

Nutrinfo

**HERE'S HOW THE EU DAIRY
COW HERD LOOKS NOW**

**TESTING OF FOUR BIRD FLU
VACCINES STARTS IN THE US**

**2023: A YEAR OF CAUTION
IN PORK INDUSTRY**

**MEATBALL FROM WOOLLY
MAMMOTH CULTURED
IN THE NETHERLANDS**



The Agrofeed webshop has been renewed

At the end of a successful development process, we are available to our Partners with a new image and an even faster ordering interface!

Webshop user guide

1st STEP LOG IN

Logging in with the provided username (customer number) and password (first three letters of customer name + customer number).

2nd STEP ADD PRODUCTS

Add the products you want to order and select parameters: quantity, packaging.

3rd STEP SPECIFY SHIPPING ADDRESS AND DATE

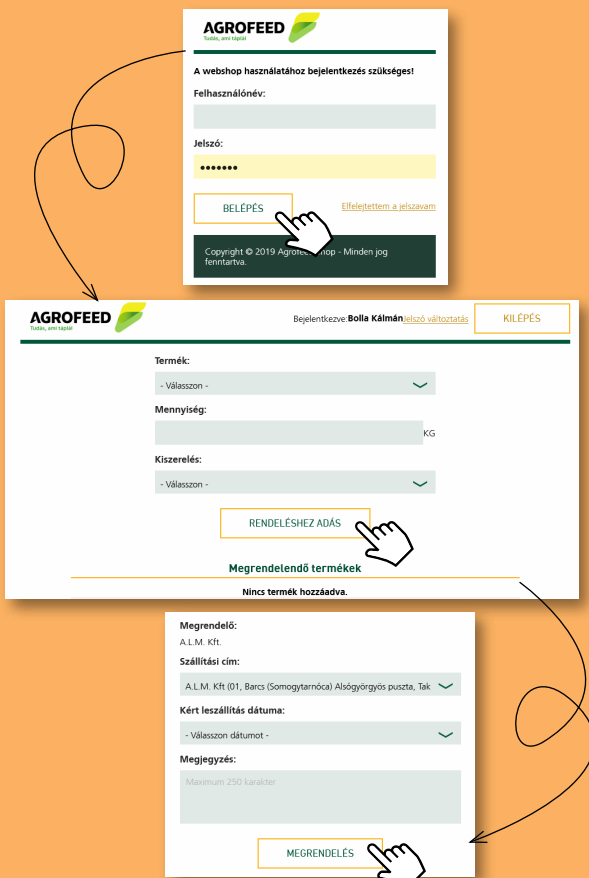
Enter the delivery address and select the date according to the delivery days of the given region.

4th STEP NOTES

Recording of all other transport-related needs (e.g. transport with rear-lift car, the driver should call one hour before arrival). New product and delivery address must also be recorded here.

5th STEP COMPLETE ORDER AND CONFIRMATION

Finalization of the order, which will be confirmed to the e-mail address provided by the customer after processing.



The screenshots illustrate the user interface for each step. The first screenshot shows the login form with fields for 'Felhasználónév:' and 'Jelszó:' and a 'BELEPÉS' button. The second screenshot shows the product selection interface with dropdown menus for 'Termék:', 'Mennyiség:', and 'Kiszereles:', and a 'RENDELÉSHEZ ADÁS' button. The third screenshot shows the shipping address and date selection form with fields for 'Megrendelő:', 'Szállítási cím:', 'Kért leszállítás dátuma:', and 'Megjegyzés:' and a 'MEGRENDÉLÉS' button.

For more information, please call your sales representative or call customer service at +36 96 550-624.

A distinctive advantage



What is the distinctive advantage? If we look at the dry phrasing: a distinctive advantage is a company's ability to find one or more ways of doing things that competitors can't or won't follow.

Agrofeed has been working for nearly three

years to achieve this distinctive advantage with You, our partners with a new marketing strategy, a renewed image and interesting ideas. Recently you can meet us more in the agricultural media, whether printed or online. We place more emphasis on our social media appearances (Facebook, LinkedIn, Youtube channel) which are now almost unavoidable and of course, our own website is also constantly maintained and developed. In our communication - company presentation film, website, publications, exhibitions, sponsorships - our role in the food chain came to the fore, for which we take responsibility with our high-quality products and with our high-level services.

Since the basis of our work is trust, joint and successful work with You, we want to strengthen this at more and more conferences and partner trips that we organize ourselves. We were very pleased that more than four hundred people were interested in our international feeding conference (AIMS) which was organized two years ago. The symposium was so successful that this year our ruminant division will also join the program!

The love of sport is also close to us, so we announced an exciting betting competition for both the European Football Championship and last year's World Cup. We waited anxiously for the results of the finals, as the order could change even then. It was a great experience!

Two years ago, we "smuggled" a joint family program under the Christmas trees with our game Agroivity. With agricultural education in mind, we delivered the game to all agricultural institutions to the great delight of the students.

This year, we would like to focus on nature photography as we are all in close contact with our environment, simply put we "live from it". As part of our **"Magical Nature"** photo contest, we are looking for pictures taken in a natural environment that show the diversity of the living world - plants, animals, landscapes, or the tourist attractions in the environment. The president of the jury is photographer Pál Nánási, who is eagerly awaiting the entries. The 12 winners will be included in Agrofeed's exclusive wall calendar at the end of the year, which will be a Christmas present to all of our dear partners. In addition the winners will also receive valuable gifts related to photography.

We believe it is important to create professional publications that are really useful, that people enjoy reading and - based on the feedback - waiting for them.

In addition to the three compilations containing the professional materials of our own colleagues (Baromfi Hirmondó, Marhalevél, Konda Ipsos), our Nutrinfo agricultural magazine was created with short articles - focusing on international agricultural news - for a kind of educational purpose. We recently asked you about the format of the publication, based on Your opinion we will distribute the magazine online in the future. In addition we share a few current articles in Hungarian and in English on our Facebook page every week, so that you can be enriched with new information weekly.

Distinctive advantage in this approach is perhaps not such a dry concept anymore.

At Agrofeed, we strive to continue to build for You/together with You in the future, since:

if you want to go fast, go alone,
if you want to go far, go with others!

Tibor Wellesz
Director of Marketing





Mycoplasmosis continues to spread in the UK: warning issued

Recent data has shown that mycoplasma continues to spread far and wide across the UK, and that its presence, in combination with other bacteria or viruses, is linked to respiratory problems, such as Bovine Respiratory Disease. Mycoplasmas are very small bacteria that belong to the class Mollicutes, with *Mycoplasma bovis* of most concern to UK cattle farmers due to its defence mechanisms which make it difficult to treat. Mycoplasma also presents as mastitis, arthritis and swollen legs in heifers ahead of calving. The worrying numbers have prompted a warning from a new independent industry-based organisation, Ruminant Health and Welfare, which says the disease is difficult to treat once it has established. "Mycoplasma bovis lacks a cell wall so some widely used antibiotics are not effective in treating it. The bacteria also has the ability to change its surface proteins to evade the cow's immune response, while an ability to produce a sugar matrix biofilm means it can temporarily hide from both the immune system and antibiotics," said Nigel Miller, Ruminant Health and Welfare chief executive.



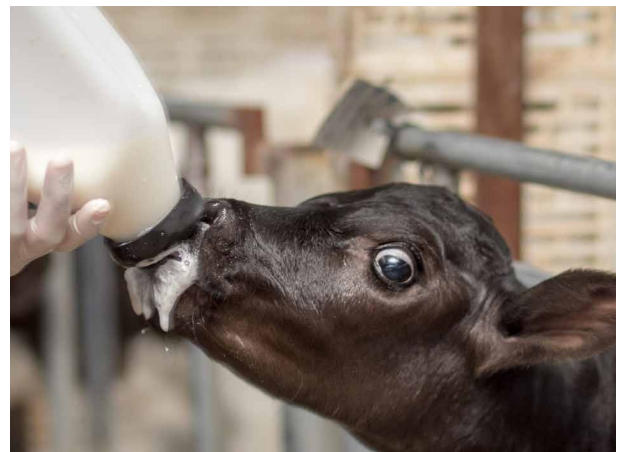
Laboratory diagnostic rates for *Mycoplasma bovis* have risen over the past 10 years, with vets also seeing an increase on-farm in a range of clinical problems caused by the bacteria. Farmers are therefore urged to investigate the causes of pneumonia and coughing calves and youngstock and take steps to understand the mycoplasma status of their herds.

Via www.dairyglobal.net 04/04/2023

<https://www.dairyglobal.net/health-and-nutrition/health/mycoplasma-continues-to-spread-know-your-herds-status/>

Novel probiotic tested in Japan to control severe diarrhea in calves

The health of calves is a crucial component in animal husbandry; diseases that affect calves cause economic losses to livestock farms either directly, due to death of the calves, or indirectly, due to weight loss that reduces productivity over the animals' lifespans. In Japan, bovine rotavirus (BRV) and bovine cryptosporidiosis infections are major diseases that cause severe diarrhea in calves. A



team of scientists from Hokkaido, including Associate Professor Satoru Konnai of the Faculty of Veterinary Medicine at Hokkaido University, have developed a novel probiotic supplement and verified its





efficacy as an antidiarrheal medication for calves. Their results have been published in the journal *Veterinary Microbiology*. Fermented milks (FMs) have been used as probiotics in animal husbandry as far back as the 1970s; however, the efficacy of these FMs has been inconsistent due to the wide variations in the manufacturing process. Furthermore, there have been cases where FMs themselves have been the source of diarrhea-causing pathogens.

Hemp products high in THC can contaminate milk

Cows fed hemp silage high in tetrahydrocannabinol (THC) produced contaminated milk and showed signs of intoxication in a study that has garnered attention for making cows “get high” on hemp. But the study also showed that other forms of hemp silage did not have the same effect, suggesting concentrations of cannabinoids like THC will be critical to determining which hemp products should be approved for use in animal feed. In the study, led by researchers at the German Federal Institute for Risk Assessment, lactating dairy cows initially received a diet in which corn silage was partially replaced by a hemp silage made from the whole hemp plant. The initial silage was intentionally selected to contain lower concentrations of THC in order to provide the cows with an “adaptation” period, according to the researchers. After this adaptation period, the researchers switched the cows to a diet containing hemp silage comprised exclusively of the leaves, flowers and seeds of the hemp plant. This silage intentionally contained a higher concentration of THC, the cannabinoid known to be responsible for most of the intoxicating effects associated with cannabis, with the researchers estimating that the cows ingested up to 86 times more THC than would be required to trigger negative health effects in humans. Cows developed symptoms including increased salivation and nasal secretion after they began eating the high-THC diet. The study also observed that feed intake, and therefore milk production, decreased significantly two days after the high-THC silage was administered. These symptoms abated

The scientists from Japan proposed that fermented milk replacers (FMRs) could be an ideal candidate for high-quality and safe probiotics in calves. They set out to develop a unified protocol to manufacture FMRs and evaluate their efficacy.

