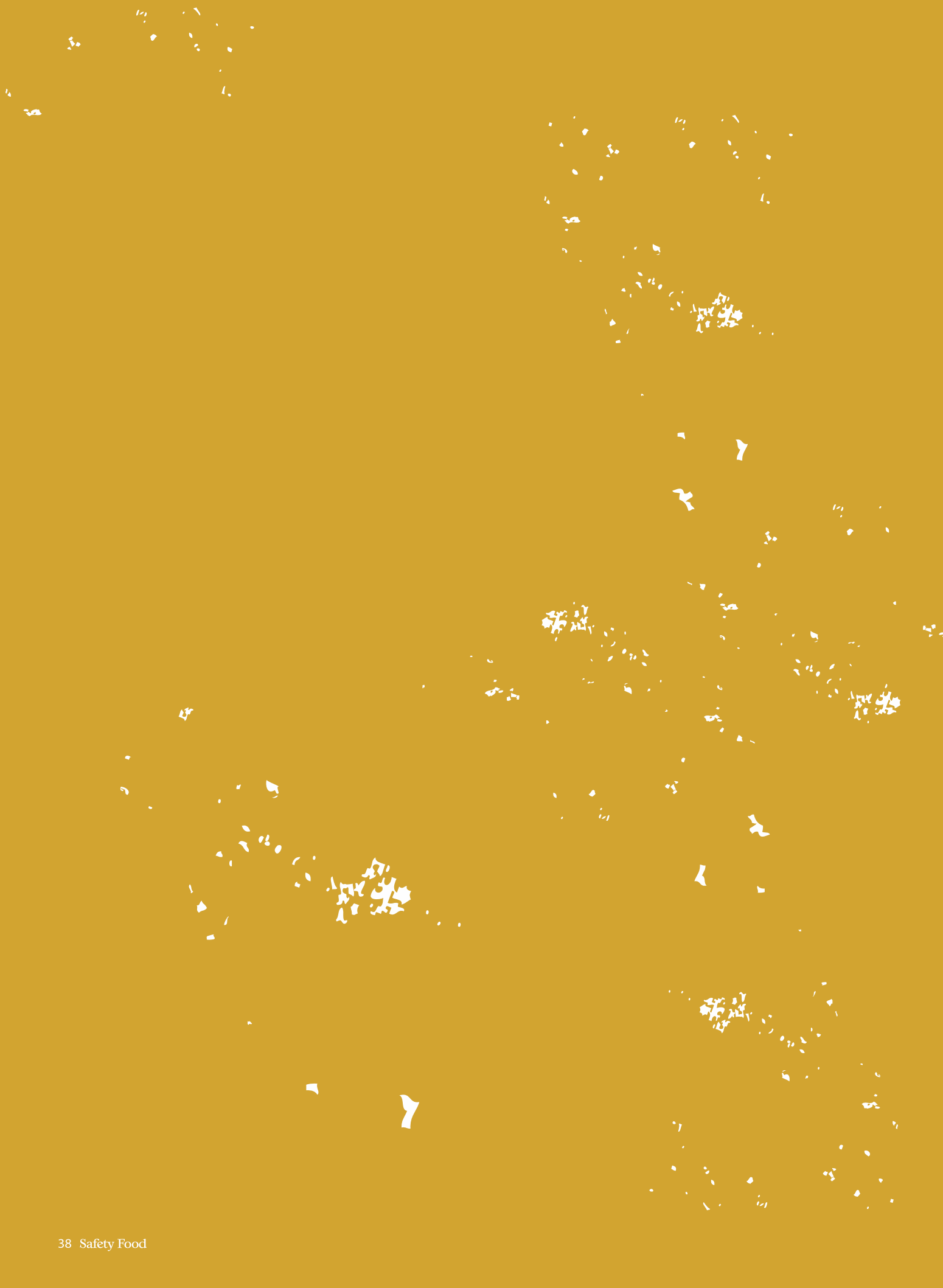
Source: Prepared by the author based on data from the Ministry of Agriculture and Rural Development (MARD)

Demand for grain from processors is moderate because they have stocks of grain for processing and try to buy the raw material on a regular basis, in small batches. Due to the large harvest in the current 2022–2023 season, Poland will again have a surplus of grain (especially wheat) that should be exported. Nevertheless, the expected continued low supply of grain in the market will limit the pace of grain exports in the first half of the season. On the import side, although grain imports from Ukraine decreased after the opening of the Black Sea ports, they continue to be at high levels. In this case, however, the biggest unknown is logistics, which are hampered by the constant missile attacks on virtually all Ukrainian territory and the resulting power outages.

Last month, however, the discussions in the Polish market were dominated by the topic of this year's corn harvest, which caused a great deal of nervousness due to lower yields, as well as concerns about noticeably higher drying costs. Despite earlier optimism about this year's crop, the market panicked after the first signs indicating the possibility of 20–30% lower yields compared to last year. This resulted in very high volatility in the price of wet corn with moisture content of 30%, which practically from the beginning of the harvest rose from the expected range of PLN 800–900 to the level of PLN 900–1 050. The rising price was supported by exports, whose exceptional profitability was due to the exchange rate, or more precisely, the Polish currency. In the end, however, the harvest was not as bad as it seemed at first and the continued high supply caused wet corn prices to fall to levels of 700 PLN/tonne at the end of the harvest. As of today, most buyers have covered their needs practically until the spring and the market is seeing a decline in demand, also due to concerns about the volume of feed production. The industry today is mostly experiencing uncertainty about the condition of the Polish economy, as well as the global economy, which determines the consumption. High inventory levels of both domestic cereals and corn are also not encouraging further purchases. Additional pressure on the market is being exerted by possible grain imports from Ukraine, as well as the expected (larger than last year) supply of grain and corn from South America, where a better harvest is expected.







In this section you will read:

- Feed expanding – a new technology at Wipasz S.A.



Feed expanding – a new technology at Wipasz S.A.

Bartosz Myśliński – Feed Formulation Specialist Wipasz S.A.

The feed expanding process primarily consists in a treatment involving the plasticization of the processed raw materials or feed for a short time, under high pressure, and at high temperature (HTST – high temperature, short time), and, as a result, the extrusion of the material through a nozzle.

Industrial expanders were first offered in the global market of feed production machinery in the 1980s. The principle of their operation is based on the work of a screw press and extrusion of raw material through a head. Of note is the high similarity of the expansion process and expander machines to the extrusion process and extruders. The fundamental differences mainly boil down to a difference in the design and the operating principle of the head. Compared to extruders, expanders are characterized by a simpler design and operation.

Modern expanders are single-auger machines with auger diameters ranging from 15 to 500 mm and output reaching up to about 30 t/h. They use a variety of head types: ring, finger, orifice, and slotted-disk. The types of heads determine to a significant extent the quality of the product and the course of the machining process. The most common head type in feed expanders is the ring head, which is relatively the simplest in design and operation.

Expanders originally acted as high-temperature conditioners before the feed pelleting process. Nevertheless, they are quite often used to make the final product, i.e. feed materials or supplementary compound feed undergoing barothermal processing.

In our newest feed production plant in Międzyrzec Podlaski dedicated to the production of feed for cattle and pigs, we use ring head expanders in the process line.

The use of an expander in a granular feed production line has many advantages, the most important of which include:

- ☒ bacteriological sterilization of feed;
- ☒ increased nutritional value of processed feeds and feedstocks.

Based on the available literature, the main aspects of the chemical transformations of starch and protein, and the impact of the expansion process on the nutritional value of plant feedstocks are presented.

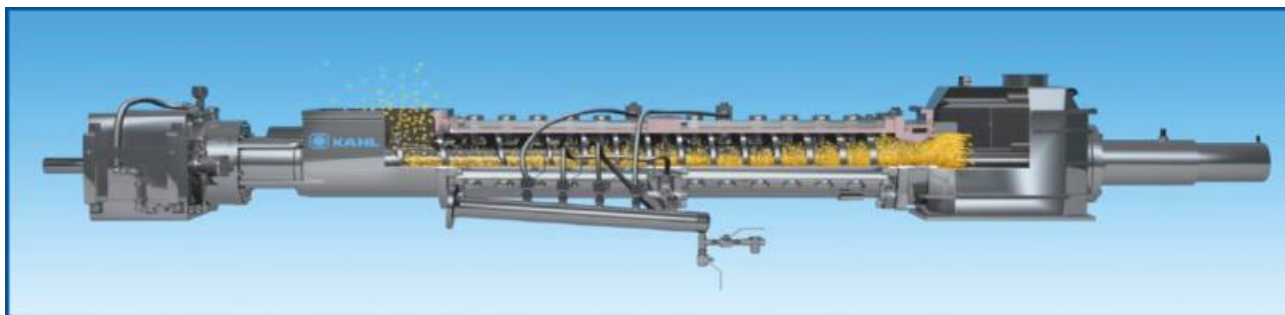


Figure 1. Longitudinal cross-section of a Kahl expander

Parameter	Before expanding	After expanding
crushing rate [%]	15	7
hardness [%]	70–75	90
granulator output [t/h]	30	36–37

Table 1. Variation of the granule parameters and the granulation process [Kahl Group publication study by Rica, Brazil]

During expanding, starch gelatinization takes place due to the breaking of intermolecular hydrogen bonds. Gelatinized starch increases the viscosity of the entire ‘cake’, and the high protein content of the processed mass promotes the growth, elasticity, and propensity for aeration of the processed matter. Leaving the expander die, the processed material rapidly swells as a result of the instantaneous conversion of water to steam and assumes a porous structure. The rapid cooling after the material leaves the expander causes this mass to stiffen. As a result of the combined interaction of temperature and pressure, significant changes take place in the processed material. The extent and mechanism of these changes are still the subject of much research conducted at scientific and research institutions.

Physicochemical changes in starch

Starch is found primarily in cereal grains and potatoes. In these products, it is found in the form of starch grains with different characteristic shapes, depending on the plant species, as well as on the variety and the method of fertilization. As is well known, the two main components of starch are amylose and amylopectin, which differ in their physical and chemical properties, including a different chemical structure. When starch is heated in a water environment, a process known as starch gelatinization begins, in which starch grains swell and absorb water, losing their crystalline nature. This phenomenon has a very good effect on the quality of the pellets, as it binds all the other particles together, making the granulate durable and compact. At a temperature specific to each type of starch,

called the gelatinization temperature, starch loses its shape of regular grains, as well as its properties (e.g. insolubility in cold water) [Mościcki, Wójtowicz 2007]. These changes lead to an increase in the viscosity of the heated solution and a higher solubility of starch in water. The gelatinization temperature of common types of starch is 62–80°C for corn starch, 52–85°C for wheat starch, and 58–65°C for potato starch, and varies depending on the availability of water, and the size and homogeneity of the starch granules.

Physicochemical changes in proteins

Barothermal processing of raw materials and feed using the expanding method also causes significant changes in the proteins found in plant feedstocks. During expanding, proteins change their structure to a fibrous one, a phenomenon called texturization. This fact is used by the food industry to create, for example, soybean cutlets or tripe, whose fibrous structure resembles that of meat. As pointed out by [Mościcki, Wójtowicz 2007], a decisive role in this process is played by the temperature of expansion, but also by the type of raw material and the physicochemical properties of the individual components of the expanded mixture. Research in this area also indicates that expanded raw materials have a higher efficiency of enzymatic hydrolysis of proteins compared to the initial material; simply put, they are easier to digest for animals. According to [Kiczorowska, Lipiec 2002], the expansion process also modifies the amino acid composition of the raw materials tested (white lupin and yellow lupin). Failure to adjust the expansion parameters (too high temperature and too long time) to the type of feedstock being processed leads to losses of lysine, arginine, histidine, cysteine, methionine, and tryptophan [Kiczorowska, Lipiec 2002]. The results of a study by the same authors indicate that these losses can be significantly reduced if the expanded raw material contains a sufficient amount of fat. In the products made by processing white lupin (which contains 9.2% fat on a dry weight basis), changes in amino acid concentration were minimal and had no statistically significant effect. The fat in white lupin could, on the one hand, reduce the processes of deamination and oxidation of amino acids and, on the other hand, affect the acceleration of mass flow through the expander.

Research on the possible use of barothermal processing to enhance the utility of plant raw materials has shown the great suitability of expansion and extrusion techniques for processing pulses and oilseeds for feed purposes. For example, the expansion of field beans, peas, lupin, and soybeans makes it possible to produce protein- and energy-rich feed material, the advantages of which compensate for the costs incurred in the refining process. It is assumed that in order to obtain a product of good quality, the process of soybean expansion should be carried out at the temperature of 125–135 °C, with the moisture content of the raw material maintained at 17–20%. The degree of deactivation of proteolytic inhibitors in processed soybeans was found to depend on the temperature and time of presence in the expander. Conditioning

prior to expansion greatly facilitates the deactivation of proteolytic inhibitors and significantly increases the efficiency of the process.

The course of the expansion process largely depends on the intended use of the final product. For this reason, several processing methods can be distinguished that ensure the appropriate effects of the refining process. One of them is to subject high-protein feed materials to high temperature and increase their time in the expander. It turns out that the product obtained by this method is of considerable importance in the feeding of ruminants. This is associated with protein denaturation and with an increase in the proportion of UDP (undegraded dietary protein) in the processed feed materials.



Raw material	UDP content (%) – unprocessed	UDP content (%) – expanded
cereals (barley, oat, wheat)	10–15	25–35
soybeans	<10	25–30
rapeseed meal (%)	25–35	35–45
rapeseed cake	25–30	40–45
wheat gluten	25–30	30–40

Table 2. UPD changes in feedstocks before and after expansion [based on Kahl Group experience]

Changes in crude fiber

The role of crude fiber in animal nutrition is well known and appreciated; this is particularly true of its auxiliary function in digestive processes and its effect on proper intestinal peristalsis. Barothermal treatment does not result in quantitative changes in fiber compared to the unprocessed material, but it did increase the content of the water-soluble fiber fraction, in processed wheat grain by a factor of almost two [Mościcki, Wójtowicz 2007]. Non-starch polysaccharides, as well as lignin, are characterized by a different behavior during processing, which results in the breakdown of these hardly soluble compounds bound to the cell wall and the formation of sugars that are more susceptible to enzymatic hydrolysis [Kiczorowska, Lipiec 2002].