Via www.thecattlesite.com 06/03/2023

<https://www.thecattlesite.com/articles/probiotics-keep-calves-healthy-too>



after the high-THC diet was removed, according to the researchers, and did not occur during the initial adaptation period. Researchers also observed that the milk from the cows in the study contained detectable levels of multiple cannabinoids, including THC, during the adaptation period where the cows received the low-THC hemp, and when they were fed the high-THC hemp. The amount of THC that accumulated in the milk exceeded the acute reference dose at which negative health effects may occur in humans. However, the researchers noted that the acute reference dose is a hypothetical limit and that the study did not test whether the milk had any actual effect on humans. The results of the study indicate that “livestock farmers should only feed components of commercial hemp plants that are approved as feed or components of feed,” said the spokesperson for the German Federal Institute for Risk Management.

Via www.feedstrategy.com 07/12/2022

<https://www.feedstrategy.com/audience-database-taxonomy/feed-safety/feeding-hemp-products-high-in-thc-may-contaminate-milk/>





New laws to ease tensions in the Ukrainian dairy sector

Ukrainian lawmakers are working on a new programme for the dairy industry, which could ease tensions in the troubled dairy industry. Arsen Didur, chairman of the Ukrainian Dairy Union, told the local newspaper Telegraph that the milk processing segment has recently entered the worst period since the beginning of the Russian invasion. "Consumer outlook is bad. Exports have almost stopped," Didur said, attributing this, among other reasons, to some mistakes made by the Ukrainian government in bilateral customs relations with the countries of Central Asia – Uzbekistan and Turkmenistan. Among other factors which have a major impact on the Ukrainian dairy industry, he listed expensive raw materials compared to the European Union, a lack of state support and hard access to bank loans. In the meantime, Verkhovna Rada, the Ukrainian Parliament, has recently registered new bills to ease tensions in the troubled dairy industry. One proposal envisages halving the VAT rate on dairy products to 10%. This meas-



ure, if adopted, would apply to domestic and imported goods. Nikolai Solsky, agrarian policy minister, also stated that the new bill should help legal companies in their struggle against the shadow segment. He expressed confidence that when the bill is signed into law, dairy producers who do not pay taxes will lose a part of their profits. In addition, Ukrainian authorities plan to establish a commodity checkoff programme. Under a draft bill, market participants will be obliged to pay 0.5% of revenue to a specially established fund designed "to promote dairy products, push forward innovations, combat falsification, and develop new production standards".

Via www.dairyglobal.net 20/04/2023

<https://www.dairyglobal.net/industry-and-markets/market-trends/new-laws-to-ease-tensions-in-ukraines-dairy-sector/>

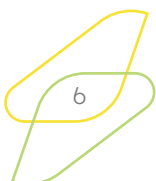
Scottish engineers lend support to calf diagnosis project

Researchers from the University of Glasgow's James Watt School of Engineering are part of a new consortium which is developing the first commercial one-step rapid test for calf pneumonia. Global Access Diagnostics (GADx), a social enterprise prioritising equitable access to diagnostics and driving local manufacturing, today announced the development of RaDiCal, a one-step molecular lateral flow test to enable rapid diagnosis of pneumonia, one of the most significant diseases affecting calves. The test is being developed through a collaborative consortium, including representatives from the University of Surrey,

University of Glasgow, Cardiff University, and Westpoint Farm Vets, to provide a low-cost platform to be used by veterinarians or farmers on-farm. The test is a pioneering molecular lateral flow platform which can be linked to a mobile phone digital platform for easy interpretation of results, enabling farmers and vets to diagnose calves on-farm, and subsequently take rapid and informed action to facilitate improved disease management and support responsible antibiotic stewardship. Professor Jon Cooper is leading the University of Glasgow's contribution to RaDiCal. For several years now, Professor Cooper and colleagues have been working to develop low-cost lateral-flow diagnostics for diseases including malaria and schistosomiasis for use in areas with limited access to healthcare. They have been field-tested in Uganda with support from local researchers and government.

Via www.thecattlesite.com 29/3/2023, 2023.03.29.

<https://www.thecattlesite.com/articles/glasgow-engineers-lend-support-to-calf-diagnosis-project>





Fighting enteric methane emissions with precision probiotic

San Diego-based Native Microbials, Inc. says its feed supplement can redirect methane-generating carbon in cow's rumen into compounds that can be used as energy by the animal to produce more milk with a lower environmental footprint. The company specialised in animal health and nutrition was the recipient of a \$1.4m grant from the USDA's Natural Resources Conservation Innovation Grants programme. The main objective of the grant is to enable the biotech company to evaluate the improvement in feed efficiency and the reduction in enteric methane emissions on commercial dairy farms as a result of implementing the firm's microbial feed supplement, Galaxis Frontier. The grant will also fund the development of a non-invasive oral microbiome-based method to measure enteric emissions from dairy cows on-farm. The rumen-native microbes that comprise Galaxis Frontier have the ability to shape the overall com-

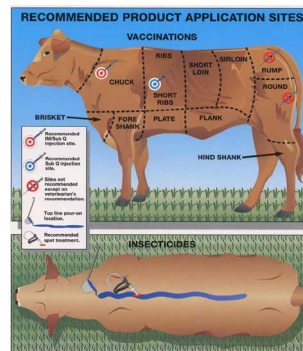


position of the rumen microbiome. These particularly influential microbes were identified by sequencing the rumen microbiome of both high and low producing cows and assessing which microbes are more prevalent in highly efficient dairy cows. These "target microbial strains" were then isolated from rumen content at the company's laboratory to create Galaxis Frontier. In a nutshell, the feed supplement can "shift" carbon from generating methane in the cow's rumen to compounds that can be utilised as energy by the animal. "Instead of chemically-inhibiting methane production, our studies suggest that Galaxis Frontier is streamlining energetic pathways in the rumen when fed daily to lactating dairy cows," explained Brooke Anderson, microbiome scientist at Native Microbials.

Via [dairyreporter.com](https://www.dairyreporter.com) 02/05/2023
<https://www.dairyreporter.com/Article/2023/05/02/how-native-microbials-usda-backed-galaxis-frontier-feed-supplement-can-improve-dairy-milk-s-carbon-footprint>

Causes of vaccination failure in beef cattle

Fall vaccinations are a vital part of a successful health program for beef herds. This includes preconditioning programs for feeder calf sales as well as maintaining an effective health status in the cow herd. Sometimes you hear a producer remark about cattle or calves that get sick anyway following being vaccinated. The usual answer is "that vaccine was no good." But the reasons for the failure of vaccines are more complex than that, says a recent Penn State University summary. The failure of a vaccination program to prevent disease can be outlined in three parts: the animal, the people, and the vaccine. Healthy cattle, primarily calves that are under some form of stress from the environment will not respond properly to vaccines. This includes extremes in weather, dehydration, or other environmental factors. Stress from transportation, weaning,



castration, comingling, or simply handling can reduce the ability of the animal to develop the desired immunity to a disease from the vaccine because these activities are additive sources of stress. When weaning calves this fall, either vaccinate ahead

of weaning or wait several days until the stress has subsided. Combine as few other management activities as possible with vaccinations. Vaccines also fail because people do not use them correctly, the authors point out. The protocol for the use of a vaccine is on the label of the product and should be followed exactly. For example vaccines that are not mixed correctly, usually modified live vaccines, will not work under the best of conditions.

Via www.thecattlesite.com, 17/04/2023
<https://www.thecattlesite.com/articles/causes-of-vaccine-failure-in-beef-cattle>





EU dairy market expected to remain stable

The EU Short-Term Agriculture Outlook said cow slaughtering is likely to increase responding to declining raw milk prices, though these could be partly compensated by increasing milk yields. Despite a slight decrease in EU milk deliveries (-0.2%), processing availability might still be kept stable thanks to higher milk fat and protein contents. The cheese and whey processing stream is expected to be favoured by the industry due to EU export potential and relatively stable domestic cheese consumption. Butter and SMP production could decline due to the larger than usual stocks (taken over from 2022), which could partially cover the increase in exports and domestic use. Overall, the report suggests that EU consumption is expected to face some consumer preference shifts to lower-quality products, impacting the value rather than the total volume. One of the questions that is being asked across the dairy sector is when there will be a recovery of import demand from China, which could open the doors for EU export growth. Analysts believe that China's stockpiles over the last few years are now reducing to normal levels. Combined with the removal of the zero-Covid policy and assuming a return of



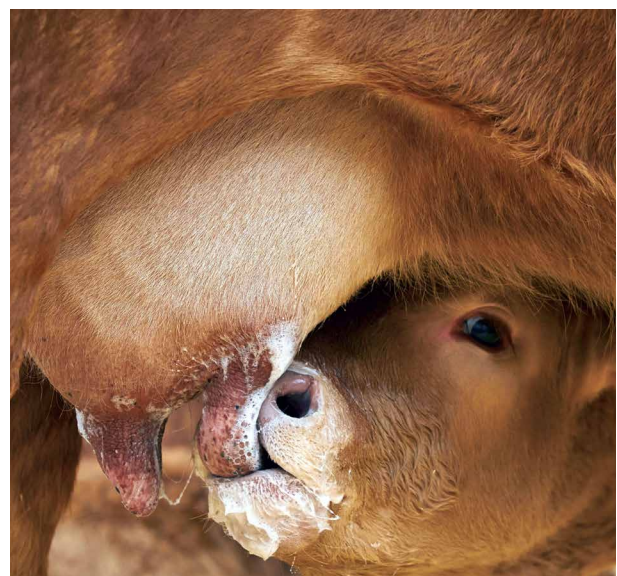
consumer confidence and strength of purchasing power, China could restart its import activity later this year. Soumya Behera, senior analyst at the Agriculture and Horticulture Development Board, said that historically there had been a strong relationship between China's economic growth and its level of dairy imports. Imports fell by around 19% in 2022, with falls across all sectors, barring butter.

Via www.dairyglobal.net 18/04/2023

<https://www.dairyglobal.net/industry-and-markets/market-trends/short-term-outlook-for-eu-milk-and-dairy-products/>

Adequate colostrum helps ensure dairy calf health

Industry research has found that 61% of dairy calves and 20% of suckler calves left to suckle the dam for colostrum did not receive enough IgG antibodies for successful passive transfer. "Passive transfer of disease-fighting antibodies from the dam is reliant on feeding enough high-quality maternal colostrum as quickly as possible after birth," says Emily Hall, livestock farmer and product manager for Nettex. She notes that simple management measures can be taken to ensure more passive transfer success rates,





which will give calves a stronger start to life. Updated guidelines recommend calves receive a minimum of 3 litres within the first 2 hours of life and an additional 3-4 litres within 6-12 hours of birth. This means that in the first 12 hours of life, a calf will receive a total of 6-7 litres of high-quality colostrum. Hall notes that IgG molecules are absorbed by the small intestine and then delivered to the blood supply. This declines rapidly after 12 hours of life. So, for successful passive transfer of IgG antibodies, colostrum quality needs to be a minimum of 50g/l IgG, which equates to 22 Brix when measured with a refractometer. To meet the recommended benchmarks for passive transfer, producers can test colostrum quality with a refractometer. "Studies have found 20-25% of calves don't feed from the dam within the first 8 hours of life, and few consume enough colostrum within the peak absorption window," says Hall. "Feeding colostrum via a bottle is preferable since the sucking reflex allows milk to go straight into the abomasum for fast absorption by the small intestine. While tubing is preferable to leaving the calf to suckle the dam, it will delay absorption by 2-4 hours due to being delivered into the rumen."