Concluding remarks

Plant products obtained by expansion and extrusion are being introduced into food and feed production worldwide on an ever larger scale. Breakfast cereals, crisp bread products, instant noodles as human food, and finally dry pet feeds, expanded/extruded refined feed materials for feeding young animals (piglets, calves) and those that can be fed to livestock only after thermal processing (soybeans) – we often do not even realize how many applications the expansion/extrusion processes have. We hope to discover even more applications in animal feed production with the new equipment at our Feed Production Plant in Międzyrzec Podlaski.

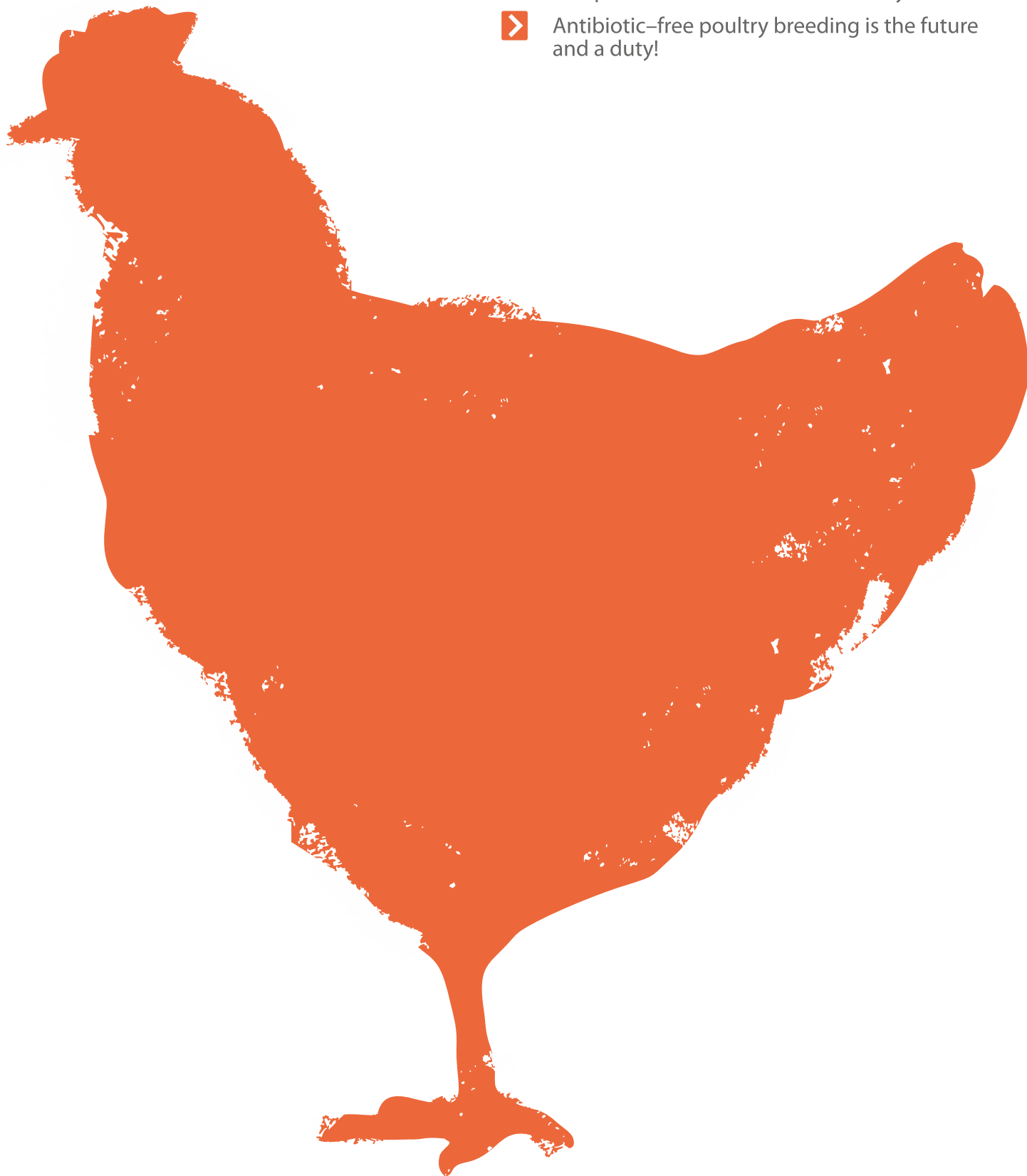
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In this section you will read:

- How not to lose the possibility of receiving compensation for avian influenza in your flock?
- Antibiotic-free poultry breeding is the future and a duty!



How not to lose the possibility of receiving compensation for avian influenza in your flock

Dawid Strzyżewski – Product Manager, Poultry Sales Department Wipasz S.A.

Avian influenza is ceasing to be a seasonal threat and is becoming a problem that the poultry industry faces to a greater or lesser extent throughout the year. Consequently, the Regulation of Minister of Agriculture and Rural Development of March 31, 2022 ordering measures related to the occurrence of highly pathogenic avian influenza was published on April 6, 2022 (Journal of Laws of 2022, item 768).

According to the new regulations, if an outbreak of avian influenza takes place on a farm, an inspection is carried out to see if the applicable regulations have been followed. If irregularities are found, compensation will not be paid. Therefore, if the new rules have not yet been implemented on a farm, this must be done as soon as possible.

In the aforementioned regulation, a lot of attention has been paid to repeating the rules that have already been applied in whole or in selected parts by poultry breeders. There are two prohibitions in the regulation, which concern, first, watering birds kept by people (including farmed poultry) with water from bodies of water to which wild birds have access and, second, bringing carcasses of wild birds or game birds to farms where poultry is kept. The following sections of the aforementioned regulation contain a series of orders as described below.

The new regulation mandates that records be kept to confirm supervision of the farm and what happens on the farm. The following records are required:

- ☒ insect control register;
- ☒ register of persons entering a poultry farm;
- ☒ register of cleaning and disinfection at the farm;
- ☒ register of the means of transport entering the farm;

- ☒ register of receipt and use of the disinfectant preparation on the farm;
- ☒ register of receipt and use of the disinfectant preparations on the farm;
- ☒ register of inspections of the safeguards aimed to control access to the building occupied by free-roaming and domestic animals.

During an inspection, the following should also be available:

- ☒ list of employees of the farm;
- ☒ list of emergency contact details;
- ☒ list of the persons catching the poultry;
- ☒ contract for the collection of dead animals from the farm.

If the farm does not have the above-mentioned registers and documents, Wipasz S.A. employees will be happy to help you draft them.

According to the aforementioned regulation, birds must be kept inside the poultry house, thus preventing them from coming into contact with wild birds and water bodies to which wild birds have access. Ducks and geese are excluded from the order to keep birds in the poultry house. Wild birds and rodents should be prevented from accessing the feed and bedding used on the farm. Water used for watering poultry must also be protected from wild birds and their droppings.

Farms keeping more than 350 bird per year on average must have a bio-assurance plan that takes into account the farm's production profile and items concerning the rules of behavior on the farm. When drafting such a plan, it is necessary to designate two zones: a dirty zone and a clean zone for people who

A yellow rectangular warning sign with a black border is mounted on a metal post. The sign contains text in Polish: 'UWAGA!' in red, 'WYSOCE ZJADLIWA' in black, 'GRYPA PTAKÓW' in red, and 'OBSZAR ZAGROŻONY' in black. The background shows a road with a line of trees, some with brown autumn leaves, under a clear sky.

UWAGA!
WYSOCE ZJADLIWA
GRYPA PTAKÓW
OBSZAR ZAGROŻONY

perform daily work on the farm. It is also necessary to describe the methods used to ensure cleanliness and adherence to the rules of hygiene by those performing daily activities on the farm, as well as the rules adopted for pest control. The plan should also include a description of how to bring the following into the farm: feed, bedding, disinfectants, and other equipment needed to work on the poultry farm. In addition, there should be a record of the procedures in place within the farm, particularly regarding the washing and disinfection of premises, equipment, and means of transportation.

According to the regulation, the number of people and vehicles entering the farm must be kept to a minimum, and a record of entries must be kept. Basic bio-assurance rules should be followed, i.e. washing and disinfecting hands before entering the poultry house and after leaving it. Disinfection mats must be laid out in front of the entrance to each poultry house; the mat can be replaced, for example, with a footwear disinfection tub that opens from the top. It is essential to change footwear and clothing before entering a poultry house, and if there are several poultry houses within the farm, clothing and footwear should be changed before entering each one of them, or disposable coveralls and shoe protectors should be used. Equipment and tools used in the poultry house should be cleaned and disinfected before each use, or at least once a day if assigned to only one poultry house.

Vehicles entering the farm must pass through disinfectant mats soaked in a disinfectant. The passage must be made in such a way that each wheel of the vehicle entering the farm is disinfected. The mats can be replaced by disinfecting basins or locks. It is also permissible to spray each wheel of the vehicle. When mats are used both in front of poultry houses and in front of the entrance to the farm, a record of disinfectant use should be kept, which must include basic

information, i.e. the name and amount of the disinfectant used, and the time of its use (replenishment). In addition, disinfectants used on a farm should be supplied in sufficient quantities for at least 7 days, and the documentation of their purchase (invoices) and records of its use should be kept for a year.

Containers or premises for dead animals and other waste should be placed outside the farm or the waste should be transferred at the entrance gate, in order to avoid the entry of vehicles used to pick up them. Dead animals need to be deposited in a premise or container at least once a day. The container or premise for storage of dead animals or waste must be washed and disinfected every time, and must be protected to prevent access of rodents, as well as domestic and wild animals. It is also necessary to ensure cleanliness around the poultry house, i.e. remove feed residues or other contaminants that may be generated during the production cycle and regularly mow the vegetation growing in the vicinity of the poultry house.

After the production cycle is complete, the poultry house and its equipment should be thoroughly washed and disinfected. Farmers should also immediately inform the farm doctor, the District Veterinary Inspectorate, the slaughterhouse, and the technical service provider of the occurrence of such clinical symptoms in the poultry, such as increased mortality, a decrease in water and/or feed intake, nervous symptoms: twitching, twisting of the neck, paralysis of the legs and wings, or clumsiness of movement, as well as shortness of breath, cyanosis and ecchymoma, diarrhea, and a sudden decrease in egg laying.

Every poultry farmer should be familiar with the full content of the above-described regulation and must comply with its provisions because in the event of an outbreak of avian influenza, very large sums of money will be at stake, which in extreme cases may determine the continued existence of the farm.



Antibiotic-free poultry breeding is the future and a duty!

Mateusz Barszcz – Regional Manager Veterinarian Wipasz S.A.

The ever-increasing pressure from consumers and, consequently, by retail chains to withdraw antibiotics from poultry production has forced the industry to seek new methods of breeding and production of chicken broilers – without the use of chemotherapeutic products. Everyone wants to eat healthy food and live healthy lives. Therefore, customer pressure is fully understandable for a responsible manufacturer like Wipasz S.A.. Nowadays, environmental protection has been added to the list of consumer expectations – the final product should be as neutral to the planet as possible and during breeding the producer should pay special attention to maintaining animal welfare.

Poultry is one of the most popular sources of protein around the world, due in part to its wide availability and relatively affordable price. It is also the meat with the lowest fat content, which makes it ideal for the diet of people who care about their health and looks.

One of the drawbacks of large-scale poultry breeding is the unwarranted use of antibiotics to protect flock health. In 2016, the United Nations recognized the phenomenon of antibiotic resistance observed in certain microorganisms as a major problem in maintaining the health of the human population.

Consumer awareness is now at a very high level and is steadily increasing. Consumers increasingly opt for products with 'antibiotic-free breeding' labels, which stimulates the market to supply such products. In 2020, nearly 60% of broiler production in the USA was carried out without the use of antibiotics and ionophore coccidiostats (Poultry Health Today, 2020).

Unfortunately, Poland holds the third place in Europe in terms of antibiotic use in livestock production. The transition to antibiotic-free broiler production raises a whole host of doubts and questions for breeders, including whether such production will remain profitable? The answer is a study conducted by the Wageningen Economic Research (WER) Center, which showed that sales of veterinary antibiotics in the Netherlands between 2009 and 2017 fell by 63%, with no negative impact on production and on the average profitability of production of the country's commercial broiler farms.

Wipasz S.A. is one of the largest poultry producers in Poland and certainly its largest exporter. To meet the expectations of its business partners and with a strong sense of mission to find the right way in poultry breeding, the company has established its own Polish Chicken Research Center, which proves that breeding without antibiotics is possible and even necessary.

In November 2021, at the Research Centre, Wipasz launched a research project aimed to develop an economically beneficial model for broiler chicken production without the use of antibiotics.

The project had two main objectives:

- 1. Complete exclusion of antibiotics as medicinal products in animal breeding.**
- 2. Production result at a level comparable to or better than conventional breeding.**

Guided by the motto “An ounce of prevention is worth a pound of cure!,” we have focused on proper prevention, disinfection, bioassurance, and supplementation of birds.

The supplementation program was based on probiotic blends, phytobiotics, and organic acids, which made it possible to ensure good gut health in poultry to optimize growth, as well as to prevent poultry diseases such as necrotizing enterocolitis and coccidiosis. The constant administration of appropriate blends of herbs and essential oils protects birds from bacterial infections, supports the respiratory system, and stimulates the immune system. Probiotic microorganisms improve digestion and intensify feed utilization, stabilize the bacterial flora, and improve the overall health of poultry, thus eliminating the need for products containing antibiotics.

The breeding result from the Wipasz Reasearch Centre, where no antibiotics were used, is presented below. The average FCR was 1.52 and the production result exceeded 430 EPEF.

This example shows that it is possible to breed broilers without antibiotics while maintaining high production parameters. The breeding model that was developed is now being used successfully with some Wipasz S.A. integration breeders.

Breeder	Poultry house	Birds placed	Deaths in the poultry house in %	Average weight	Average weighted day	FCR	EPEF
Wipasz Institute	K2	60 030	4,35	2,61	37,79	1,53	432
Wipasz Institute	K3	60 120	4,02	2,60	38,42	1,52	428
Wipasz Institute	K4	59 040	1,79	2,56	38,79	1,52	425
Wipasz Institute	K5	60 480	3,78	2,64	38,42	1,54	431
Wipasz Institute	K6	61 740	2,94	2,67	38,04	1,53	444
Wipasz Institute	K7	60 210	2,30	2,61	38,62	1,46	451
Wipasz Institute	K8	59 760	3,72	2,57	38,57	1,50	427
Wipasz Institute	K9	59 400	1,99	2,73	39,43	1,52	446
Total		480 780	3,12	2,62	38,5	1,52	436

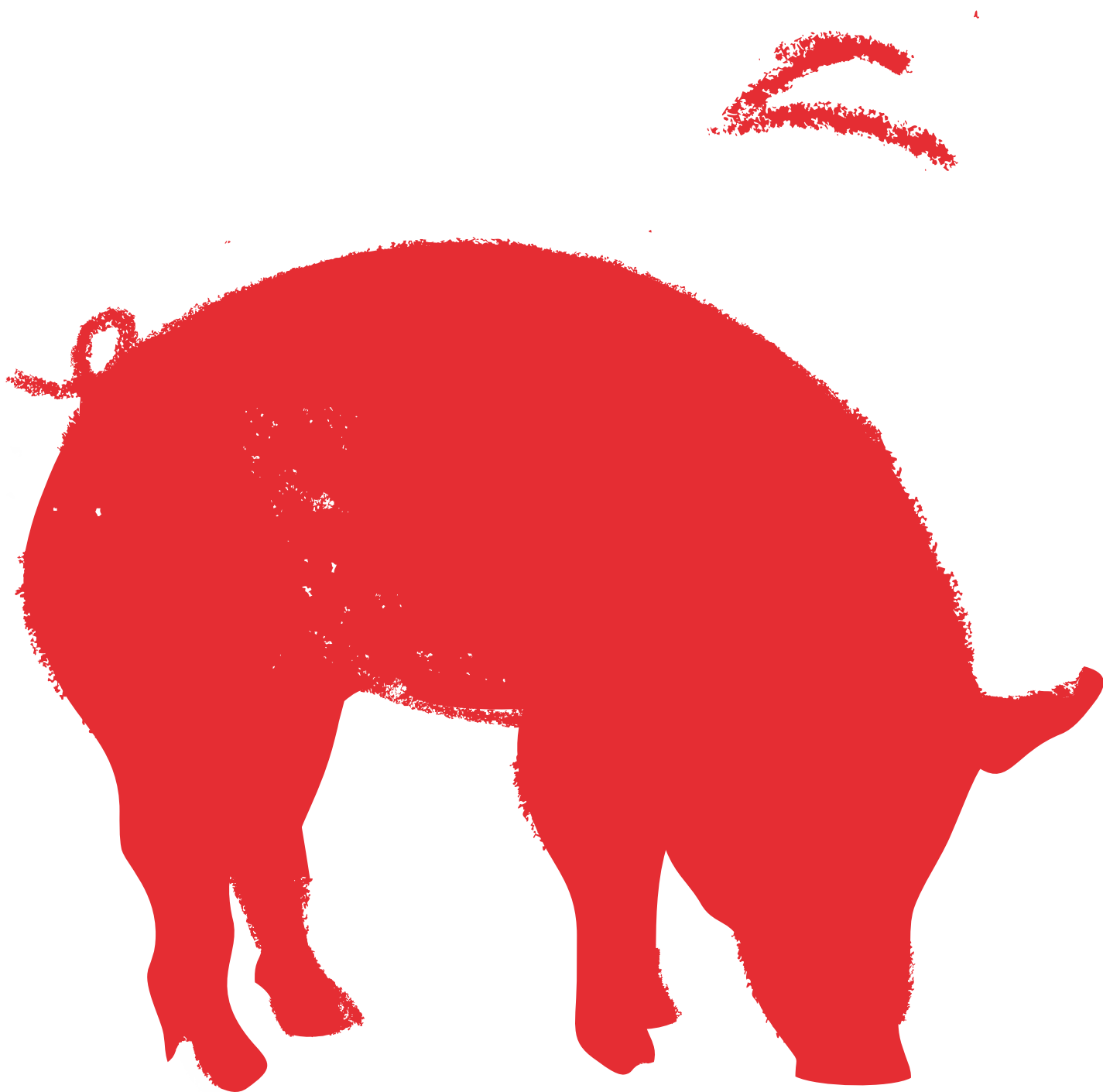
Breeder	Poultry house	Birds placed	Deaths in the poultry house in %	Average weight	Average weighted day	FCR	EPEF
Wipasz Institute	K1	12 900	4,14	2,56	36,00	1,46	467

Table 1. The breeding result from the Wipasz Institute, where no antibiotics were used



In this section you will read:

- Nutritional supplements and the economics of piglet breeding
- The role of vitamins in pig nutrition



Nutritional supplements and the economics of piglet breeding

Paweł Bartosiewicz – Pig Nutritionist Advisor Wipasz S.A.

Maintaining a high level of pig productivity is a major challenge for breeders. Several years ago, antibiotic growth promoters were routinely used in piglet feeds, which solved a large number of pig health problems. In 2003, after antibiotics were banned as growth promoters, the market was forced to look for new solutions to help combat health problems in piglets and a decline in production efficiency.

Deaths and health problems during the weaning of piglets are most often a consequence of physiological imbalances in the gut microflora resulting from improper feeding. For piglets, diarrhea is a factor that significantly worsens rearing performance. Correct feeding and proper zoohygienic conditions, appropriate temperature, humidity, and ventilation can minimize diarrhea in piglets.

Formulation of compound feed so as to increase piglet production efficiency is facilitated by feed additives such as:

synthetic amino acids – which help ensure proper protein balance. The more protein contained in the compound feed, the greater the acid binding capacity of the feed. Such feed rapidly raises the pH of the content of the gastrointestinal tract, thus creating bad conditions for the growth of harmful microflora. The addition of amino acids reduces the risk of diarrhea caused by bacteria.

enzymes – compound feeds for pigs contain practically only plant materials, except for compound feed for piglets, which contains ingredients of animal origin, such as fish meal, milk, whey, blood plasma, etc. Unlike ruminants, however, pigs do not fully utilize

plant-based feeds, due to a lack of adequate digestive enzymes and greatly reduced efficiency of bacterial fermentation. The task of feed enzymes is to improve the utilization of plant feed nutrients and thus the efficiency of pig nutrition. Piglets weaned at the age of 3–4 weeks are largely still feeding on milk. Their body is adapted to digest lactose, while the secretion of enzymes that digest polysaccharides is relatively low. Residues of concentrate feed tend to stay in the digestive tract and create a habitat for the growth of pathogenic microflora. The addition of feed enzymes improves the digestibility of feed and prevents it from persisting in the digestive systems of piglets.

acidifiers – additives essential to proper rearing of piglets. Their action consists in lowering the pH of the gastrointestinal contents, as a result of which the growth of harmful microorganisms is inhibited. In addition, the use of acidifiers increases the palatability of the compound feed and improves the digestibility of nutrients. The substances most frequently used as acidifiers are organic acids such as formic acid, acetic acid, tartaric acid, and malic acid.

probiotics – preparations that contain live or lyophilized cultures of symbiotic microorganisms. The most common are the *Lactobacillus*, *Enterococcus*, *Bifidobacterium*, and *Streptococcus* strains of bacteria. Preparations containing the *Sacharomyces Cerevisae* yeast are also offered in the market. The action of probiotics takes place on several levels. First, beneficial microorganisms populate the surface of the digestive tract and displace pathogenic microorganisms. In addition, most of them synthesize significant amounts of lactic acid, thus creating unfavorable conditions for the growth of harmful microorganisms. Some groups



of microorganisms produce natural antibiotics that limit the presence of pathogenic microflora. Probiotics are beneficial for increased weight gain, better health, as well as reduced stress.

attracting substances – when weaning piglets, it is very important that they switch as soon as possible to solid feed, which stimulates the development of the digestive tract. It is recommended that the intake of the first concentrate feed take place as early as on the 6th or 7th day of the piglet's life. In order to encourage animals to consume solid feed, it is necessary to add a flavoring substance that allows an early start of concentrate feed intake.

There are many nutritional supplements on the market that contain a mixture of substances that take care of the proper and efficient development of piglets and prevent health problems. The first nutritional supplements a farmer should provide to piglets are milk replacers, such as **Vigor Milk** and **Pig Milk**. These products contain milk and are rich in probiotics, glutamine, maltodextrins, and flavor additives. These supplements help avoid diarrhea in piglets. They take care of proper development of the intestines and facilitate a gradual introduction and digestion of concentrate feed.

After the introduction of concentrate feed, one must make sure to provide easily digestible protein and lactose to reduce the impact of post-weaning stress, thereby preventing the development of health problems. The products that are helpful at that time, are those with formulations enriched with probiotics and flavor additives to promote feed intake and ensure

high protein digestibility, such as **Witalac** and **Witalac Extra**.

Indispensable for protecting animal health and increasing production efficiency is the use of additives that regulate gastrointestinal function in compound feed. Their presence in feed is expected to contribute to the development of the intestinal epithelium, to stabilize the microbial environment in the gastrointestinal tract, and to improve the functioning of the immune system. Feed supplements that improve the health of animals include acidifiers from the **Viacid** line, and those that improve feed digestibility include **Grano-mix**, **Energomix**, **Fersoy**, **Fercan**, and **Herbal Pro**.

Pig production is closely linked to crop production, as its profitability is highly dependent on grain prices. The grain market is currently very volatile. As the cost of feeding pigs is one of the highest costs in pig production and reaches the level of several dozens of percent, the need to reduce it is indispensable and requires the rational use of feed. In pig feeding, emphasis should be placed not only on the optimal quantitative balance of nutrients in the ration, but also on improving their utilization, through both technological treatments and the use of appropriately selected feed supplements. In a properly prepared ration for livestock, in addition to feed materials providing nutrients, energy, vitamins, macro- and microelements, there should also be feed supplements that increase the utilization of these ingredients, improve the metabolic and health condition of animals, prevent deaths in early development, and ensure fattening efficiency, optimal feed utilization, and quality of products of animal origin.



The role of vitamins in pig nutrition

Damian Adamiak – Pig Nutritionist Advisor Wipasz S.A.

In animal nutrition, vitamins are a key part of the diet. They are responsible, among other things, for growth, development, and the proper metabolic processes. Vitamins can be divided into water-soluble (C, B, etc.) and fat-soluble (A, D, E, and K). The vitamin demand of animals ranges from a few micrograms (μg) to tens of milligrams (mg) per day, so vitamin mixtures should be added in a balanced manner to the feed so as not to cause any harm.

A severe deficiency of one or more vitamins is referred to as avitaminosis and their partial lack – as hypovitaminosis. Today, thanks to the extensive choice of pre-mixes, these phenomena are increasingly rare. More common, however, is the problem of hypervitaminosis, which is an excess of vitamins in the diet. Hypervitaminosis primarily concerns fat-soluble vitamins (A and D), which can cause symptoms of diseases. Vitamin A causes flaking of the skin, sensitivity to touch, and blood in feces and urine, while too much vitamin D can inhibit growth and cause deposits in blood vessels, kidneys, and lungs. Deficiency of these vitamins can also weaken animals' immunity to dangerous infectious diseases. The maximum dose of vitamins A and D in compound feeds for piglets is 10 000 IU and in those for fattening pigs, sows, and boars – 2 500 IU. Large doses of water-soluble vitamins are not toxic, as their excess can be excreted in urine.

Characteristics of fat-soluble vitamins:

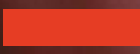
vitamin A – is responsible for the development of the skin and membranes, ensures the proper functioning of the reproductive organs and the vision process, as well as the development of the skeletal system. The results of its deficiency are weaker growth, less numerous litters, and an unsteady gait. The most common symptom of long-term deficiency is hind limb para-

lysis. To prevent its deficiency, it is a good idea to use fish meal, fish oil, and whole milk in the diet.