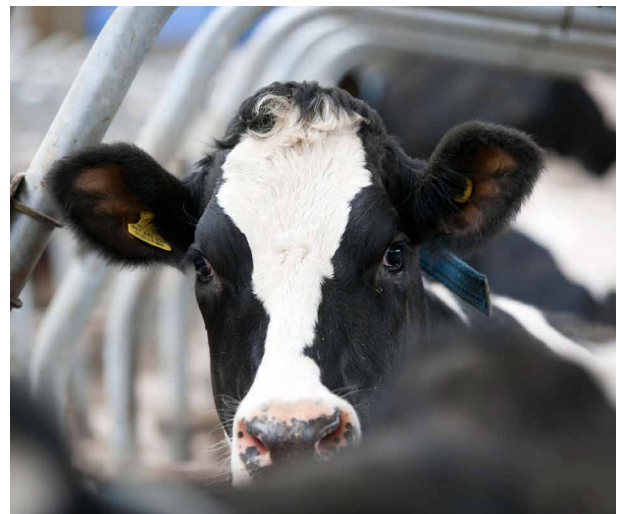
When colostrum quality is below the recommended 22 Brix or below the minimum 6 litres, supplementation will boost antibody availability and energy supply to the calf. A maternal dam on the same farm is the best source to help protect the calves from on-farm pathogens. However, should this not be possible, supplementation should be considered.

Via www.dairyglobal.net 19/04/2023

<https://www.dairyglobal.net/dairy/calves/adequate-colostrum-helps-ensure-dairy-calf-health/>

Here's how the EU dairy cow herd looks now

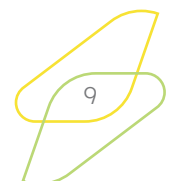
Two European Union countries – Germany and France – have more than a third of all the dairy cows across member states. Between them, they had more than 7 million cows in 2022 out of a total of 20.1 million, according to Eurostat figures. Germany had the largest dairy cow population within the EU, recording 3.8 million animals, accounting for 17% of the total EU dairy population. France had 3.2 million animals while Poland had the third-largest national herd with just over 2 million animals. The majority of EU countries recorded an annual decline in cow numbers in 2022, with France recording the largest loss with 91,720 (2.7%) fewer animals than in the previous year. One country to buck the trend was Austria, which recorded the largest expansion within the EU last year. The population reached 551,000 head, up 24,090 (4.6%) on 2021. At the other end of the scale, Malta continued to be the smallest milk-producing nation within the EU, with just 6,120 record-



ed in 2022. There are likely to be further falls in cow numbers this year. In its short-term dairy outlook, the European Commission forecasted a drop of 0.2% in milk production for 2023. With a forecasted 1% increase in slaughtering, there will be less milk available in 2023 due to a declining dairy herd.

Via www.dairyglobal.net 26/04/2023

<https://www.dairyglobal.net/industry-and-markets/market-trends/a-look-at-dairy-cow-numbers-across-the-eu/>





Super-cows cloned in China

In early February 2023, Chinese state media reported that a group of Chinese scientists had successfully cloned 3 so-called super-cows that can produce a remarkably high amount of milk. The 3 calves born in the Ningxia region in December and January are copies of highly productive cows from the Holstein Friesian breed, said to be capable of producing 18 tonnes of milk per year, or 100 tonnes of milk in their lifetimes. Jin Yaping, one of the leading scientists, told the state-owned publication Global Times that the birth of the super-cows was a breakthrough allowing China to preserve the very best cows in an economically feasible way. He also expressed confidence that the cloning technology will help China mitigate its dependence on foreign breeds. If the cloning technology expands in China, it will dramatically change the face of the breeding segment of the global dairy industry dramatically. Currently, China imports roughly 70% of breeding cattle, a significant share of which comes from the EU. The Chinese scientists estimated that only 5 cows in 10,000 can produce 100 tonnes of



milk during their lifetime. It is common that highly productive cows are identified at the end of their lives when conventional reproduction methods can no longer be used. In the next 2-3 years, China plans to produce 1,000 highly-productive clones, which, as Yaping claimed, over time, should become a foundation of the renewed Chinese dairy industry.

Via www.dairyglobal.net 21/04/2023

<https://www.dairyglobal.net/dairy/breeding/cloned-dairy-cows-whats-the-situation/>

Jubilee exhibition in Hódmezővásárhely

The Hungarian Great Plain Animal Husbandry and Agricultural Days were held for the thirtieth time in Hódmezővásárhely. Unlike at other times, the weather was fabulous for the exhibitors and the large number of visitors.

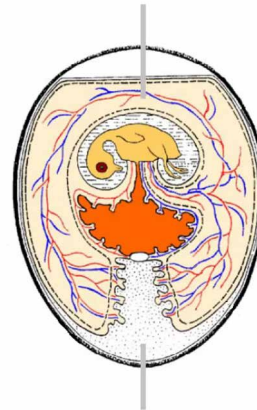
Just like at other times, our stand was full of visitors and the atmosphere was fantastic. We had useful conversations with our partners, offering them a taste of our new fermented delicacies. Being the official cattle feed supplier of the exhibition, we were also often seen in the outside areas. We look forward to welcoming all our partners next year as well, hopefully on a slightly larger scale.





When do chicken embryos start hurting?

Under the Animal Welfare Act in Germany, the killing of male chicks has been legally prohibited since 2022. Beginning in 2024, it will be prohibited to kill male chicken embryos after sex determination in the egg on or after day 6 of incubation because earlier studies suggest that chicken embryos may be capable of pain transmission from day 7 of incubation. The Federal Ministry of Food and Agriculture in Germany has therefore commissioned a research project to determine the time period during which chicken embryos develop the ability to perceive aversive sensory experiences as pain. The study, led by researchers from the Technical University of Munich (TUM), chicken embryos were examined from embryonic day 7 to embryonic day 19. Tissue-damaging stimulus, a control stimulus was applied in ovo. A mechanical stimulus was used as the noxious stimulus for cardiovascular parameters and behavioural observations at the base of the beak. The response was compared to the control stimulus of touching the beak. As a second control group, a



local anaesthetic, was applied to the base of the beak before the mechanical stimulus at embryonic day 18. The reactions of chicken embryos were analysed based on cardiovascular parameters (mean arterial blood pressure and heart rate), behavioural parameters (movements), and electrical brain activity. The results show that cardiovascular reactions to mechanical stimulation were significant from embryonic day 16 onwards, whereas behavioural reaction to mechanical stimulation was observed from embryonic day 15 onwards. This means that the ability to sense pain cannot be excluded at embryonic day 15, and can be assumed from embryonic day 16 onwards. Meanwhile, physiological neural activity was measurable from embryonic day 13 onwards.

Via www.poultryworld.com 24/04/2023

<https://www.poultryworld.net/the-industrymarkets/market-trends-analysis-the-industrymarkets-2/research-into-pain-perception-in-chick-embryos/>

Special award to our colleagues at the 36th OTDK

After 20 years Kaposvár hosted again the Agricultural Science Section of the 36th National Scientific Students' Associations Conference (OTDK).

The three-day event attracted young scientists from 23 Hungarian higher education institutions who submitted nearly 300 papers.

Two of our young colleagues, Árpád Neuman (Effect of threonine supplementation through early feeding on performance and certain immune parameters of broilers, Animal Husbandry Section) and Kornél Levente Schermann (Effect of age of broiler breeder flocks, incubation period and use of litter eggs on egg hatchability, microbiome composition and production pa-



rameters of hatched chickens, Feeding Section) were honoured with Special Awards based on the assessment of the professional jury.

This is a very impressive result, as nearly twenty papers were submitted for the prestigious professional competition in both categories.

Agrofeed congratulates its colleagues with great appreciation.



Testing of four bird flu vaccines starts in the US

The US government has begun testing vaccines against avian influenza for poultry after a record-breaking outbreak forced the slaughter of more than 58 million chickens, turkeys and other poultry. The trials carried out by the US Department of Agriculture's (USDA) Agricultural Research Service are a first step towards the possible use of vaccines. The USDA is testing 2 vaccines developed by its Agricultural Research Service, 1 each from Zoetis and another from Merck Animal Health. Zoetis previously supplied its vaccine to a USDA stockpile in 2016, following the massive outbreak in the US a year earlier, but it was never used. Initial data from the animal study with a single dose of the vaccine are expected to be available in May, with researchers hoping to have 2-dose vaccine challenge studies with results



in June. If the trials are successful and USDA elects to continue development, it would take at least 18-24 months for a vaccine that matches the current virus to be commercially available.

Via www.poultryworld.net 26/04/2023

<https://www.poultryworld.net/health-nutrition/health/bird-flu-vaccine-testing-starts-in-the-us/>

Natural antibody inheritance under polygenic control in brown hens

Results from a Wageningen University & Research, Animal Breeding and Genomics (WUR-ABG) study published in Poultry Science suggest that both natural antibody (NAb) levels and resilience indicators are heritable and are under polygenic control in a brown layer line. Resilience is the capacity of an animal to be minimally affected by disturbances or to return quickly to the state it was in before exposure to the disturbance. Given that livestock are continuously exposed to environmental disturbances, for example fluctuations in temperature or pathogens, breeding (disease) resilient livestock is important for the sustainability and profitability of livestock production. Measuring general resilience of animals is not easy. However, the increasing availability of longitudinal production data allows estimating resilience indicators based on deviations observed from expected production levels. To



evaluate an animal's general disease resistance, levels of natural antibodies (NABs) can be used as an indicator trait. The researchers performed a genome-wide association study (GWAS) to identify genomic regions influencing NABs and resilience indicators in a pure-bred Rhode Island layer line. Results suggest that both resilience indicators and NABs are heritable and under





“polygenic control”, meaning that they are influenced by many genes with a small effect. These observations provide further insight in the genetic architecture underlying resilience, which, in turn, may facilitate genetic improvement for resilience in layer lines. According to the authors, there is currently no simple interpretation of any of the resilience indicators and

it is important to further refine and validate them in order to verify their practical relevance and to implement them in management and breeding practices.

Via www.thepoultrysite.com 08/03/2023

<https://www.thepoultrysite.com/articles/natural-antibodies-and-resilience-indicators-appear-to-be-under-polygenic-control>

Renewed interest in poultry bacteriophage treatment

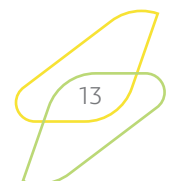
Increasing concerns over the effects of primary contaminants in poultry, such as *Salmonella enterica*, *Campylobacter jejuni* and *Escherichia coli*, have prompted scientists to rekindle their interest in using bacteriophages as antimicrobial agents. This is due to their pathogenicity and widespread nature, which contributes many economic losses as well as posing a threat to public health. With the increasing prevalence of bacterial pathogens being resistant to most conventional antibiotics, bacteriophages (i.e. the viruses of bacteria) are being investigated as an alternative to antibiotics in the poultry sector. Bacteriophages' high specificity may allow them only to target a specific bacterial pathogen in the infected animal, but a tailor-made sophisticated cocktail of different bacteriophages could broaden their antibacterial activity in a typical situation with multiple clinical strains infections. Bacteriophages can also be used as safe disinfectants to reduce contamination on food contact surfaces or poultry carcasses, but until now, have not been developed sufficiently for widespread use. This has been down to problems with resistance, safety, specificity, and long-term stability. Scientists from across the globe, led by Professor Amr Abd El-Wahab, from Mansoura University in Egypt, carried out a desk review highlighting the benefits, challenges and current limitations of bacteriophage applications in the poultry industry. The research suggests that although bacteriophage treatment for enteric disorders has had a high level of success, it has not yet reached its full potential. This is because antibiotics usually work well against a wide range of bacterial species. Therefore, a specific selection is not necessary when using



them to treat infections. Contrarily, bacteriophages typically target a single host and sometimes fail to eradicate all members of a given bacterial species. However, given the growth in antibiotic resistance, bacteriophages might be able to operate as a last line of defence when antibiotics are either not available or inefficient. One of the most significant limiting factors to the widespread use of bacterial viruses is the regulatory status of bacteriophage products. While being given the green light by the US Food and Drug Administration and support from Switzerland, Israel, Canada, Australia, New Zealand and Brazil, legal uncertainty in the European Union is slowing down the development of commercially available bacteriophage products. But the European Medicinal Agency has started to work on a concept paper on the quality, safety, and efficacy of bacteriophages as veterinary medicines, which may open doors in the future.

Via www.poultryworld.net 04/04/2023

<https://www.poultryworld.net/health-nutrition/health/scientists-rekindle-interest-in-bacteriophage-treatment-in-poultry/>





Will climavores eat chicken?

With consumer concerns about sustainability at all-time high, retailers and foodservice are prepping for the dawn of the climavore. Will this new brand of consumers choose chicken? This will be a key topic at the 2023 Chicken Marketing Summit, where experts will discuss how consumer habits are changing. "A climavore is someone who makes a specific food choice based on the climate impact of that food choice," said Corey Chafin, partner, Consumer and Retail, Kearney. For example, a climavore is someone who chooses chicken over beef, not necessarily because of taste, but because chicken is generally perceived as having a lower environmental impact. "It's someone who's fundamentally making a food choice – not necessarily all food choices – but a single food choice based on the climate impact of that food choice," Chafin added. "One of the most important things that chicken companies can do to connect with climavores is to focus on building trust," explained Erika Stewart, consultant, consumer and retail, Kearney. These consumers are looking to chicken producers to push toward sustain-



able outcomes. They also expect producers to take the lead when it comes to education. Furthermore, they're looking for education in the form of positive reinforcement. Stewart says that meat industry actors need to communicate with this consumer group in a way that makes them proud of their food choices.

Via [www.wattagnet.com 10/04/2023](https://www.wattagnet.com/10/04/2023)

<https://www.wattagnet.com/articles/47082-will-climate-conscious-consumers-choose-chicken>

Farming insects on poultry manure

Dutch scientists have researched the suitability of poultry manure as a nutrient medium for breeding insects. Although European legislation has for many years barred the use of animal protein in feed due to BSE, insects have recently been made an exception – unless they are grown on manure. Leo Beukeboom, professor of evolutionary genetics at the University of Groningen, said the project wanted to address 2 challenges at the same time: 1) The Development of cheaper and more sustainable ways to produce proteins; 2) Tackling the surplus of manure. Beukeboom said insects are a high-quality source of protein for humans and animals, and breeding insects requires



much less water and space compared to conventional livestock farming: "Another advantage is that this approach reduces our dependence on protein





sources from abroad, while making efficient use of the nitrogen in the manure of our livestock and poultry. In other words, we kill several birds with one stone. Moreover, using a waste stream to produce protein is an ultimate form of circularity." In the project, Beukeboom and colleagues from Vrije University in Amsterdam and Wageningen University and Research, collaborated with a company to experiment with growing fly larvae on manure. Wageningen colleagues investigated the nutritional value of the manure for larvae. They discovered that the larvae grown better if you enrich the manure with around 15% starch, said Beukeboom. Temperature was also an important factor: "We experimented with different temperatures and 32°C turned out to be optimal." Vrije University colleagues discovered that you could improve the genetics of the flies

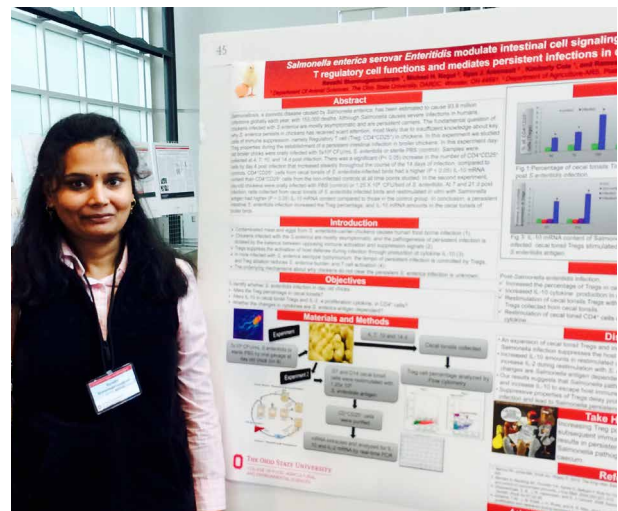
through selective breeding, so that flies can grow better on extra sugar or fat, which will allow geneticists to develop breeding lines that perform better on certain substrates. And in Groningen they have been experimenting with ways to breed more females, relative to males. This provides an economic advantage because only females lay eggs. This was also successful. All of this show that there is still a world to discover, and that production can be optimised even further," summarises Beukeboom, who hopes that this type of research contribution could help change legislation allowing insects to be reared on manure.

Via www.poultryworld.net/17/03/2023

<https://www.poultryworld.net/health-nutrition/nutrition/study-farming-insects-on-poultry-manure/>

Even low mycotoxin levels cause necrotising enteritis in poultry

Mycotoxins in corn and corn byproducts – even at low levels – can damage the poultry gut and predispose chickens to necrotic enteritis, revealed new research from the U.S. Department of Agriculture (USDA) Agricultural Research Service's (ARS) National Poultry Research Center. "We are very concerned about gut health in the poultry industry. The intestinal tract is the first site of contact for mycotoxins, and intestinal epithelial cells are the first target cells exposed to the highest concentration of mycotoxins," explained Revathi Shanmugasundaram, research biologist at the National Poultry Research Center. "These gut microbiome profile shifts can be responsible for the onset of certain infectious diseases, like subclinical necrotic enteritis in poultry flocks." The research showed that fumonisins and deoxynivalenol in poultry feed negatively impacted the body weight gain and feed conversion ratio (FCR), as well as the morphology of the small intestine. The toxins also significantly increased incidence of necrotic enteritis in broilers. Necrotic enteritis is an acute infection in poultry caused by the



bacteria *Clostridium perfringens*. Sudden changes in feed formulation, such as the addition of high levels of fish meal or wheat, can disturb the intestinal microflora, leaving the gut vulnerable to infection. "The level of fumonisins and deoxynivalenol in the experimental diets of the current study was much lower than the FDA tolerance levels," said Shanmugasundaram. "Our findings identified the mechanism through which fumonisins and deoxynivalenol synergistically affect chickens and predicted the specific thresholds of fumonisins and deoxynivalenol toxins when present together."

Via www.wattagnet.com/17/02/2023

<https://www.wattagnet.com/articles/46786-low-mycotoxin-levels-cause-necrotic-enteritis-in-poultry>



A long-term approach is best against avian influenza

According to a report involving Roslin expertise, long-term conservation measures are the most effective way to control avian influenza in wild birds in Scotland. The study, published by Scottish government agency NatureScot, analyses the unprecedented flu outbreak among wild birds since 2021. It provides advice to support the work of Scotland's Avian Flu Task Force, which co-ordinates the national response to the crisis. Avian influenza is expected to continue to be an issue among wild birds into the 2023 nesting season and beyond, the study found. The most effective solutions will likely be long-term conservation measures for birds that are particularly susceptible, accompanied by enhanced disease surveillance, demographic monitoring, and continued research, it says. The report also looks at the effectiveness and benefits of short-term measures and provides a picture of how avian influenza has affected Scotland's wild birds so far. Once avian influenza is present in a wild bird population, it is very difficult to control or reduce it, the study found. Measures such as carcass removal or reducing human activity across sites, for example, whether for recreation or monitoring, are unlikely to significantly reduce the impact of an outbreak on wild birds. "Although



there's no silver bullet to solve this complicated dilemma, this report will be a great help as the Avian Influenza Task Force plan action to reduce the effect of avian flu on Scotland's important populations of wild birds," said Alastair MacGugan, NatureScot Wildlife Manager. "This is an utmost priority for our partners and ourselves, as the geographic scale, range of species of wild birds affected, and severity of impacts may threaten the very survival of some species."

Via www.thepoultrysite.com 03/05/2023

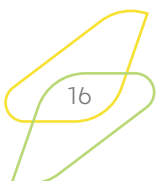
<https://www.thepoultrysite.com/news/2023/05/long-term-approach-on-avian-influenza-is-best-scottish-study-finds>

From poultry litter to fertiliser and feed

Milinator Technologies has developed a closed-loop system relying on the life cycle of the housefly to convert poultry manure and other organic waste into fertiliser and feed in a sustainable way. "We are taking something that nobody likes and wants and making it into something," said Ivan Milin, president of Milinator Technologies. He was inspired by learning about a similar system used in space travel. "It's interesting that the fly larvae were being taken on spaceships because



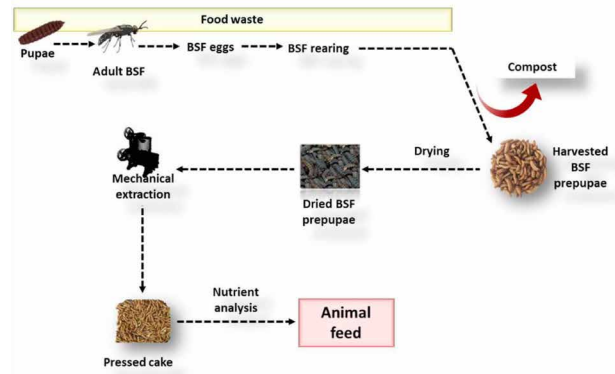
they could recycle all organic things without making any pollution," he said. "Wow, what a beautiful idea." In





nature, flies lay eggs on animal manure. Once these eggs hatch, the maggots, also known as larvae, feed off the litter. Once grown, flies are typically consumed by birds or other animals. The prototype recycling system mimics this process. The system is made up of a series of conveyor belts. On the top belt, fresh poultry manure is mixed with fly eggs. In the next day, the eggs become maggots, which begin eating the litter. The conveyor belt continues to move a little bit each day as the maggots mature into adult houseflies so that new manure can be added. The system takes less than four days to produce an odorless, organic fertilizer and a protein-rich animal feed in the form of fly larvae. Once the maggots complete their lifecycle, they instinctively move out of the fertilizer into the larvae collector, so there is no need to separate the two end products. Insects are a highly digestible natural source of protein for poultry. The feedstuff is high in energy such as lauric acid, a C-12 saturated fatty acid with demonstrated value-added, antimicrobial and antibacterial properties.