The precursor of vitamin A is β -carotene. The animals that are most susceptible to its deficiency are piglets with low birth weight, which are born with low retinol content in their blood. This is due to the limited transport of vitamin A from the mother's body to the fetus; however, by the third day of life, the content of vitamin A is 2.5 times higher. The rapid increase in retinol concentrations in the blood of piglets is due to the intake of colostrum, which is the primary source of vitamin A for the suckling piglets. Colostrum contains much more vitamin A than milk. Research has shown that the average concentration of retinol in colostrum is 2.45 mg/kg. The content of vitamin A in the sow's milk can be increased by using carotenoids, such as corn, in the sow's ration. Vitamin A in excessive amounts can have an adverse effect on the body's vitamin E content.

vitamin D – is produced as a result of skin exposure to sunlight. Just as in humans, its deficiency is frequent in pigs when they stay indoors for long periods of time, or due to limited access to sunlight. Vitamin D is responsible for proper metabolism of calcium and phosphorus, and enhances their absorption from the intestines. It is especially important in the process of bone formation in young animals. It also prevents rickets and micro-fractures. In fattening pigs, the deficiency manifests itself in lameness. Paresis and tremor may also be present. Vitamin D hypovitaminosis can lead to lowered immunity and increase the risk of diseases or poisoning resulting in animal deaths.

vitamin E – is extremely important primarily for sows and boars. In boars, it is responsible for the development of testicles and spermatogenesis. Vitamin E



deficiency causes deterioration of sperm motility. In sows, on the other hand, it determines the proper course of pregnancy; it should be supplemented before estrus and in case of increased stress, the dosage should even be doubled. It determines proper functioning of the nervous system, muscles, and liver. It stimulates the processes of humoral immunity and affects the quality and the shelf life of meat. The symptoms of its deficiency can include sudden death and mulberry heart – as in the case of selenium deficiency. Vitamin E levels are also related to feed fatness. Vitamin E is very common and, therefore, symptoms of its deficiency are rare.

vitamin K – has an anti-hemorrhagic effect and plays an important role in blood clotting. Its deficiency causes paleness in newborn piglets and internal hemorrhages, which eventually result in animal deaths. When large amounts of calcium are used, it is recommended to increase the dose of vitamin K.

Characteristics of the essential vitamins:

vitamin C – is key to the body's immunity and protects against oxidative processes. It has bacteriostatic and bactericidal properties. It is recommended to supplement it during periods of various types of stress, such as moving animals between buildings or heat stress, as well as during convalescence. Vitamin C deficiency leads to connective tissue dystrophy.

vitamin B2 (riboflavin) – is especially important in sows. It plays an important role in oxidation processes and is responsible for proper functioning of the nervous system. It also participates in the metabolism of amino acids and is important in the functioning of vision. Vitamin B2 deficiency results in loss of appetite,

vomiting, skin changes, and weaker hair. It can also cause reproductive inhibition. It is produced in small amounts by intestinal bacteria. Vitamin B2 is of low toxicity to animals and one of its rich sources is yeast.

vitamin B3/PP – participates in the production of red blood cells and is a source of two coenzymes: NAD (nicotinamide adenine dinucleotide) and NADP (nicotinamide adenine dinucleotide phosphate). These coenzymes are involved in enzymatic reactions in the body. Vitamin B3 regulates blood sugar and cholesterol levels, and enables the degradation and utilization of proteins, fats, and carbohydrates. Symptoms of its deficiency include inhibited growth, vomiting, diarrhea, and loss of appetite.

vitamin B12 – participates in the production of red blood cells and the synthesis of RNA and DNA. It is also responsible for proper functioning of the nervous system. Vitamin B12 deficiency can cause slower growth, skin inflammation, and anemia.

Another vitamin in this group that is worth supplementing is **vitamin B6**, which participates in the metabolism of amino acids and synthesis of proteins. It strengthens the nervous system, the heart, and the liver, and its deficiency manifests itself in skin lesions.

The role of vitamins in the animal body is extensive, as they are involved in all basic metabolic and immunity mechanisms. Among other things, they are responsible for the appearance of the skin, the eyesight, as well as bone development and blood clotting. When caring for the proper development of pigs, it is important to ensure a balanced diet that is rich in essential vitamins. Our nutrition consultants will be happy to help with balancing the right doses of vitamins for our customers' animals.





In this section you will read:

- Improving milk production performance by increasing the digestibility of the ration
- Do not compromise on selenium supplementation



Improving milk production performance by increasing the digestibility of the ration

Filip Kula – Product Manager, Cattle Sales Department Wipasz S.A.

This article was prepared in collaboration with Phileo by Lesaffre brand specialists

Feeding the world's population in these increasingly demanding times requires the improvement of feed and food utilization and the use of sources of nutritional value that previously had been used little or not at all.

More than 85–90% of the carbohydrates in the feed can be degraded in a well-working rumen. The properties of fiber and its fractions are key to improving feed efficiency, given their impact on the digestibility of food, the dry matter intake and rumen fermentation control.

Feed is the largest cost of milk production, so controlling this expense is essential to the profitability of any dairy farm. In order to minimize the cost per liter of

milk produced, it is crucial to optimize feed efficiency.

Feed market players are relentless in their search for solutions aimed to help meet the needs of ruminants. This includes a focus on the proven effectiveness of Actisaf®Sc 47, a high-quality yeast probiotic contained in the **Sac Rum** and **Sac Rum 100** products offered by Wipasz S.A. These products help improve rumen health and feed utilization efficiency, leading to increased milk production and overall improvement in animal health and utilization parameters.

Feed utilization efficiency, as a key element of sustainable ruminant production, is a priority requirement in the contemporary world.

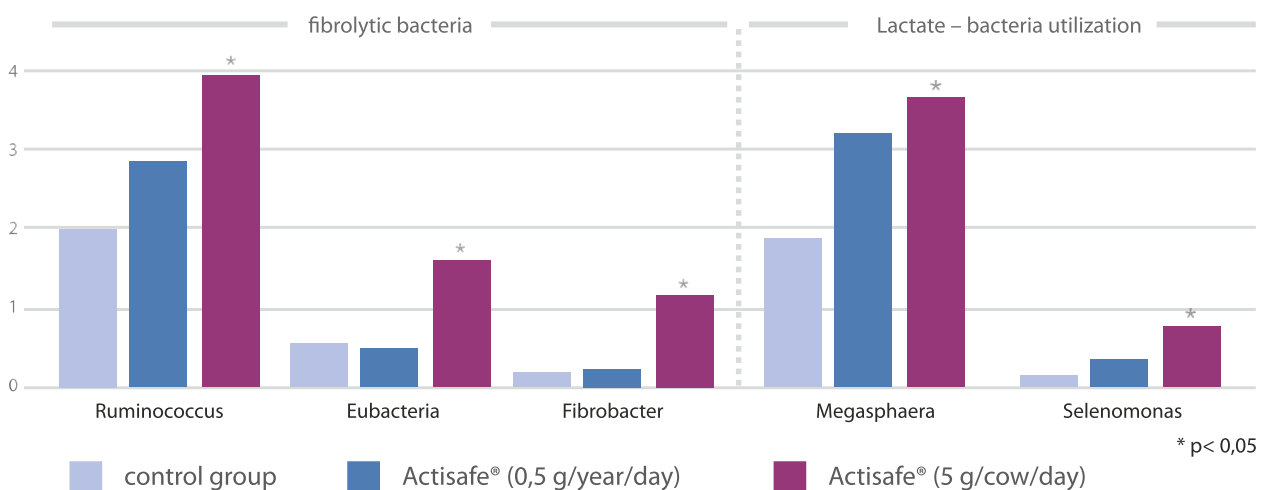


Figure 1. The impact of Actisaf®Sc 47 on the absolute numbers of certain bacteria populations in dairy cows during lactation (Pinloche et al., 2013)



Ruminants are able to make significant use of the structural carbohydrates (fiber) in their feed, thanks to bacterial fermentation processes taking place in the rumen. Rumen is a complex ecosystem consisting of anaerobic bacteria, protozoa, and fungi. These microbes interact to decompose plant material while providing metabolic energy to the animals. The rumen microflora is therefore strongly linked to feed quality. Published studies show that Actisaf®Sc 47 stabilizes the rumen microflora by increasing the pH and making the environment more reducing, which favors selected bacterial strains.

In fact, Actisaf®Sc 47 modulates the rumen biotope, causing changes in the main group of fibrolytic bacteria (*Fibrobacter*, *Eubacter*, and *Ruminococcus*) and bacteria that utilize lactic acid (*Megasphaera* and *Se-lenomonas*) (Figure 1).

The results also show that supplementation of Actisaf®Sc 47 has a 'dose effect' with the best microflora balance achieved by adding 5 g per cow per day to the diet (Pinloche et al., 2013).

Supplementation of Actisaf®Sc 47 increases the relative numbers of fibrolytic and lactic acid-utilizing bacteria, thus enhancing the reducing conditions of the rumen environment. It helps reduce the risk of acidosis, increase the concentration of VFA (volatile fatty acid) and the overall digestibility, thus resulting in higher feed efficiency. Lowering of the Eh index (redox potential that determines anaerobic conditions in the rumen) with Actisaf®Sc 47 stimulates fibrolytic bacteria, which also translates into better digestibility.

The yeast probiotic and sodium bicarbonate have been observed to have similar effects on the population of cellulolytic microorganisms. Digestibility data show that yeast increases the digestibility of neutral-detergent fiber (NDF), while sodium bicarbonate does not (Figure 2). This suggests that Actisaf®Sc 47 not only increases the proportion of cellulolytic bacteria, but also stimulates their activity. In addition, by using Actisaf®Sc 47, one can obtain higher total digestibility of NDF and ADF (acid-detergent fiber) in the digestive tract (Marden et al., 2008), which indicates better digestibility and increased utilization of the feeds used.

By stabilizing and balancing the rumen environment, the probiotic improves digestion in cows and nutrient availability, leading to improved productivity and unleashing the full genetic potential of the herd. Many studies have shown improved milk production in cows that were given Actisaf®Sc 47 at the dose of 5 g per cow per day. Tests have showed that cows given the supplement increased milk production by an average of 1.86 kg/day.

Actisaf®Sc 47 stabilizes the rumen ecosystem, leading to a more consistent and stable response to dose changes, stress, and other challenges. By stabilizing rumen pH, reducing Eh, and stimulating the growth and activity of absolute anaerobic bacteria, supplementation with a probiotic increases the animal's energy supply while reducing the risk of acidosis. When added to the diet, it helps prevent rumen diseases while improving digestibility and feed efficiency, and raising performance levels in high-yielding dairy and beef cattle.

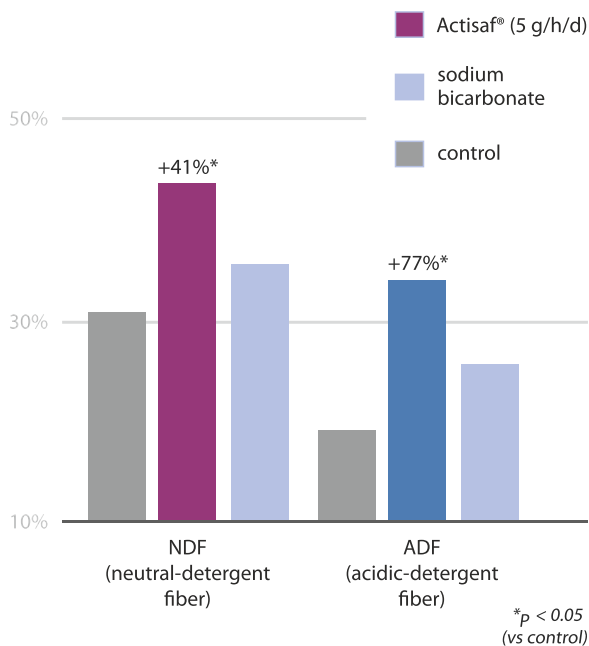


Figure 2. The impact of Actisaf® Sc 47 and sodium bicarbonate on the total digestibility in the digestive tract (Marden et al., 2008)

The production of feeds containing structural carbohydrates with a higher susceptibility to decomposition and digestion is an important factor in controlling animal performance on the farm. Effective carbohydrate degradation is enhanced by stable ration parameters and proper rumen fermentation, which covers the requirements of the microflora and reduces pH fluctuations in the rumen. The use of selected live yeast cultures can help maintain and im-

prove the ability of rumen microflora to digest fiber.

Feeding **Wipasz's products containing Actisaf®Sc 47** to cows, especially during early lactation, reduces the risk of acidosis and improves digestion of feed, especially grass silage. This results in higher dry milk solids production, higher peak milk yield, and reduced body condition loss in the first weeks of lactation.



Do not compromise on selenium supplementation

Aurélie Moal – Global Marketing Manager, Adisseo

Michele De Marco – Global Scientific & Technical Manager, Adisseo

Effective selenium supplementation increases the selenium status of cattle and provides optimal antioxidant protection. This ensures the performance of dairy cows and calves, particularly during times of stress. Under challenging conditions, ensuring optimal selenium status maintains a higher level of both milk yield and quality. Immunity is also supported, as cattle receiving a specific form of organic selenium have lower: metritis, somatic cell counts and incidences of subclinical mastitis; as well as improved fertility. When a cow has greater selenium body reserves, she is able to pass more on to her calf; mainly via colostrum. This improves calves' immunity, helping them face challenges and supporting growth.

Stress in dairy production

Cattle are subject to a variety of physiological, sanitary, environmental, technological and nutritional stresses. These stresses are responsible for significant economic losses in commercial dairy production. Physiological stresses include pregnancy and parturition, whilst heat stress is a common environmental challenge. Bacterial and viral challenges are also well known to trigger the redox balance of the body. Stress can have a greater impact on dairy cows when it occurs during critical physiological periods – for example during the transition period, at calving or during the peak of lactation. This in turn leads to more incidences of subclinical mastitis in cows or diarrhoea and morbidity in calves.

These stresses increase free radical production, resulting in oxidative stress. At the cellular level, high level of free radicals (ROS and RNS) cause lipid peroxidation, protein oxidation and DNA damage – impairing cell functions and damaging tissues. Moreover, those reactive molecules can activate several transcription factors and nuclear receptors which are implicated

in the pathogenesis of the inflammatory and immune disorders, having a direct negative effect on the health status of cattle. In terms of herd performance: milk production, growth and reproductive performance are decreased. Negative effects on fertility in both male and female cows are seen; as well as poorer colostrum quality.

The antioxidant function of selenium

To counteract the negative effects of free radicals, the body has several lines of defence: scavenging free radicals, detoxifying their metabolism products and repairing damaged molecules. These systems work by producing biological antioxidants, including enzymes. If dietary antioxidants are added to cattle feed, animals' antioxidant defence systems are improved. The players in the antioxidant system are fat-soluble antioxidants (vitamin E), water-soluble antioxidants (vitamin C), antioxidant enzymes (GSH-Px) and the thioredoxin system. Together they work as a team to protect the body, with selenium as the chief executive.