Houseflies were chosen because of their short lifecycle and prolificacy. This type of flies is also less likely to be a vector for diseases than other species.

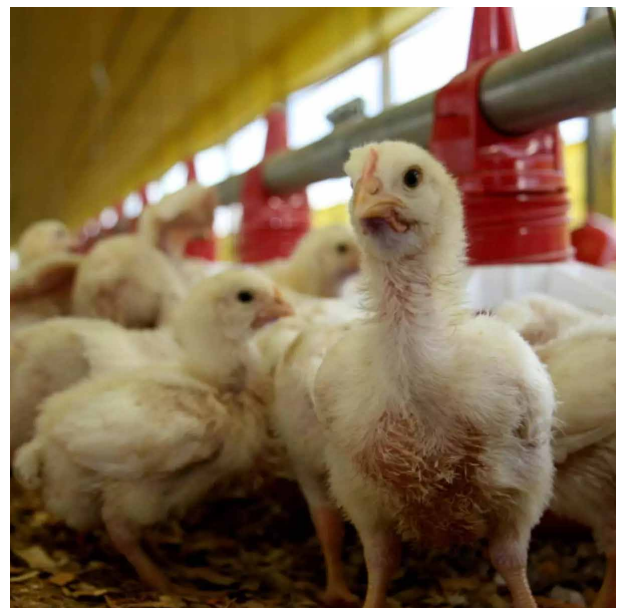


Via www.wattagnet.com 28/03/2023

<https://www.wattagnet.com/articles/4700b-maggots-can-convert-poultry-litter-into-fertilizer-feed>

EU broiler market could recover in 2023

According to the European Commission short-term outlook report for agricultural markets, EU poultry production decreased again in 2022, although less than the year before (-1.7%). These numbers were driven by declines in major poultry producing countries such as France (-12%), Italy (-9%), and Germany (-3%). Poland, on the other hand, increased its production by 6%. Given the developments in 2022, occurrence of highly pathogenic avian influenza (HPAI) is assumed to remain a threat over the whole year rather than being seasonal. On the other hand, its direct impact on poultry meat production is limited as the production could recover quickly. However, the damage for EU exports caused by an introduction of related import bans by third countries is of a stronger magnitude. EU broiler prices have continued to increase, driven by both tight supply and strong demand, and have reached exceptionally high levels since April 2022. This partly helped to transfer high feed and energy costs down the chain. Since 2023, producer prices have been more stable. As feed and energy costs continue to decline from the very high levels observed last year, some pro-



duction recovery could take place in 2023. Therefore, EU poultry production is likely to grow by around 1.1%. Demand for poultry benefits from general inflation as consumers replace more expensive meats (beef, pig-meat) by cheaper poultry meat. This could support EU poultry consumption growth in 2023 (+2.5%).

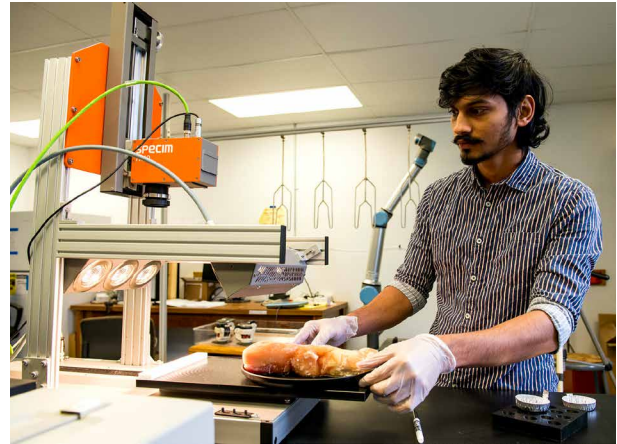
Via www.thepoultrysite.com 28/04/2023

<https://www.thepoultrysite.com/news/2023/04/eu-broiler-production-could-recover-in-2023-report>



High-tech cameras would detect “woody breasts”

A multidisciplinary team of scientists at the Arkansas Agricultural Experiment Station are testing to see if hyperspectral images can be used to detect a chicken breast defect known as “woody breast” that costs the poultry industry millions of dollars annually and decreases customer satisfaction. Dongyi Wang, assistant professor of biological and agricultural engineering, explains that hyperspectral imaging is a non-invasive sensing technique that combines a near-infrared sensor with a high-definition color camera to capture physical and chemical information. Woody breast detection with a hyperspectral camera system would take just a few seconds with a computer instead of grading by hand. “If hyperspectral imaging can be used in a poultry processing plant, that labor force could be diverted to another area.” “Woody breast is still a safe product. It just can have a crunchy texture in some cases that is not appealing to customers, but it can be diverted for further processing into products like chicken nuggets, sausage, or chicken patties where the defect is not as noticeable,” said Casey Owens, the Novus International Professor of Poultry Science at the experiment station. Owens said one theory is that the fast-growing birds may be producing muscle



faster than the blood vessels can support them, leading to muscle fiber damage and therefore increased collagen deposits. Chaitanya Kumar Reddy Pallerla, a food science graduate student working on the project, said each image with a hyperspectral camera takes up about 1 gigabyte of data. The photo is processed by a computer and correlated with a texture map indicating hardness levels in the fillet created with Owens’ previous research. Once calibrated, the system would rely on the images alone to detect woody breast. Wang said the hyperspectral camera, so far, has detected woody breast meat with about 84 percent accuracy. The goal is to accommodate high-speed sorting on a conveyor belt, or handheld portable devices, he added.

Via www.thepoultrysite.com 29/03/2023

<https://www.thepoultrysite.com/articles/high-tech-cameras-focused-on-chicken-breast-defect-detection>

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Controversy in the US over mRNA vaccine use

The safety of mRNA vaccines created for protection against Covid-19 remains controversial. The accuracy and extent of testing has been questioned by many, including government officials and industry employees. Currently, some of these vaccines are approved in the US only under 'Emergency Use Authorisation, but as of April 18, "the monovalent Moderna and Pfizer-BioNTech Covid-19 vaccines are no longer even authorised for use in the US." Now, the controversy has extended to using mRNA vaccines in pigs, cows and other livestock. For example, the Texas Agriculture Commissioner recently stated that "since news of the development of mRNA vaccines and mRNA-related treatments for livestock came to our attention, we have been working towards developing a fact- and science-based assessment of the risks." A company called Good Ranchers that sources all its meat from US independent farms and also strongly supports more accurate meat product labelling, states that "recently, some states have worked to make the mRNA vaccines mandatory. We have never and will never source meat from any farm that uses mRNA vaccines in their animals." Years ago, Bayer joined with Germany-based BioNTech to develop mRNA vaccines for animals. Harrisvaccines created a swine mRNA vaccine platform called Sequivity in 2015. Merck Animal Health purchased it around that time. The company describes the platform as able to "create custom [veterinary] prescription products" such as vaccines against PCV2, PCV3, and PED. It also "allows for the creation of multivalent formulations by blending RNA particles to target multiple swine pathogens in one shot." The US government granted a conditional licence for the Sequivity "PED Vaccine, RNA Caution" product sometime before 2015. Efficacy and potency test studies were in progress then. Dr Robert Malone, the originator of mRNA technology and very much against its use in vaccines, recently stated that Sequivity, which he calls a 'pseudo mRNA' vaccine, "has been approved for swine by the US Department of Agriculture, is on the market now and there is no special labelling for the meat." However, in a recent



podcast, molecular biologist Dr Kevin Folta of the University of Florida's department of horticulture describes the controversy of using mRNA vaccines in livestock as "manufactured." One of his guests, Dr Alison Van Eenennaam of the University of California-Davis, noted that mRNA breaks down quickly and would not survive the digestive process. However, scientists in China concluded in a 2022 study "that bovine milk-derived exosome-based-mRNA vaccine could serve as a new strategy for preventing SARS-CoV-2 infection. Meanwhile, it can also work as a new oral delivery system for mRNA." For his part, Dr Malone recently stated that the mRNA in vaccines "has not been tested and it is not 'normal' mRNA like what is found in the body ... 'Pseudo' uridine has been substituted for uridine in the mRNA. We ingest mRNA and DNA daily in our food. Our stomachs break it down. But this is not normal mRNA. So, who knows?" He also questioned the safety of other vaccine components such as lipid nano particles. "Will there be trace amounts in the meat? Will heat break it down? How much heat? Are there other chemical components in the products? We just do not know. If [testing] has been done, show me the data."

Via www.pigprogress.net, 2023.04.19.

<https://www.pigprogress.net/health-nutrition/health/controversy-in-the-us-over-mrna-vaccine-use/>





Recent ASF cases in Asia help Brazilian exports

Brazilian pork export increased with 15.7% in the first quarter of 2023 in comparison to the same period last year. The country exported 274,800 tonnes this season against 237,500 tonnes between January and March of 2022. In the same period, revenue from export totaled US\$ 646.3 million. This is 29.6% more than the total of the first 3 months of 2022, which totaled US\$ 498.5 million. "Rising production costs in the world, as well as the impact of health issues in several producing countries have supported the trend of increasing demand", analyses president of the Brazilian Association of Animal Protein (ABPA) Ricardo Santin. The resurgence of African Swine Fever (ASF) in China and the Philippines should also keep Brazilian exports at levels above 100,000 tonnes a month in the coming months. China, the main destination of pork shipments, imported 109,600 tonnes between January and March. This was



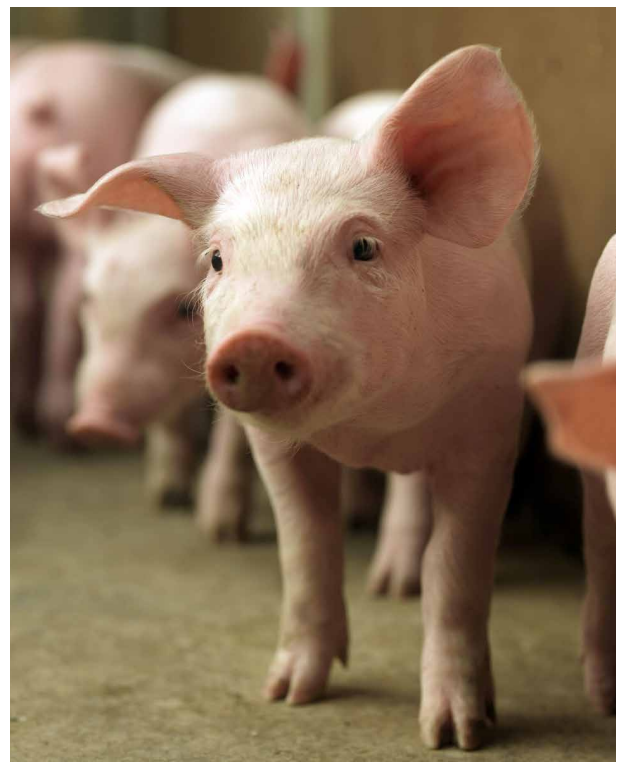
25.6% more than in 2022, which totaled 87,200 tonnes. In the same period, sales to Chile also stood out with 21,300 tonnes (+96.8%), the Philippines, with 17,800 tonnes (+8), Singapore, with 15,900 tonnes (+25.8%), and Japan, with 7,200 tonnes (+36.9%).

Via www.pigprogress.net, 2023.04.21.

<https://www.pigprogress.net/the-industrymarkets/market-trends-analysis-the-industrymarkets-2/asf-cases-in-asia-strengthen-brazilian-pork-export/>

Hair analysis: a new method to test stress tolerance in pigs

Pigs that are more generally resistant to stress are also more resistant to disease and demonstrate better overall performance. This fact is already used to some extent in breeding programmes for pigs and other livestock animal types. A new window into resilience to stress in pigs – through hair analysis – will lead to greater and more accurate breeding relating to this fact in future. Stress indicators are grouped into 3 main categories. These are: causal indicators (certain behaviours such as tail biting, type and number of social interactions) biological response indicators (for example, blood stress hormone levels) and consequence indicators (overall performance). Stress hormones can be measured through blood analysis, but a non-invasive and economical approach is to clip and analyse how





much stress hormone is 'locked' into the hair of the pig. Research into this way of measuring stress was started several years ago by Dr Jack Dekkers at Iowa State University and his colleagues there. Hair sampling analysis is not only non-invasive, but it tells a different story than blood analysis for stress hormone levels. That is, as hair grows, some stress hormones get deposited in it and, unlike stress hormone levels in blood which fluctuate all the time, are permanently accumulated. Therefore hair grown over a given will reflect stress response over that whole period. In addition to stress response due to introduction of disease, the researchers are interested in how pigs respond to typically stressful situations such as being weaned, being transported and be-

ing put in a new group where a new social order takes form. Therefore, data from hair samples from around 1000 animals are now available for the experiment, which started in 2021. Researchers already know that pigs with a low ratio of the stress hormones cortisol to DHEA in hair are less stressed. Which genetic lines have more stress resiliency can inform breeding programmes, but the research is going further into investigating the specific genetic underpinnings that result in more or less resiliency.

Via www.pigprogress.net, 2023.04.05.

<https://www.pigprogress.net/pigs/genetics/hair-analysis-a-new-way-to-test-resilience-in-pigs/>

Change in feed can improve pig growth in low sanitary conditions

Growing-finishing pigs kept under low sanitary conditions (LSC) eat and grow less than pigs kept under high sanitary conditions (HSC). Researchers at Wageningen Livestock Research investigated whether growth performance can be improved by increased levels of dietary energy and essential amino acids (EAA) in the diet. Both LSC and HSC pigs had a higher daily energy intake and daily gain on the diets with increased levels of energy and amino acids. However, the effect was greater in LSC than in HSC pigs. This suggests opportunities to at least partly compensate for the reduction in growth performance in pigs kept under low sanitary conditions and/or sub-optimal health condition by modification of the energy and amino acid composition of the diet. In a $2 \times 2 \times 2$ factorial design, pigs were allocated to either high sanitary conditions (HSC) or low sanitary conditions (LSC). A contrast in sanitary conditions was generated by imposing to the pigs differences in strategy for vaccination against specific pathogens, cleaning and hygiene protocol, antibiotic treatment and deworming. Pigs were fed one of four experimental diets, a diet with starch as main energy source or a diet with a combination of fat and starch as main energy source, each diet having either basal energy and EAA concentrations (B diet) or increased concentrations in energy and EAA (I diet). The results of the experiments show that an increase in contents of dietary energy and



EAA increases growth performance and energy intake more in LSC than in HSC pigs. Compared with studies in which only EAA were supplemented and not energy to increase growth performance of immune challenged pigs, it seems that dietary supplementation of both EAA and energy is more effective in increasing performance of LSC pigs than dietary supplementation of EAA alone. Partly replacing dietary starch with fat does not seem an interesting approach to increase the performance of the LSC GF pigs.

Via www.thepigsite.com, 2023.03.13.

<https://www.thepigsite.com/articles/sub-optimal-growth-performance-in-pigs-under-low-sanitary-conditions-can-be-partly-compensated-by-adjustments-of-the-diet>





The future of the Russian pig sector in Asia's hands

The key challenge the pig industry in Russia will face in the next 5 years is to make its way into the list of the top-5 of the world's largest pork exporters. Sergey Kovalev, chairman of the Russian Union of Pork Producers, outlined this during an industry conference in Moscow. In the current circumstances, the priority markets for the Russian pig industry are China, Hong Kong, Thailand, Vietnam, South Korea, Japan and the Philippines. The Russian government, including the Agricultural Ministry and the Russian veterinary body Rosselkhoznadzor, must intensify all existing political, diplomatic and administrative efforts to pave the way for Russian pork on the Chinese market, Kovalev stressed. "The further development of Russian pig breeding depends on this. China, due to a shortage in the domestic market, is expected to ramp up pork imports to 3 to 3.5 million tonnes per year. Russia is the only major pork producer in the world that does not have access to the Chinese market. Having already worked with Hong Kong and Vietnam, we can count on an increase in export of Russian pork thanks to China by 300,000 to 350,000 tonnes worth \$1 billion." The main problem preventing the opening of the Chinese market for Russian exporters remains African swine fever (ASF). However, there are positive



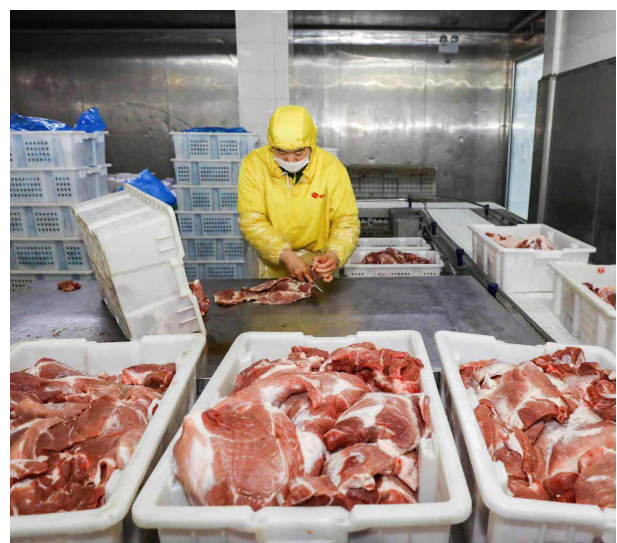
signs in this field. In December 2021, France signed an agreement with China. Under this agreement, which has certain limitations, French pig farmers can keep selling their products to Chinese customers even if an ASF outbreak occurs in their country. Currently, Germany talks with the Chinese authorities about signing a similar agreement. Most analysts believe that China will battle against ASF for at least another 5 years, Kovalev claimed. During this period, the country needs imported pork. In 2023, China will likely increase pork imports since a 2022 drop in production could be more significant than the official data indicated, he stated.

Via www.pigprogress.net, 2023.03.27.

<https://www.pigprogress.net/the-industrymarkets/market-trends-analysis-the-industrymarkets-2/the-future-of-the-pig-industry-in-russia-largely-depends-on-asia/>

2023: a year of caution in pork industry

Softer consumption trends in early 2023 are prompting caution in the global pork industry as it struggles to adjust to a moving target, according to Rabobank's latest quarterly pork report. Weaker economic growth is starting to have an impact on global pork consumption. Although the worst of the inflationary effects appear to be in the past, the lagged impact on consumption is likely to be felt throughout 2023. In a slowing economy, pork





remains well-positioned, as demand for the protein is historically less income-sensitive than more expensive proteins like beef and premium seafood. "Nevertheless, we see persistently high retail prices limiting consumption of all proteins. Consumers continue to conserve capital by shifting everyday purchases to lower-value protein options, switching channels, and moving to smaller pack sizes," says Christine McCracken, senior analyst – animal protein at Rabobank. Moreover, industry optimism in 2022 after a notable upward shift in pork consumption (and prices) in some markets and expectations of a 2023 recovery of pandemic-restricted consumption in others contributed to planned supply growth in 2023. That growth will take time to curb. "Slowing supply in Europe will help balance the industry, yet high costs of production and limited consumer support will require a more conserv-

ative approach to production to stabilize margins," McCracken said. Although a modest improvement in production costs is expected in 2023, local conditions will vary, and risk management will remain critical to success. Global feed stocks are at historically low levels, and availability remains tight. A disappointing Argentine harvest will partially offset Brazil's record 2023 soybean and safrinha corn crops, leaving the market to focus on import needs, Black Sea grain availability, and the successful planting of a new crop in the Northern Hemisphere. "Rabobank expects the small global cushion in grain and oilseed stocks to drive additional feed cost volatility in 2023," McCracken said.

Via www.feedstrategy.com, 2023.04.27.

<https://www.feedstrategy.com/business-markets/rabobank-global-pork-industry-cautious-in-2023/>

Effect of organic and inorganic selenium on post-weaning pigs

Researchers from the University College Dublin and the Monaghan Mushroom Group, Ireland evaluated the effects of mushroom powder enriched with inorganic selenium and mushroom powder enriched with organic selenium on growth performance and gut health of post-weaning pigs. Weaning comprises dietary, social, and environmental stressors. These result in a reduced feed intake, and gut morphological and functional changes. It also leads to lower nutrient absorption, reduced energy availability, gut inflammation, dysbiosis and post-weaning diarrhoea. It is therefore necessary to identify natural bioactive compounds to support growth performance, enhance beneficial microbial populations, and prevent diarrhoea. Selenium is an essential trace nutrient promoting immune function and growth performance with bacterial-modulating activities. Mushrooms are a rich natural source of bioactive compounds with anti-inflammatory, antioxidant and immunomodulatory properties improving growth performance. The researchers selected 96 pigs at weaning. They supplemented the pigs' diets with one of the following feed additives: 1) zinc oxide; 2) mushroom powder



enriched with inorganic selenium; 3) mushroom powder enriched with organic selenium. Then they conducted a complete study of the growth characteristics and gut morphology of the animals in each group. From the results they concluded that supplementing mushroom powder enriched with organic selenium was more effective than mushroom powder enriched with inorganic selenium at improving gut health and modulating cecal microbiota of post-weaning pigs due to lower toxicity and higher bioavailability of organic sources of selenium.

Via www.pigprogress.net, 2023.04.28.