Selenium is a key component of two amino acids, selenomethionine (SeMet) and selenocysteine (SeCys). SeMet is the natural storage form of selenium, which is actively transported through the intestinal membranes. It is incorporated in rumen bacterial protein before being absorbed in the small intestine and deposited, as a methionine source, in animal protein acting as a safe storage of selenium. These body selenium reserves are then available to ensure adequate levels in blood, milk and colostrum. SeCys is the active form found at the catalytic site of selenoproteins, many of which play an important role in antioxidant defence, for example Glutathione peroxidase. Selenoproteins are also involved in thyroid metabolism, spermatozoa function; inflammatory and immune responses.

The importance of the selenium source

Selenium has historically been added to animal diets in the inorganic form sodium selenite. The use of organic forms is increasing; including SeMet and selenised yeasts. The amount of SeMet in selenium yeasts is highly variable, from 15–70% maximum, which limits their effect on selenium status. Hydroxy-selenomethionine (OH-SeMet) is a pure, chemically synthesised form of organic selenium, as such its consistency and reliability are assured. It is also safe, stable and easy to use in animal feed applications.

OH-SeMet has been shown to be very effective at increasing Se deposition in the tissues. By enhancing Se levels in tissues, a reserve of selenium is created, available for use when animals are suffering from ox-

idative stress. Experiments have shown that feeding OH-SeMet results in higher levels of selenium in plasma, milk etc; than sodium selenite and seleno-yeasts.

Dietary forms of SeCys cannot be stored as SeMet and they cannot be directly incorporated into selenoproteins, as it has to be created *de novo* for this purpose. Therefore, adding SeCys to the diet, would be of no greater benefit than supplying inorganic selenium, such as sodium selenite. Much of the inorganic selenium fed is transformed into elemental selenium, by reduction in the rumen environment, in this insoluble form it is then unavailable to the animal (figure 1). In ewes, 3.8 times more SeMet was incorporated into rumen micro-organisms than sodium selenite. This research explains the higher bioavailability of SeMet and OH-SeMet compared to inorganic forms of Se.

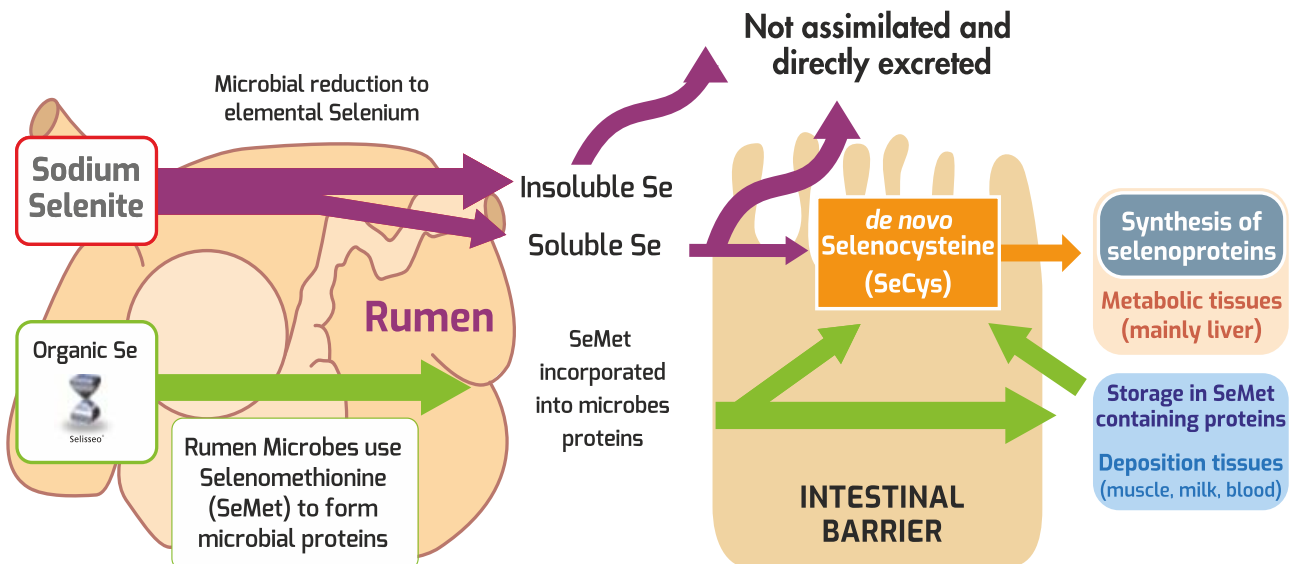


Figure 1. Fate of different sources of selenium in the rumen

Selenium deficiency and the effect of climate change

In the absence of supplementation, ruminants depend on the selenium present in grass, forage or cereals. In turn, the level within these plant sources is dictated by the availability of selenium in the soil. Even if soil contains adequate levels of selenium, factors including acidic pH and incomplete aeration due to water logging promote the formation of insoluble complexes of elemental selenium and sodium selenite with iron oxide. Selenium deficiency in dairy cows can lead to:

- ☒ poor fertility;
- ☒ poorer immune status;
- ☒ higher somatic cell counts;
- ☒ reduced calf growth and health;
- ☒ longer service to calving interval;
- ☒ increased susceptibility to mastitis;
- ☒ less transfer of selenium via colostrum to calves.

For instance, in Europe there are many regions where the levels of selenium in soil are very low; and sub-optimal levels of selenium in both animals and humans are reported. Higher levels of rainfall and lower soil pH are predicted due to climate change, increasing the likelihood of poor selenium status in cattle. A moderate climate change projection predicted that globally the soil in 66% of agricultural land would contain 8.7% less selenium.

The effect of optimal

Supplementation with OH-SeMet increases the selenium status of cattle and provides optimal antioxidant protection. Greater effects are seen in dairy cattle fed OH-SeMet, compared to both selenium yeast and sodium selenite. The effects of OH-SeMet ensure the performance of dairy cows and calves, particularly during times of stress. During heat stress, it has been

shown to maintain a higher milk yield, despite a similar drop in dry matter intake as cows fed sodium selenite (figure 2). This improvement in milk yield was positively correlated with a greater total antioxidant capacity; as well as a lower level of circulating plasma nitric oxide and hydrogen peroxide.

	SS	OH-SeMet
dry matter intake	10,9	11,6
milk yield	19,3	21,1

Figure 2. Effect of OH-SeMet on dry matter intake (DMI) and milk yield during heat stress

Researchers have demonstrated a direct correlation between mean herd plasma selenium and the level of SCC in the milk tank. Cows fed OH-SeMet have lower metritis, somatic cell counts and incidences of sub-clinical mastitis (figure 3). When a cow has greater selenium body reserves, she is able to pass more on to her calf mainly via colostrum (figure 4). This improves calves' selenium status, helping them better face the first challenges after birth and supporting their growth.

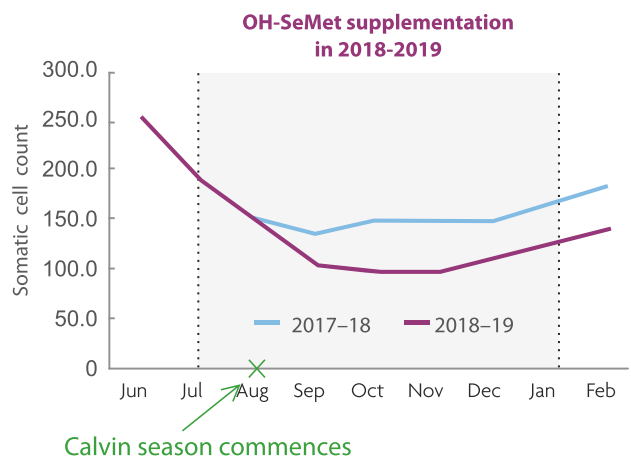


Figure 3. Effect of OH-SeMet on somatic cell count (SCC)

Providing OH-SeMet to cattle helps build their reserves, so that during periods of stress, they can combat oxidative stress. Selenium availability and stress are major factors that determine selenoprotein

expression. As well as ensuring the effectiveness of the antioxidant system, it supports immunity and fertility. Adequate selenium status is essential to maintain the performance of dairy cattle. However, the form of selenium supplementation is key to the ability of a product to help cattle reach their full potential.

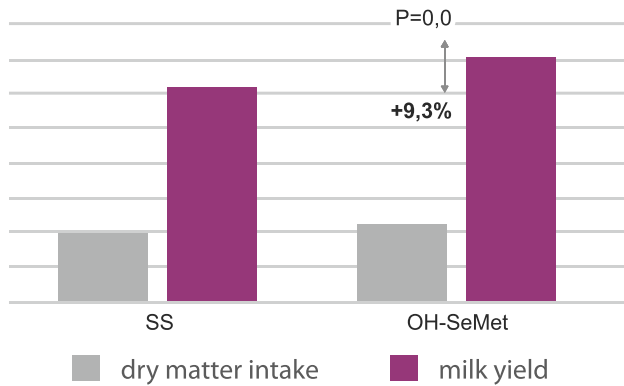


Figure 4. Total Se content and proportion of total Se in the form of selenomethionine (SeMet) or selenocysteine (SeCys) in colostrum of freshly calved heifers (NC – negative control, SS – sodium selenite, OH-SeMet – hydroxy-selenomethionine)

Figures:

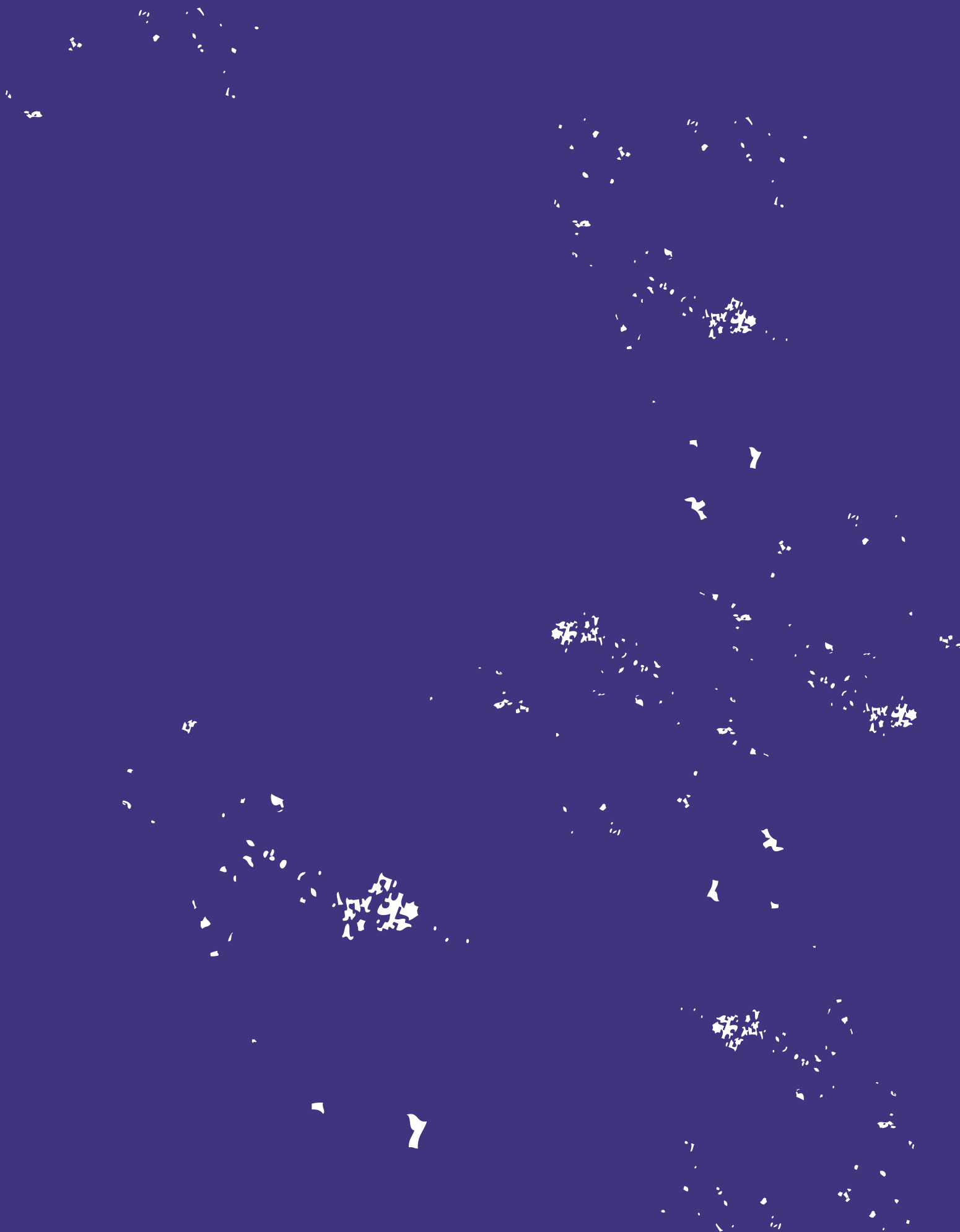
Figure 1. Behavior of different sources of selenium in the rumen

Figure 2. Effect of OH-SeMet on dry matter intake (DMI) and milk yield during heat stress

Figure 3. Effect of OH-SeMet on the number of somatic cells (NSC)

Figure 4. Total Se content and proportion of total Se in the form of selenomethionine (SeMet) or selenocysteine (SeCys) in colostrum of freshly calved heifers (NC – negative control, SS – sodium selenite, OH-SeMet – hydroxy-selenomethionine)





In this section you will read:

- What is the net weight declaration?



What is the net weight declaration?