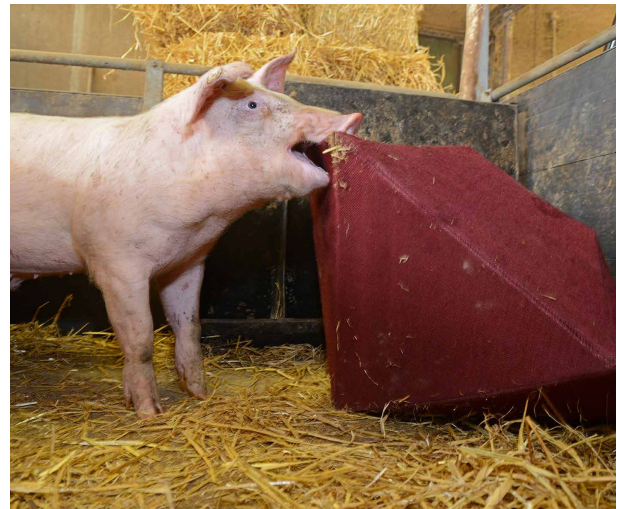
<https://www.pigprogress.net/pigs/piglets/effect-of-organic-vs-inorganic-selenium-on-post-weaning-pigs/>





Aggressive pigs are less likely to learn from losing a fight

The outcome of a contest between two unfamiliar pigs can have an impact on their attitude towards subsequent aggressive encounters, according to new research. While aggressive pigs are less likely to learn from losing a fight, non-aggressive pigs are significantly more affected by winning or losing a social conflict. The aim of the study, led by researchers at SRUC, was to improve the welfare of pigs on commercial farms where aggression can lead to injury, social stress, poor growth and a drop in immunity. Scientists used the qualitative behaviour assessment (QBA) method – which assesses the body language of animals in different situations - to record the emotional state of the pigs in a dynamic social situation, especially when confronted with unfamiliar pigs. Using ear posture, direction of gaze and vocalisations such as grunts and squeals, they measured how personality (aggressiveness towards an intruder) and the experience of winning or losing a contest when paired with an unfamiliar pig, influenced how the animals felt when they were next put back into the 'unfamiliar pairs' situation. Rather than being fearless and over-confident, they found highly aggressive pigs showed more negative



emotions than low aggressive pigs when confronted with a strange pig. They were also less likely to learn from past defeat. Lead researcher Lucy Oldham, a postgraduate research student at SRUC, said: "A key aim of this study was to find out what being an aggressive pig is like for the pig - which is really important when it comes to solving the problem of aggression on farms. Our results show that the welfare of both aggressive and non-aggressive pigs suffers. It is therefore advantageous for all animals if we can find ways to reduce their aggressiveness by providing social and physical environments that encourage their best natures."

Via [thepigsite.com](https://www.thepigsite.com), 2023.04.17.

<https://www.thepigsite.com/articles/once-bitten-twice-shy>

Survival of a surrogate ASF virus-like algal virus tested in feed matrices

Because African swine fever virus (ASFV) is a highly contagious virus, and countries such as those in the Americas, Australia and New Zealand where the disease is still absent, research with ASFV can only be conducted in a highly restricted biosecurity level 3 facility. Consequently, this has resulted in only a





few laboratories in the world that have regulatory approval to work with this virus. These biosecurity restrictions also limit the capability of evaluating ASFV survival and inactivation in various feed ingredients under real world feed supply chain demonstrations because unlike many RNA viruses, no suitable surrogate has been available for ASFV. African swine fever virus is a member of the Asfarviridae family which is part of a larger group of virus families that are classified as nucleocytoplasmic large DNA viruses (NCLDVs) and evolved from a common ancestor. Until now, no surrogate NCLDV with similar features to that of ASFV, nor any other virus with suitable surrogate properties, have been proposed for use in studies to evaluate ASFV survival and inactivation in feed ingredients and complete feeds. *Emiliana huxleyi* virus strain 86 (EhV-86) is an ecologically important NCLDV which controls blooms of the marine unicellular phytoplankton *Emiliana huxleyi*. The virus shares many of the morphological and physical characteristics of ASPv, but its host range is limited

to the marine algae species *Emiliana huxleyi*, making it a safe surrogate for experiments with results that can be applied to ASPv. The research team of the University of Minnesota used EhV-86 as a surrogate for ASFV, they inoculated conventional soybean meal, organic soybean meal, and swine complete feed matrices with EhV-86. Results showed that EhV-86 was detected in all matrices and no degradation in EhV-86 viability was observed after the 23-day transportation in the trailer of a commercial transport vehicle across the United States. However, sampling sensitivity rather than virus inactivation best explains the variation of in EhV-86 quantity detected in feed matrices after the 23-days transport period. These results demonstrate for the first time that ASFV-like NCLDVs can retain viability in swine feed matrices during long-term continental transports.

Via www.thepigsite.com, 2023. 02.27
<https://www.thepigsite.com/articles/new-research-survival-of-a-surrogate-asf-virus-like-algal-virus-tested-in-feed-matrices>

DNA helps understand pig muscle development

Analysis of pig DNA has offered insights into important correlations with muscle growth. This can provide tools to help predict piglet growth and support pig breeding programmes. Researchers from the Roslin Institute and the Centre for Tropical Livestock Genetics and Health sought to find and examine regions of DNA that regulate muscle development in piglets. The team used a technique to study DNA in frozen tissue, which is advantageous because it can help limit the numbers of animals used for research. They applied this technique to samples from muscle in piglets at various stages of development, to pinpoint regions of DNA that control activity in genes linked to muscle growth, and to study activity in these genes. Variations in regions of DNA were observed between small and large piglets. These variations suggest a difference in how DNA is regulated – which in turn governs muscle growth – between large and small piglets. Researchers hope to explore their data further to identify variations in the genetic code of pigs that are linked to growth, and better understand how



these differences regulate the activity of key genes involved in muscle development, to inform pig breeding programmes.

Via www.thepigsite.com, 2023.04.13.
<https://www.thepigsite.com/articles/dna-offers-insights-into-pig-muscle-development>





Reducing antibiotic use – where are we now?



A year and a half has passed since Hungary joined the European Union's commitment to reduce the use of antibiotics. One might think that we have overcome the initial difficulties, but unfortunately, the overall situation paints a different picture.

Agrofeed's professional team is determined to support its partners in this area as well.

Two years ago, we started developing AB Kontroll, an internet-based software that provides a simple and effective tool to help you meet your legal obligations and monitor the animal health situation on your farm.

Over the past year, we have been heavily engaged in analysing in detail the situation around antibiotic reduction and its practical solution at our professional events as well. This year we felt that time was ripe to organise a workshop where all stakeholders of the process can listen to and actively respond to the question of "where are we now?".

Why was this important?

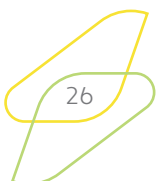
- because we are all aware that the responsible use of antibiotics is a priority both from the point of view of farm management and because the risks it poses to human health
- because a significant proportion of veterinarians find it difficult to meet their legal obligations
- because it is the responsibility of the veterinarian to ensure the proper use of antibiotics, to develop a reduction plan and to monitor it continuously
- because it is also important to be aware that the conscious optimisation of antibiotic use can only be achieved through a well-functioning and cooperative site management
- and because it is important for all of us to be aware of the true extent and characteristics of domestic antibiotic use



We held our event at the Granada Hotel in Kecskemét on 17/03/2023. Due to the relevance of the topic and the practical approach to it, our event attracted a lot of interest, with nearly a hundred guests, representing the Hungarian pig industry with more than forty-five thousand sows in terms of the number of breeding animals on the farms. We would like to take this opportunity to thank our partners' veterinarians and the farm management staff working in cooperation with them for honouring us in such great numbers, as well as all the governmental and stakeholder organisations (Ministry of Agriculture, National Food Chain Safety Office (Nébih), Hungarian Pig Farmers Association, Hungarian Pig Health Association), who represented themselves at the management and decision-making level as well.

The event had an innovative aim, and despite the large number of participants, it managed to retain its workshop character. The questions asked during the presentations clearly showed the areas where we are still on shaky ground. We tried to discuss every situation that could support successful implementation and, based on the feedback received, we are pleased to say that we have achieved this goal as well.

In putting together the programme, we have strived to look for and define focal points. We invited Dr. Imre Biksi, Dr. László Búza and Dr. László Gombos to speak at the conference, who are all renowned specialists in fields related to the antibiotic reduction process. To complement the presentations and to illustrate the real situation in the field practice, we also invited to the discussion a farm where the responsible use of





antibiotics and the analysis of the related farm situations have become part of their routine. And not because of obligations or legal requirements, but because continuous analysis makes it easier for them to make decisions, to manage and evaluate changes in a more conscious and targeted way.

In conclusion, the workshop exceeded our expectations both in terms of the number of participants and the level of active involvement. Based on the feedback received, we can conclude that there is a great need for events where alongside theory there is a strong emphasis on practice and where participants can gain up-to-date information and advice that they can adapt to their own practice.

Dr. László Gombos

Stem cell approach to study pig infections

A method of producing immune cells from stem cells for research into pig infections is more affordable, practical and ethical than standard approaches, a study led by scientists from the Roslin Institute suggests. Investigations using the technique will benefit from access to an unlimited number of a type of immune cells, known as macrophages, which are easy to manipulate and can be infected by viruses and bacteria for the study of infections, according to scientists. The method reduces the need for animals in research and is less costly than conventional procedures, which use macrophages extracted from slaughtered animals and require continuous replacement. Work conducted using the approach will be critical for devising effective strategies to combat important diseases such as African swine fever, and improve healthy, ethical livestock farming. For instance, the technique could be used to produce virus for the development of live vaccines. Stem cell-derived macrophages can also be gene edited for targeted studies of the role of genetics in infections, for biotechnology applications, and to generate bespoke engineered cells for experiments. Scientists produced macrophages from pig stem cells through a protocol adapted from a method used for mouse and human cells, and observed they had similar features



to macrophages used in existing procedures. The stem cell-derived macrophages served as targets for infection by key pig infections, such as Salmonella and the viruses that cause African swine fever and porcine reproductive and respiratory syndrome, experiments have shown. "This novel technique could help improve understanding of how infectious agents interact with the immune system of farmed animals, which ultimately can contribute to prevent disease spread and pandemics, improve animal welfare, and reduce the use of animals in research," Dr Stephen Meek with the Roslin Institute.

Via www.thepigsite.com, 2023.03.20.

<https://www.thepigsite.com/articles/stem-cell-approach-to-aid-study-of-pig-infections>





Russian feed industry stable – production is growing

Feed prices appear to be stabilising in Russia, although feed additives remain a “weak link” in the supply chain, Vladimir Manaenkov, chairman of the Russian Union of Feed Manufacturers, told during Agroinvestor PRO’s conference in Moscow. Despite the Western sanctions, almost all of the world’s leading feed component producers continue to operate in the country competing with each other, claimed Manayenkov, reckoning that their emergency in the country in the past gave a strong impetus to the development of local livestock and poultry production. In 2022, Russia manufactured 34.2 million tonnes of feed against 31.95 million tonnes in the previous year, Manaenkov said. It is estimated that 49% of feed in Russia is produced for poultry, 41.9% for pigs, and only 8.5% for cattle. The increase is due to last year’s production growth in the Russian poultry and pig sectors. Historically, Russian cattle farmers rely



on pastures and green fodder, but as efficiency becomes more important in the industry, compound feed is becoming a dominant option, said Manaenkov, who expressed optimism that this trend would gain steam. Premix production is also growing steadily in

Russia. In 2022, output in this segment was 519,900 tonnes, compared with 499,100 tonnes in the previous year. Manaenkov said that the growth may still be insufficient to meet the expanding demand. However, Manaenkov also admitted that the country is fully dependent on imported feed additives and 80% on feed ferments. Currently, feed additives in Russia are almost 30% more expensive than in Europe. In light of this, Manaenkov stated that the country should increase domestic feed additives production.

Via www.allaboutfeed.com, 2023.04.20.

<https://www.allaboutfeed.net/market/market-trends/russian-feed-industry-stable-production-on-the-rise/>

China aims to reduce soymeal use in animal feed

China’s agriculture ministry has issued a three-year action plan to reduce the inclusion rates of soybean meal in animal feed in an effort to reduce the country’s dependence on soybean imports. According to a Reuters report, the new plan calls for soybean meal inclusion in animal feed to be reduced to less than 13% by 2025 from 14.5% in 2022. The plan would “guide the feed industry to reduce the amount of soybean meal, promote the saving and consumption reduction of feed grains, and contribute to ensuring the stable and safe supply of grain and important agricultural products”, according to the document, published by the Ministry of Agriculture and Rural Affairs. Similar guidelines were already published in April 2021, recommending a reduction in the amount of corn and



soybean meal in pig and poultry feed. The guidelines also recommended feed formulations based on the country’s regions, such as reducing corn in pig rations by at least 15% in the Northeast using rice and rice bran, and using sorghum, cassava flour, rice bran meal

and barley in the southern region. China’s soybean imports in March were up 7.9% year-on-year, as Chinese buyers stocked up ahead of expected strong demand. Imports in the first three months of the year totalled 23 million tonnes, up 13.5% from a year earlier, the data showed. Much larger volumes are expected in the coming months, according to traders and analysts, but demand has proven weaker than expected.

Via www.feedstrategy.com, 2023.04.14.

<https://www.feedstrategy.com/china/china-issues-plan-to-reduce-soymeal-use-in-animal-feed/>





Amaranth made more attractive for feed producers by new technology

A group of Russian scientists have developed a new technology for deep processing of amaranth that allows 30% more protein to be extracted than conventional processing methods. Amaranth is a protein-rich, gluten-free grain similar to quinoa, distantly related to Swiss chard and spinach. An amaranth plant produces multiple seed heads, each of which can produce up to 5,000 seeds. In Russia, it is used in poultry and cattle feed, although not widely. According to scientists, amaranth protein contains twice as much lysine as wheat, almost as much as soybean. In the conventional processing technology of amaranth, the protein is isolated from the seeds and beans. The Russian scientists proposed to obtain it from the green mass of the plant instead, which will secure a 30% increase in obtained protein. Amaranth is currently not widely used in agriculture due to its high production and processing costs. But new technology can solve this problem. "The proposed technology for deep processing of amaranth is based on the use of modern equip-



ment, which makes the technology effective and takes down the production cost to the competitive level," the scientists said. In addition, the new processing method allows

the production of not only protein but also pectin. By 2025, the scientists plan to launch the first industrial production based on the principles of a single technological cycle: the dietary fibres remaining after the isolation of protein and pectin will also be used. "Different varieties of amaranth have protein content between 15 and 29%, which is more than in some varieties of beef. 4 times more protein can be obtained from one hectare of amaranth crops than from one hectare of soybeans. In addition, the cultivation of amaranth does not require certain conditions: the plant is resistant to heat and drought, unpretentious to the types of soil, and in the southern regions, up to two crops can be harvested per season," Ilya Bubnov, head of the research group said. In 2021, the Russian Union of Feed Manufacturers estimated a shortage of feed protein on the domestic market of between 2 and 2.5 million tonnes.

Via [allaboutfeed.net](https://www.allaboutfeed.net), 2023.01.24.

<https://www.allaboutfeed.net/all-about/new-proteins/new-tech-to-make-amaranth-more-attractive-for-feed-producers/>

French insect protein producer Ynsect pulls out of feed production

French insect-based ingredients producer Ynsect will refocus its strategy on high-margin markets such as pet food, close a production plant and cut jobs after raising €160 million from investors, Reuters reported, citing the company's CEO. The company, which is negotiating additional funding, will use the money to expand the world's largest vertical insect farm in Amiens in northern France, as well as for new projects, Antoine Hubert told Reuters in an interview. Farmed insects, such as mealworms, are ground down to produce proteins for aquaculture, livestock, pet food, fertiliser and human nutrition. They are considered en-



vironmentally friendly proteins because they require less land and water than crops and emit fewer greenhouse gases. But the technology is costly, making insect meal much more expensive than its

plant-based alternatives. "In an environment where there is inflation on energy and raw materials but also on the cost of capital and debt, we cannot afford to invest loads of resources in markets which are the least remunerative (animal feed), while you have other markets where there is a lot of demand, good returns and higher margins," Hubert said, referring to pet food, human nutrition and fertilisers.

Via www.thepoultrysite.com, 2023.04.17.

<https://www.thepoultrysite.com/news/2023/04/frances-ynsect-to-re-focus-feed-business-after-capital-increase>

Meatball from woolly mammoth cultured in the Netherlands

A giant meatball made from flesh cultivated using the DNA of an extinct woolly mammoth was unveiled at the Nemo science museum in the Netherlands, Reuters reported. The meatball was created by the Australian in vitro meat company Vow, with the aim of bringing cultured meat into the public debate as a more sustainable alternative to real meat. "We wanted to create something that was totally different from anything you can get now," Vow founder Tim Noakesmith told Reuters, adding that another reason for the choosing mammoth is that scientists believe the animal's extinction was caused by climate change. The meatball was made from sheep cells into which a single gene from the mammoth, myoglobin, has been inserted. "When it comes to meat, myoglobin is responsible for the aroma, the colour and



the taste", James Ryall, Vow's Chief Scientific Officer explained. Since the mammoth's DNA sequence obtained by Vow had a few gaps, African elephant DNA was inserted to complete it. "Much like they do in the movie Jurassic Park", Ryall said, stressing the biggest difference is that they were not creating actual animals. While creating cultured meat usually means using blood of a dead calf, Vow used an alternative, meaning no animals were killed in the making of the mammoth meatball. The meatball, which is said to have the aroma of crocodile meat, is currently not for consumption. "Its protein is literally 4,000 years old. We haven't seen it in a very long time. That means we want to put it through rigorous tests, something that we would do with any product we bring to the market," Noakesmith said.

Via www.thepoultrysite.com, 2023.03.29.

<https://www.thepoultrysite.com/news/2023/03/cultured-woolly-mammoth-meatball-unveiled-in-the-netherlands>

Ukrainian farmers switch to more profitable crops

Some Ukrainian farmers are switching from wheat and corn to soybean and rapeseed, in a bid to improve profitability, according to the association of farmers All-Ukrainian Agrarian Rada. Ukrainian farmers are selling grain on the domestic market at an average price of 40% below the world's average, Denis Marchuk, deputy chairman of the All-Ukrainian Agrarian Rada, estimated. The market still battles against oversupply, as the pass-through capacity of the available export infrastructure remains limited. This pushes farmers to switch to more profitable crops. A massive gap between the grain prices on the global and Ukrainian markets forces many companies to switch from wheat and barley to soybean and rapeseed, said Maxim Gopka, analyst of the Ukrainian club of agricultural business (UCAB). "There are more profitable crops that are easier to store," he explained. However, switching to other crops is often risky. "Changing the crop, you



can fail to achieve the desired result. And the additional costs always come with great risks," Gopka said. In addition to sales difficulties, Ukrainian farmers face a number of challenges, all of which increase production costs. One of the critical problems of the spring sowing campaign is a labour shortage. In addition, to the unprecedented immigration wave, a large number of workers joined the Ukrainian Armed forces. "Since large territories remain occupied or mine-contaminated, the pace of preparations for the sowing campaign is slow. The mobilisation of workers also takes a toll," Marchuk said, adding that farmers are actively recruiting new employees to fill the gaps left by the mobilisation. In the wake of the spring sowing campaign, the number of available vacancies in the agricultural sector jumped by nearly a third compared to the previous year.

Via www.allaboutfeed.net, 2023.03.13.

<https://www.allaboutfeed.net/market/market-trends/ukrainian-farmers-switch-to-more-profitable-crops/>

US startup to turn food waste into animal feed

Food waste is the animal feed of the future, according to Connecticut-based startup Bright Feeds. The company, set up two years ago, has built a high-tech processing facility that uses sensors and computer algorithms to convert various combinations of commercial food processing waste into a uniform meal that can be included in animal feed. According to Jonathon Fife, co-founder and CEO of Bright Feeds, feedback from the company's first customers suggests that waste-based meal is 20% cheaper than conventional feed components such as corn or soybeans. The company opened its state-of-the-art, 450-ton processing facility about seven months ago and started with a single customer, Fife said. Since then, the company has quickly gained more customers as word of their product – and their ability to use computer algorithms to tailor the waste meal to specific nutritional profiles – has spread. “We have sensors that measure protein, fiber, fat, ash, carbohydrates. ... We record all the data from those sensors as food moves through our plant and we have algorithms to blend and mix the food waste to create a consistent feed,” Fife said. “We have had several different feed mills request more or less of a certain nutritional factor, so we have been able to accommodate



that using our technology.” In previous experiments, other companies have tried to solve the consistency problem by restricting the incoming food waste streams, but this has not proved effective. Bright Feeds approached the problem from a different angle. Instead of trying to control the nutritional profile of the feed by controlling the waste stream, they would assemble a team of top engineers to design a plant capable of blending diverse waste streams into a consistent meal product. Fife said, that the company is already looking for locations to build a second processing plant. Location is a critical factor: they need to be close to both sources of commercial food waste and to potential customers, namely feed mills.

Via www.feedstrategy.com, 2023.03.28.

<https://www.feedstrategy.com/animal-feed-manufacturing/startup-using-tech-to-turn-food-waste-into-animal-feed/>

Digital Agricultural Compass points in the right direction

The professional exhibition and conference “Digital Agricultural Compass – Sustainability in the Food Chain” was held at the Albert Kázmér Faculty of Mosonmagyaróvár of Széchenyi István University with the participation of hundreds of young people and nearly forty exhibitors. The event was an excellent networking opportunity for students and businesses in the sector, as well as a professional forum to discuss current issues of the digitalisation of agriculture and precision farming.



Agrofeed Kft. has been a sponsor of the event year after year, so this year again it was present with its decorative stand. During the day we had fruitful discussions with representatives of the agricultural sector, and there was also great interest from the agricultural students of Mosonmagyaróvár.





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