Piotr Włodawiec – Legal Counsel

Anna Pakulska – Food Technology and Human Nutrition Engineer

In the current issue of Safety Food you will find answers to several questions that arise in relation to the weight of the products you buy, including the following: How should the net weight of meat products be declared on unit packaging so as not to mislead the consumer? What could the possible difference between the manufacturer's declaration and the actual weight of the product be due to? What is the liquid coming out of meat during storage?

Facts

A batch of meat products was analyzed. The net weights of the products were found to be lower than those declared by the manufacturers. In addition to the different weights of the products, the inspection authorities detected the presence of free leakage from the meat.

Water absorbability

Water absorbability is a product's ability to absorb and retain its own and added water. It represents important factors from a technological and economic point of view. The ability to absorb water is influenced by myosin and actin. Individual protein functional groups, on the other hand, are responsible for water retention. Water absorption increases or decreases depending on the speed and direction of post-slaughter transformation.

Several factors affect the content of water bound in the meat. The first is the pH value. As the pH decreases, water absorbability of the product decreases. As a result of lowering the pH value below the isoelectric point of myosin (pH=5.4), sarcoplasmic proteins can be destroyed, which results in a large amount of free leakage. Another factor that affects the content of wa-

ter bound in meat is the postmortem concentration. As the meat matures, its water absorbability and tenderness increase.

The processing quality of meat is determined by three types of leakage: **free**, **thermal**, and **forced**. The leakage contains 80 to 160 mg of protein/cm³, 120 mM of potassium, and 20 mM of sodium. In addition to minerals, the liquid from the meat contains vitamins and peptides. A free leakage is one that occurs as a consequence of natural changes in stored meat. As a result of meat freezing and the subsequent thawing process, thermal leakage occurs. If the meat sample is subjected to constant pressure, then forced leakage occurs. Based on an analysis of the three leak types, it is possible to determine the level of water absorbability.

The amount of free leakage is determined by the method developed by Honikel. The determination involves leaving a sample of prepared meat in natural conditions during refrigerated storage. Meat weighing 300 g is packaged in vacuum conditions and then stored for 24 h at the temperature of 3°C. The percentage result is obtained from the differences in the weights of the sample before and after the storage process.

According to Prof. Edward Pospiech, free leakage for good-quality, red, firm, normal (RFN) meat reaches the value of 2 to 5% by weight of the product. In the case of pale, soft, exudative (PSE), red, soft, exudative (RSE), and acid, soft, exudative (ASE) meats, the leakage occurring during storage accounts for more than 5% of the total product weight. The smallest weight loss takes place in the case of dark, firm, dry (DFD) meat and is equal to less than 2%.



Based on the research of Dr. Iwona Chwastowska-Siwińska et al., the free leakage of the femoral muscles of a rabbit is at the level of 1.14%. The differences between the results obtained were statistically insignificant.

Based on the research of Dr. Marta Chmiel et al. the amount of free leakage was 2.5%. The amount of thermal leakage for the same type of meat was 4.9%. The authors also conducted an analysis of meat with the PSE defect. The amount of free and thermal leakage for this type of meat was 4.4% and 6.1%, respectively. The third object of research was meat with a partial PSE defect. The free and thermal leakage values for the meat that was analyzed were 3.1% and 4.1%, respectively.

Prof. Jacek Kondratowicz and Dr. Iwona Chwastowska-Siwińska conducted research on thermal leakage. Four tests were conducted that differed in the storage time and the thawing method. The storage time was half a month and 3 months. The thawing methods used were the microwave method and the air method. When the meat was stored for half a month

and then subjected to microwaved thawing, the weight loss was 3.74%. When the same storage time but the other thawing method was used, the weight loss increased and reached 5.61%. For a three-month storage period and the microwave thawing method, the weight loss was at 5.15%. When the microwave thawing method was changed to the air method, the loss was equal to 6.98%.

According to Prof. Zygmunt Litwińczuk et al., the value of free leakage is influenced by the type of muscle and the grade of the meat. An analysis of the results obtained for semimembranosus muscle shows that E, U, O, and P grade meat had a leakage rate of 2.5 - 3%. The value was higher in R grade meat (3.63%). For the longest lumbar muscle, free leakage for the E, U, R, and O grades ranged from 4.7 to 5.3%. The greatest weight loss was in meat of the P grade (6.09%).

In a study conducted by Dr. Andrzej Zybert et al., fluid leakage increased during storage. Measurements were conducted after 48, 72, and 96 hours of storage. P grade meat had the highest leakage of all samples.

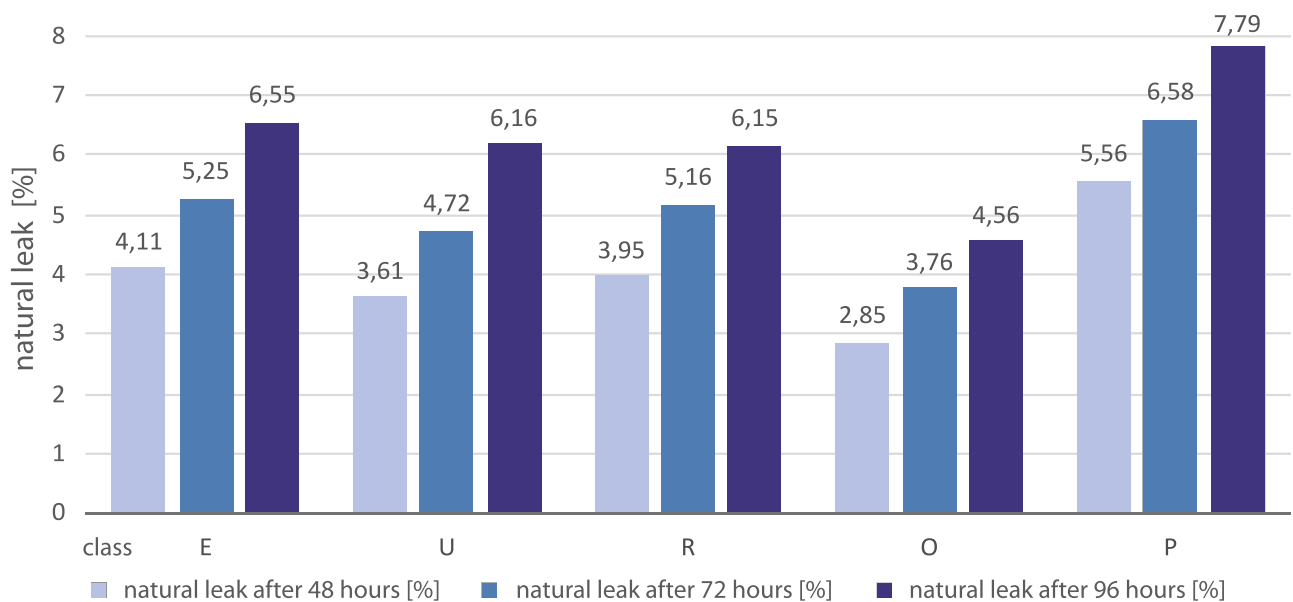


Figure 1. Free leakage results [%] depending on the degree of muscularity of the carcasses and the storage time [h]

Dr. Salomea Grajewska et al., in a study conducted within different groups of pig genotypes, showed that free leakage reached values in the range of 2.81 to 5.88%. The highest leakage was determined for meat from pigs with the nn homozygous genotype and the lowest - with the NN homozygous genotype.

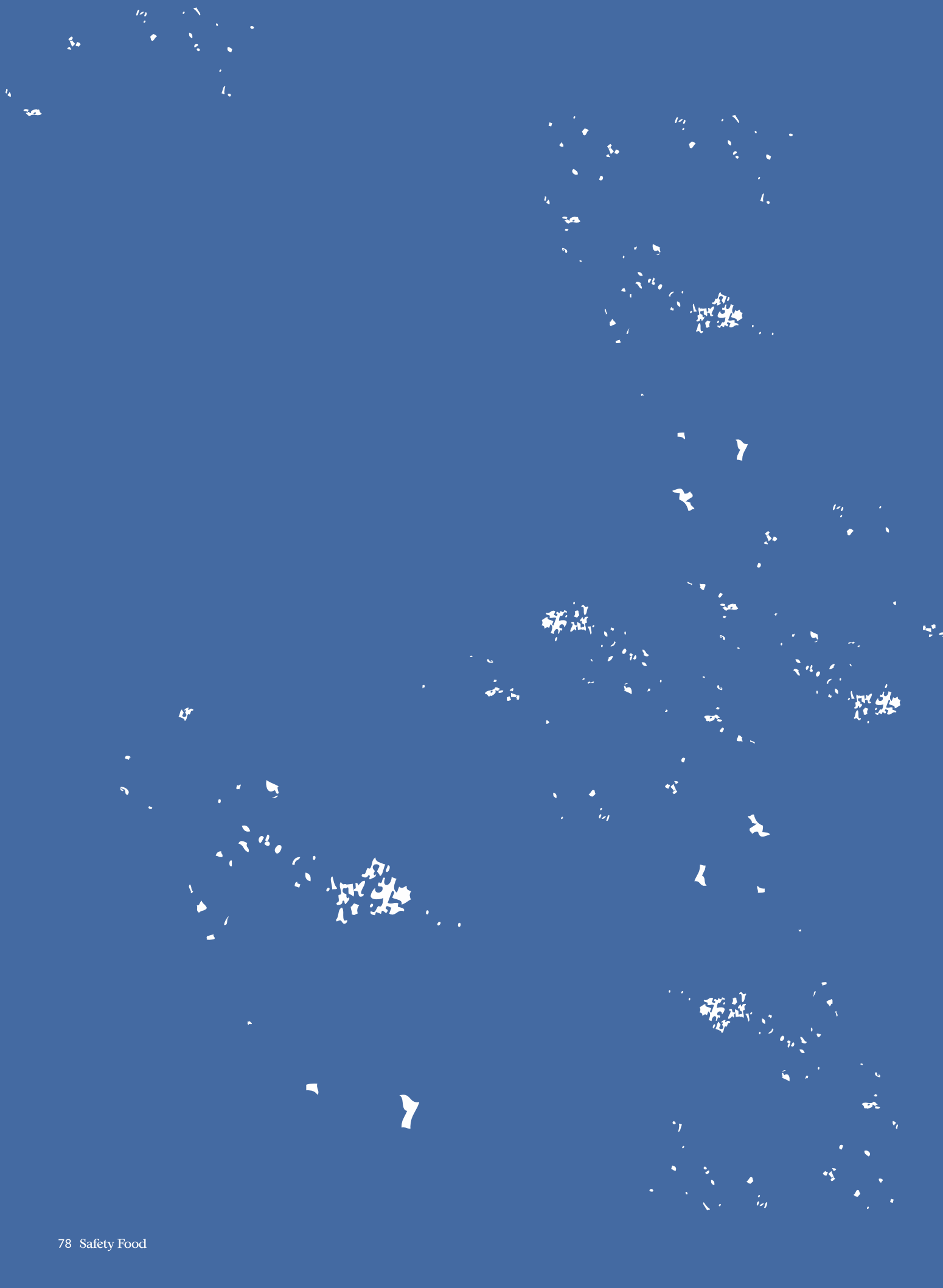
Producers of meat and processed meat products very often use absorption inserts. These elements are made of cellulose fibers. Their use is associated with the formation of free leakage during storage. They are designed to absorb the fluid coming out of the meat. In addition to the aforementioned function, they also

have an antibacterial function. The bacteria present in meat can have harmful effects on consumer health. The insert absorbs bacteria and other harmful microorganisms.

Conclusion

Based on the results of other authors' research discussed above, it can be concluded that the amount of free leakage depends on the degree of meatiness and the presence or absence of meat quality defects. In all cases analyzed, the leakage value was in the range of 1.14 to 7.79% of the total product weight.





Our experts

answer your questions



What challenges does the grain market face in the 2022/2023 season? What key factors will determine the prices and behavior in the grain market in the near future?

The challenges currently facing the grain market and the factors that determine it in this season are undoubtedly closely related: rising inflation, the war in Ukraine, and the threat of an energy crisis.

The current inflation affects almost all countries and is a worldwide phenomenon. It is felt by both manufacturers and consumers. In the last 12 months, grain prices have risen by more than 100% compared to the beginning of the 2021 season.

The war undeniably affected the economies of some countries, including Poland, due to reduced supplies of grain, coal, gas, and oil, among other things. Russia and Ukraine are among the world's top grain exporters. The disruption of the supply chain from these countries caused by the economic sanctions imposed on Russia, the reduced exports, and the concerns about global production and grain stocks in the next

season, has made a strong impact on the current price level.

The rising energy prices are linked to strong increases in energy commodity prices. Their high levels have led to growing production costs of many products, including the cost of fertilizers, which are essential for growing crops. The rising production costs caused by the energy crisis are reflected in the rising prices in the grain market, particularly the prices of corn. Unfortunately, there may be numerous problems with its drying, due to expected gas shortages and record gas prices.

It is likely that within 2–3 years the European Union will find a solution for the current inconveniences. By successfully combating inflation, avoiding an escalation of the war in Ukraine, accelerating the energy transition that has already begun, and becoming independent of energy supplies from Russia, it will most likely be possible to stabilize the grain market, which has been troubled for quite a long time.

Sebastian Węgiński
– *Commodity and Currency Market Analyst Wipasz S.A.*



The soybean meal market – is a third consecutive drought in Argentina possible?

The current high soybean meal prices are due to the increasingly disadvantageous balance of global soybean stocks. Unfortunately, this is closely related to the lack of optimal weather conditions in the world's major growing countries, namely Argentina, Brazil, and the USA.

Droughts did take place in the past, too, but the main difference was that they did not occur in several important regions at the same time and, more importantly, they did not occur year after year. Against this backdrop, the situation in Argentina, the largest exporter of soybean meal, is definitely extremely rare. The country cannot consider its last two harvests as

successful, because the excessively dry weather conditions have reduced soybean or corn harvest levels to historic lows. The upcoming season with a harvest in March and April 2023, was supposed to be finally better, but unfortunately, the current weather models show a high risk of another, third in a row, drought in that country (figure 1).

The drought in Argentina is therefore very likely, and the effects of climate change that we were to see in a few decades are already affecting us today.

Sebastian Michalak
– Feed Additives and Raw Materials
Purchasing Director Wipasz S.A.

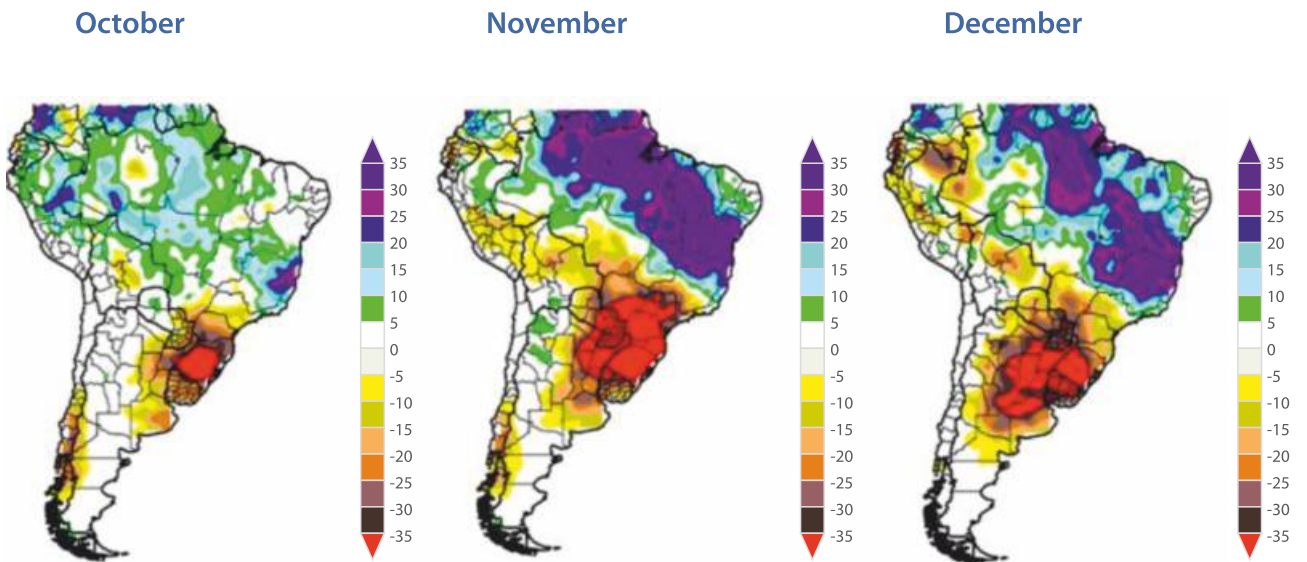


Figure 1. Analog Model Rainfall Anomalies (mm) in South America

How can one achieve the right egg yolk color?

Adequate egg yolk color is primarily assessed using the simple but subjective DSM (formerly Roche) Yolk Color Fan method. It expresses the score on a scale of 1 to 16 by visually comparing the yolk with calibrated cards in a special fan. Most consumers consider properly colored yolks to be those with the value of 12 or more, while vendors typically require from farmers eggs with yolks in the range of 9 to 12.

The coloration of the yolk in an egg depends on the concentration of carotenoid pigments. These pigments can be divided, depending on their chemical composition, into two groups: xanthophylls, which mainly produce the yellow color, and carotenes, which are responsible for the red color. Some pigments are present in the raw materials commonly used in feed, such as cryptoxanthin or zeaxanthin found in corn grains. Other pigments are introduced into the feed using natural coloring preparations (calendula flowers, alfalfa or pepper) or mixtures of synthetic pigments.



To achieve the right color of a yolk, it is best to have several different coloring substances in the finished feed. Adding just one pigment in large amounts may not produce the desired results. It is very difficult to achieve the desired yolk color with a yellow pigment alone, and on the other hand, an excess of a red pigment can lead to yolk blotchiness. Therefore, the easiest way to achieve the right yolk color is to use about 40% of corn in the birds' diets, which will contribute the right amount of yellow pigments, and 3–5% of natural ingredients containing a red pigment, such

as dried grass or alfalfa. Natural ingredients containing carotenoids can also be substituted with a smaller amount of commercial coloring preparations. One should also keep in mind that yolk color also depends on factors such as the genotype of the laying hen, the amount of feed consumed, and the percentage of the egg yield.

Adrian Dąbrowski
– *Specialist for Feed Formulation Wipasz S.A.*



What factors should be considered when introducing an alternative bulk raw material into an animal's feed ration?

This is a question many growers are asking themselves today. The high prices of grain and other bulk commodities are forcing farmers to look for alternatives. Despite the high demand, one can find offers on the market for the sale of domestic as well as foreign raw materials from the processing (agro-food) industry. If a raw material is completely unknown to the farmer, he can seek from his nutritional advisor an advice on the suitability for feeding a particular group of animals. Most importantly, the farmer should ask the supplier to provide a representative sample of the product or evaluate it by himself. The more the farmer learn about the origin, composition, quality, and production process, the lower the risk of deterioration of animal welfare and production results. The first thing to do before buying a product is to conduct an organoleptic evaluation, to check whether the raw material is free of live pests, unusable contaminants, burned material, and non-specific odors indicating the presence of fungi and mold. The raw material should then be evaluated, with basic analytical components and possible mycotoxin contamination tested beforehand, as a minimum.

Such tests can be ordered by farmers within the framework of cooperation with Wipasz S.A. Once we know

that the raw material is safe and have determined its nutrient contents, the farmer adds it into the recipe after first assigning the parameters in the optimization software. The rule of thumb is that where an ingredient is not known, it may be added to the diet at no more than 5%. One ingredient may never be replaced 100% with another one. It is always necessary to conduct reformulation with the help of optimization software. A new, unknown ingredient must be introduced gradually, while observing the animals and the production results. If no contraindications are seen, its proportions may be increased. When more than one alternative ingredient is added, they must not be added at the maximum recommended doses, because it is not known what antinutritional substances they contain or if they pose other risks. Another rule of thumb is that if one is not sure about an ingredient then it should not be fed to vulnerable animals, i.e. ones that are young, reproductive, and weakened.

In conclusion, the use of unknown ingredients requires constant attention on the part of the farmer. Alternative products are often made in small batches, may come from different sources, and may not be repeatable. Finally, one must keep in mind that there is no such thing as 100% safe feed ingredient in the market. It is always advisable to use caution and common sense.

Sylwester Filipek
–Animal Nutrition Specialist Wipasz S.A.



What is the *in ovo* chick feeding method? Can it have a commercial application?

At a time of rapid development of biotechnology in poultry production, more and more popular is the *in ovo* (into the egg) injection, which allows intervention in the development of the bird at the stage of its embryogenesis. Many broiler breeders associate this method with vaccination of birds against the Gumboro disease or the Newcastle disease (ND). It involves introducing the vaccine into an egg with a live embryo (either into the air chamber of the fertilized egg or directly into the embryo itself), at the final stage of hatching, usually around day 18. The procedure was first used in the United States in 1982 to vaccinate hatching turkey eggs against Marek's disease.

On the other hand, the *in ovo* feeding technology – feeding of chick embryos, involves the injection of nutrients (amino acids, carbohydrates, vitamins, and minerals) into the amniotic fluid of the egg. In general, this procedure is carried out about 3 days before hatching. The enriched amniotic fluid is ingested by the maturing chick and the substances thus delivered begin to affect the young bird's body even before it leaves the egg. It has been shown that administration

at the last stage of embryonic development of such nutrients as glucose, sucrose, dextrin, and maltose (carbohydrates) increases energy availability to the embryo (better hatching rate), stimulates morphological development of the intestinal epithelium, and increases the number of goblet cells (allows better absorption). It also affects the gene expression of mucins, which are responsible for the first line of defense against pathogens in the intestines of recently hatched birds (higher survival rate in the first hours of life and improved health).

Scientists have been studying this form of chick stimulation since about 2010. This relatively fresh and innovative technology has not yet been widely adopted by the poultry industry. The results of the research so far are encouraging and the method offers the possibility of improving the vitality and viability of chicks at birth. It also contributes to a favorable microflora of the digestive system, which enhances immunity, and affects other important production results. Hopefully, this method will quickly be applied in commercial poultry farming.

Natalia Hestkowska
– Poultry Nutritionist Wipasz S.A.



Is it possible to complete a broiler production cycle with compound feed containing coccidiostats?

Coccidiosis is a major problem in poultry production, especially in the breeding of broiler chickens. Therefore, coccidiostatic products are used for almost the entire period of their breeding. The standard product used is feed containing a coccidiostat at the starter, grower 1, and grower 2 stages. Finisher feeds are most often devoid of this additive. However, high intensity of breeding is conducive to coccidiosis, which in turn contributes to serious financial losses for poultry producers. Particularly insidious is the subclinical form, which is responsible for *E.acervulina* and *E.maxima*. That is why flock management in terms of coccidiostat programs is so important.

If there is a major problem with coccidiosis during the breeding of chickens, especially if the situation keeps recurring on the farm, it is possible to extend the use of the coccidiostat, including in the finisher feed. This preparation must have no withdrawal time, i.e. it's feeding must not affect the slaughter period of the birds. Such coccidiostats include monteban and salinomycin, among others. An alternative to these coccidiostats are plant substances known as 'herbal coccidiostats'. They can be added at any feeding period. Coccidicidal activity is shown by many substances of plant origin, such as artemisinins, turmeric, oregano, betaine, phytoncides, and phylloalexins.

Tomasz Kisiel
– *Regional Sales Director,*
Poultry Sales Department Wipasz S.A.



Why do not sows manifest symptoms of estrus?

As a rule, this is due to poor preparation of the sow for the next cycle while the current cycle is still in progress. In order to do what should be done before parturition, that is to keep the sow in proper condition, it is necessary to shorten or lengthen the time the piglets stay with the sow and to properly balance its diet. A well-chosen formulation and feed ration depending on the condition of the sow is essential. Feeding sows immediately after weaning is also important, and flushing as well as supplementation with vitamin E and selenium are recommended.

Another aspect is the maintenance conditions and handling of the sow. A very important role is played by the temperature and light for 14–16 hours (with white artificial lighting with the intensity of 200–250 lx) - often there are old or dirty fixtures that do not emit so much light. Stimulation with a boar at least 2 times a day (preferably with different males) – often there are too few boars on a farm, which decreases their effectiveness. What is also important, is calm and competent staff.

Tomasz Zalas
– Pig Nutritionist Wipasz S.A.

What are the causes of aggression in fattening pigs?

Pigs are herd animals and the purpose of the relationship between them is to establish a hierarchy in the herd. As a result, they are able to set clear rules regarding access to resources such as feed and water. Aggression is also regulated by hormonal factors, which is why boars and castrates fight for dominance

to a greater extent. In a herd with an established hierarchy, incidents of aggression decrease, but it is nevertheless a complex topic. The level of aggression in fattening pigs depends, among other things, on the microclimate in the pig house, which often changes depending on the weather conditions. Too much light in the room, too high a temperature, and excessive temperature fluctuations (the optimal temperature is 19–21°C) are a problem. Proper microclimate also requires adequate airflow, about 2 m/s. Excessively high gas concentration can cause stress and anxiety in animals. The size of the enclosures in which fattening pigs are kept also has an impact on the aggression among them. Excessive density of the animals leads to a lot of negative social interactions that cause stress and consume a lot of energy. In simple terms, an area of about 0.1 sq. m for every 10 kg of animal weight should be provided. What is also of great importance in addition to a proper animal housing system and proper microclimate is access to water, i.e. at least one functioning drinking trough for every 10 animals, as well as adequate access to feed (5 to 10 pigs at one feeder) and feed quality. A possible problem in feeding of fattening pigs is a poorly balanced ration (especially in terms of fiber and energy content) or switching from a feed with lower protein content to a feed with a higher one. If feed with a higher content of rye (especially fresh rye) is required, enzyme products should be added.

Aggression in the herd have many causes and therefore, it is important to analyze the level of animal welfare on your farm and reduce or eliminate any irregularities to achieve the best possible production results without incurring additional costs.

Tomasz Zalas
– Pig Nutritionist Wipasz S.A.

How should soybean cake be used in porker feed?

Soybean meal is the main source of protein in pig nutrition. Unfortunately, its price has remained very high for more than a year. Currently, it has not fell below PLN 2 500 at the port, causing breeders to look for cheaper alternatives. One such product is soybean cake. Its price is on average about PLN 400 per ton lower, which makes it an economically attractive substitute. The parameters of soybean cake are slightly different from those of soybean meal: about 39% of protein, 6.5% of fiber, and about 8–10% of oil. Its high fat content further encourages the use of this product.

At the same time, soybean cake protein contains as much lysine and tryptophan, essential amino acids necessary for proper animal growth and development. One must keep in mind that soybean cake contains more anti-nutrients than soybean meal. The safe amount of soybean cake in a fattening pig's feed at any stage of fattening is 5–6% per ton of feed. Such an amount balanced with soybean meal and other feed ingredients visibly reduces the cost of the feed without reducing the nutritional value of the mixture.

Mariola Skomial
– Pig Feeding Advisor Wipasz S.A.

Is it a good idea to use additional enzymes in compound feed for fattening pigs?

Compared to last year, the current cost of feeding a 100 kg porker has increased by as much as one hundred percent. Breeders are reluctant to accept the extra cost associated with enriching and improving the quality of compound feeds. Many continue to wrongly believe that poorer feed results in financial savings. Unfortunately, a poor compound feed results in prolonged fattening, reduced growth rates and increased susceptibility to disease. Ultimately, this worsens the production results and, consequently, the breeder's earnings. Most breeders use additional enzymes in the feed right after the harvest for the so-called fresh grain. After a month, they stop it, as they consider them unnecessary. Is it the right approach? Wipasz S.A. uses enzyme supplements in all of its products to improve feed digestion, but production results achieved by breeders who use enzymes year-round show lower feed consumption and thus higher earnings.

The cost of Enzomix is PLN 10 per 1 tonne of feed. By reducing feed consumption by 10 kg per fattening pig, the breeder saves about PLN 20. Therefore, it is definitely a good idea to use additives that increase feed utilization and thus increase the final profit of the breeder.

Mariola Skomial
– Pig Feeding Advisor Wipasz S.A.



This year's corn for silage has cobs with a small amount of grain. What can be done to take the best advantage of it?

The starch content of corn silage is affected mostly by the weather. This year's summer was not favorable for corn, which failed to reach high weights as a result of the deficit of water and additionally did not develop much grain. Now we can only seek to make the best use of the nutrients it contains. The first key step is the process of harvesting the plants and preparing the silage material. Proper shredding of both the green part of the plant and the grains determines the extent to which the silage is utilized by cattle. While there are several theories regarding the length of the plants cut in the shredder, which depends largely on how the plants are taken from the heap and placed on the feed table, everyone agrees on the issue of grain shredding. The grain in corn silage should be shredded as much as possible because the best di-

gestibility in the digestive system of cattle is ensured by feeding particles that are three millimeters in size. Improper silage preparation translates into huge economic losses. If there are whole grains or only 'knocked' grains in the heap, we can be sure that the starch from these grains will not be properly utilized, which will strongly reduce the energy content of the feed.

In the case of well-prepared and ensiled corn, its digestibility can be modified with the help of nutritional additives. The higher digestibility, the better for the farmer. To achieve this, we recommend using the products CornBooster and ComboBooster. The enzymes they contain are aimed at improving the digestibility of grain and fiber from corn and they yield very good results. By using these products, we can maximize the potential of silage.

Filip Kula
– Product Manager,
Cattle Sales Department Wipasz S.A.



Roasted chicken thighs in spices

Ingredients:

- ▶ 1 package of Green Farms Chicken Thighs
- ▶ 125 ml of white wine
- ▶ half an onion
- ▶ 2 cloves of garlic
- ▶ 1 package of bulgur groats

Spices:

- ▶ 4 cloves
- ▶ 1/2 teaspoon of pepper
- ▶ 1/2 teaspoon of salt
- ▶ 2 small dried piri piri peppers
- ▶ a pinch of ground nutmeg
- ▶ 2 rosemary sprigs
- ▶ 4 apricots
- ▶ 1/2 teaspoon of cinnamon

Preparation:

STAGE I

Pour the spices (cinnamon, nutmeg, pepper, and salt) into a bowl. Add pressed garlic and mix together. Then add the onion cut lengthwise, the cloves, and the chopped dried piri piri peppers. Pour wine over the mixture of aromatic spices. Put the meat into the previously prepared marinade, lay the rosemary sprigs, and refrigerate for at least one hour. Place the chicken in an ovenproof dish and pour the marinade over it. Place it in an oven preheated to 180 degrees and bake for about 45 minutes. After the indicated time, add the apricots and bake for another 15 minutes.

STAGE II

Transfer the roasted chicken to another dish and cover with foil so that it does not get cold. Remove the cloves and rosemary from the marinade and blend everything to make a spicy apricot sauce.

STAGE III

Put the chicken on a plate, pour the sauce over it, and serve it with bulgur groats.

Enjoy it!



Chicken breast fillets in balsami sauce with cranberries

Ingredients:

- ☒ 1 package of Green Farms Chicken Breast Fillets
- ☒ 2 tablespoons of frying oil
- ☒ 3 cloves of garlic
- ☒ 1.5 cups of fresh cranberries
- ☒ 2 rosemary sprigs
- ☒ 1/2 cup of chicken broth
- ☒ 1/2 kg of potato

Spices:

- ☒ 1/3 cup of orange juice
- ☒ 1/2 teaspoon of orange peel
- ☒ 2 tablespoons of balsamic vinegar
- ☒ 3 tablespoons of honey
- ☒ 1 teaspoon of honey mustard
- ☒ Salt and pepper to taste

Preparation:

STAGE I

Season the chicken with salt and pepper. Heat a frying pan over high heat. Fry the chicken breast until browned on both sides – the meat does not need to be cooked inside. Remove the meat from the pan. In the same pan, fry finely chopped garlic for no more than 30 seconds. Immediately add the remaining sauce ingredients: cranberries, rosemary, chicken broth, orange juice and zest, balsamic vinegar, mustard, and honey. Bring the sauce to a boil and season with salt and pepper. Add the previously fried chicken to the sauce and continue cooking on medium heat for 6 minutes.

STAGE II

Remove the chicken from the sauce and put it on a plate; serve it with roasted potatoes.

Enjoy it!



Christmas carrot cake

Ingredients for the cake:

- ▶ 250 g of wheat cake flour
- ▶ 180 ml of vegetable oil
- ▶ 4 large eggs
- ▶ 300 g of coarsely grated carrots
- ▶ 120 g of sugar-free apple mousse
- ▶ 250 g of sugar
- ▶ 2 teaspoons of baking powder
- ▶ 1 teaspoon of baking soda

Preparation:

STAGE I

Sift 250 grams of wheat flour into a bowl. Add 2 teaspoons of baking powder, one teaspoon of baking soda, and half a teaspoon of salt. Add the spices: cinnamon, ginger and nutmeg. Finally, add the vanilla extract and mix. Peel and grate the carrots on a coarse grater. If the carrots are juicy, squeeze the excess juice out. Put four large eggs and sugar in a bowl with grated carrots. Pour 180 ml of vegetable oil. Finally, add the unsweetened apple sauce. Mix the wet ingredients for the carrot cake thoroughly with a spoon. Then pour in the mixture of loose ingredient and mix everything thoroughly. Pour the dough into a 35 x 25 cm baking pan lined with paper and bake on the middle shelf of the oven for 35 minutes at 175 degrees – after this time, gently open the oven door and leave the dough for another 10 minutes. After it has cooled slightly, cut it in half.

STAGE II

Put the cheese in a bowl and beat it for a while with the mixer at medium speed, then increase the speed to high and gradually add soft pieces of butter. Finally, add all the sugar and beat everything until all the ingredients are blended.

STAGE III

Spread cream between the two halves of the cut cake. Decorate the top of the cake with it as well and sprinkle it with crushed walnuts.

Ingredients for butter cream:

- ▶ 250 g of Philadelphia cheese
- ▶ 150 g of butter (at room temperature)
- ▶ 150 g of powdered sugar

Spices:

- ▶ 1 teaspoon of vanilla extract
- ▶ 1/2 teaspoon of cinnamon
- ▶ 1/2 teaspoon of salt
- ▶ 1/2 teaspoon of ginger
- ▶ 1/4 teaspoon of nutmeg

Enjoy it!



Dear Friends of our Foundation:

Wadağ, 1 November 2022

We feel that it is our duty to thank you for your support, report on the tasks we have accomplished, and present a plan of further action.

In 2022, a total of PLN 315,920.65 was credited to our account.

Today we can already proudly and happily say that together we have broken a record in the history of the foundation!

Your involvement and generosity prove that what we are doing is good. Mature sharing stems from empathy, the ability to understand another person's needs, and see the situation from his or her point of view. We are happy to be surrounded by people who know how to share. Thank you for your sensitivity.

In February, we faced the challenge of helping war refugees from Ukraine. While Wipasz S.A. focused its efforts on providing equipment and medical supplies to the battlefield in Ukraine, the Foundation received refugees on the Polish side of the border. Donations marked "aid to Ukraine" were used to purchase clothing, hygiene products, school supplies, and toys, as well as for daily subsistence of refugees. We were able to give shelter to 86 women and children who, thanks to your help, became independent and started a new stage in their lives after a few months.

We operate in the entire territory of Poland. We focus on leveling the playing field for children who, for various reasons, cannot develop their talents and realize their childhood dreams. Thanks to you, Alicja from Olsztyn is developing her talent as a golf player in the USA, Zuzia and Paweł from Mława are shaping their characters, achieving excellent sports results in the spirit of fair play, and Jakub has become vice-champion of the world in power lifting. We support sports clubs, including the People's School Sports Club "Olimpijczyk" in Jeżewo, Marlin Mława, the "Dynamit" Soccer Academy in Etk, the Shot Token Karate Club in Lębork, and the Taekwondo Club in Międzyrzec Podlaski, where children develop their passions and spend their time safely. We have subsidized the purchase of a specialized bus adapted to the needs of children with disabilities in Morağ. We have built a playground for kindergarten children in Drelów and bought toys for the toddlers attending the nursery in Międzyrzec Podlaski. We have supported child and family days and runs, which promoted a sense of safety and belonging, so necessary in the development of children.

All members of the Wipasz Helping Hand Foundation are employees of Wipasz S.A. For us - people associated with food production - the topic of the ever-worsening global food crisis is particularly relevant. Today, more than a billion people around the world suffer from hunger. The five basic human needs include physiological needs - with eating playing a fundamental role. Inability to satisfy hunger prevents other key needs from being met. That is why we are planning to deliver aid to the world's poorest areas this year.

Every zloty provides an opportunity to change a child's life for the better.

You can support us by:

- **making a transfer directly to our account PKO S.A. 95 1240 5598 1111 0010 3452 1503**
- **in the form of quick payments Apple Pay / credit card - by scanning the QR code below:**

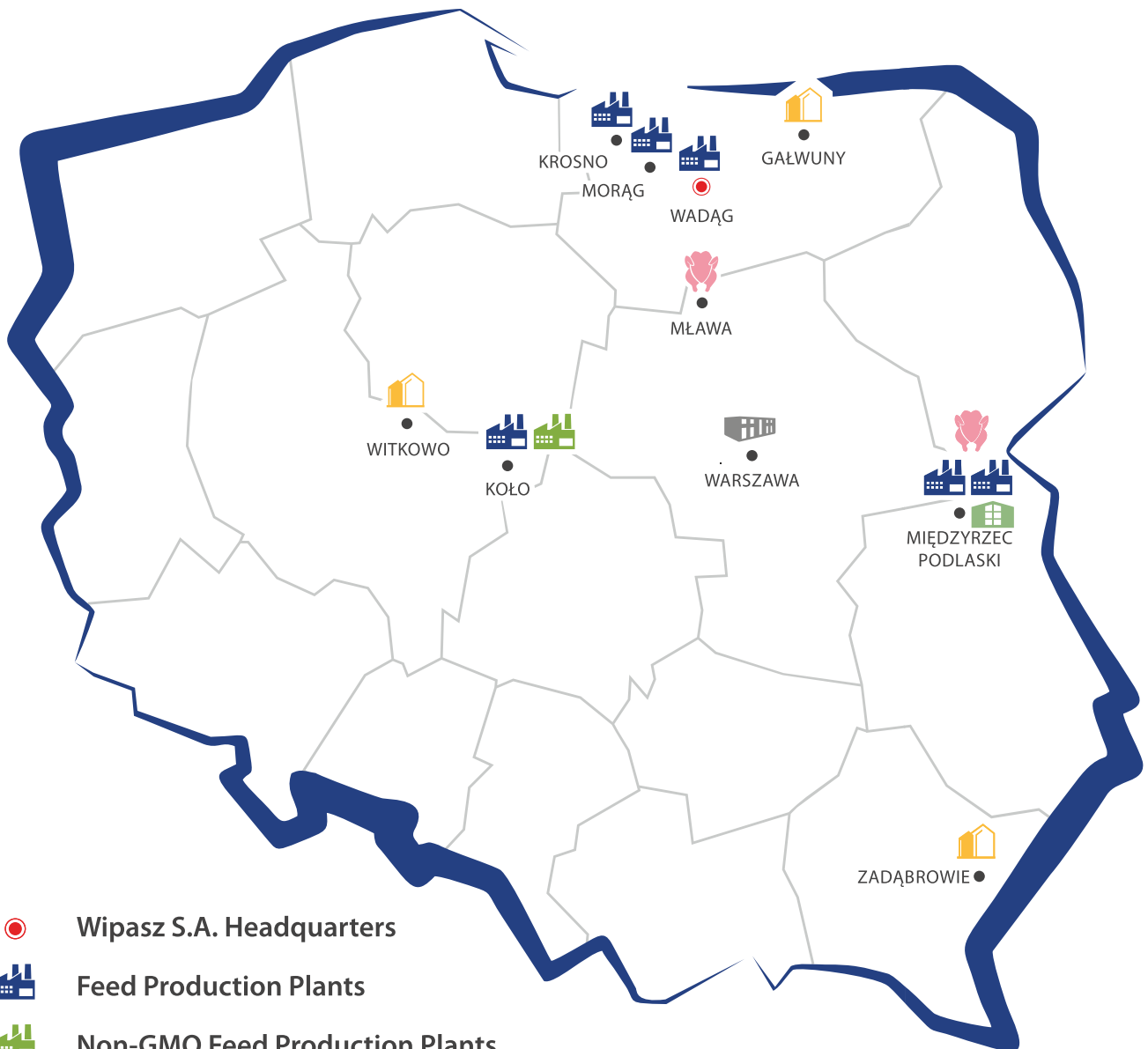


President of the Foundation

Vice President of the Foundation



Our locations



-  **Wipasz S.A. Headquarters**
-  **Feed Production Plants**
-  **Non-GMO Feed Production Plants**
-  **Grain Stores**
-  **Poultry Processing Plants**
-  **Sales Office**
-  **Polish Chicken Research Center**

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