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动物营养专题

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▶ 前沿资讯

1. 研究首次成功培育3个基因编辑小型猪新品系

简介: 中国农业科学院深圳农业基因组研究所动物功能基因组学创新团队联合北京畜牧兽医研究所等单位培育的中农巴马小型猪3个实验用小型猪专门化品系，近日被认定为中国实验动物新资源，收录于国家实验动物模型资源信息平台，该品系是首次通过鉴定的基因编辑猪疾病模型新品系。据悉，研究人员于2016年通过自主建立的多基因精准编辑技术，成功获得6头ApoE和LDLR双基因缺失猪，借助基因型检测等技术，历时6年多选育获得遗传稳定的3个小型猪疾病模型新品系，该品系病理特征明显，每个品系的种群均达到60头以上。此外，研发团队还针对3个专门化品系制定了饲养管理方法、实验操作技术方法和遗传质量控制方法。开发实验动物新资源是我国重要战略需求，小型猪疾病模型专门化品系的成功培育为基因编辑大动物模型专门化品系提供了理论和技术支撑，对我国生命科学研究和生物医药领域发展具有重要意义。

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<http://agri.ckcest.cn/file1/M00/10/27/Csgk0GQFNQuAU-ggAAeZz-B1weQ197.pdf>

2. 统计局：2022年全国猪牛羊禽肉产量9227万吨，创历史新高

简介: 2022年，各地区各部门认真贯彻落实党中央、国务院关于农业发展的重大决策部署，统筹推进疫情防控和农业生产，有力克服北方罕见秋汛导致冬小麦晚播、南方持续高温干旱等不利因素影响，毫不松懈抓好粮食生产，全年粮食实现增产丰收，生猪生产总体稳定，禽蛋奶供应充足，主要农产品价格基本稳定，农业生产呈现稳中向好的发展态势。粮食实现增产丰收，产量连续8年保持在1.3万亿斤以上。2022年，各地严格落实粮食安全党政同责，强化耕地用途管制，加大粮食生产支持力度，提高农民种粮积极性。全国粮食总产量13731亿斤，比上年增加74亿斤，增长0.5%，粮食产量连续8年稳定在1.3万亿斤以上。全国粮食播种面积17.75亿亩，比上年增加1052万亩，增长0.6%，连续三年保持增长。2022年夏季长江流域高温干旱，东北地区南部农田渍涝灾害偏重，叠加种植结构调整等因素影响，全国粮食作物单产387公斤/亩，比上年减少0.2公斤/亩，下降0.1%。分季节看，夏粮、早稻、秋粮均实现增产。其中，夏粮产量2948亿斤，比上年增加29亿斤，增长1.0%；早稻产量562亿斤，增加2亿斤，增长0.4%；秋粮产量10220亿斤，增加43亿斤，增长0.4%。分品种看，小麦、玉米、大豆产量增加，稻谷产量下降。2022年，全国小麦产量2754亿斤，比上年增加16亿斤，增长0.6%；玉米产量5544亿斤，增加93亿斤，增长1.7%。国家大力实施大豆油料提升工程，大豆产量首次突破400亿斤大关，达406亿斤，增加78亿斤，增长23.7%。稻谷产量4170亿斤，减少87亿斤，下降2.0%。生猪生产总体稳定，牛羊禽肉产量持续增加。2022年全国猪牛羊禽肉产量9227万吨，比上年增加339万吨，增长3.8%。猪肉、牛羊肉、禽肉、禽蛋和牛奶产量均不同程度增长。生猪出栏保持增长，存栏小幅增加。2022年，全国生猪出栏69995万头，比上年增加2867万头，增长4.3%。2022年生猪出栏保持增长，但增速有所放缓，一季度同比增长14.1%，上半年增长8.4%，前三季度增长5.8%。全年猪肉产量5541万吨，比上年增加246万吨，增长4.6%。2022年末，全国生猪存栏45256万头，比上年末增加333万头，增长0.7%。其中，能繁殖母猪存栏4390万头，增加62万头，增长1.4%。牛羊生产较为稳定，牛奶产量

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持续增长。2022年，全国肉牛出栏4840万头，比上年增加132万头，增长2.8%；牛肉产量718万吨，增加21万吨，增长3.0%；牛奶产量3932万吨，增加249万吨，增长6.8%。2022年末全国牛存栏10216万头，比上年末增加399万头，增长4.1%。2022年，全国羊出栏33624万只，比上年增加579万只，增长1.8%；羊肉产量525万吨，增加10万吨，增长2.0%。2022年末全国羊存栏32627万只，比上年末增加658万只，增长2.1%。家禽生产稳步增长，禽肉禽蛋产量增加。2022年，全国家禽出栏161.4亿只，比上年增加4.0亿只，增长2.5%；禽肉产量2443万吨，增加63万吨，增长2.6%；禽蛋产量3456万吨，增加48万吨，增长1.4%。2022年末全国家禽存栏67.7亿只，比上年末下降0.2%。农产品生产者价格略涨，生猪价格降幅收窄。2022年全国农产品生产者价格总水平比上年上涨0.4%。其中，一季度下降6.7%，二季度下降0.7%，三季度上涨8.2%，四季度上涨5.7%。分类别看，农林牧渔四大行业生产者价格呈现“两升两降”态势。农业产品价格比上年上涨2.9%；渔业产品价格略涨0.4%；林业产品价格下降1.6%；饲养动物及其产品价格下降4.3%，降幅比上年收窄13.6个百分点，主要原因是生猪价格降幅收窄。分品种看，2022年生猪生产者价格下降9.8%，降幅比上年收窄25.3个百分点。其中一、二季度分别下降51.3%和25.9%，三、四季度分别上涨36.1%和42.1%。小麦、玉米、大豆生产者价格分别比上年上涨12.8%、2.7%、5.3%，小麦价格指数创2005年以来最高纪录；稻谷价格下降0.3%，蔬菜价格上涨1.4%。2022年，全国粮食再获丰收，畜禽生产平稳健康发展，重要农产品市场供给充裕，为保障国家粮食安全、稳定宏观经济大盘提供了有力支撑，为应对复杂严峻形势、战胜各种风险挑战奠定了坚实基础。注：由于小数位进位，部分分项合计数与总数略有差异。

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<http://agri.ckcest.cn/file1/M00/03/55/Csgk0Yhb6F6AEnL1AArLFyyejZo823.pdf>

3 New research: survival of a surrogate ASF virus-like algal virus tested in feed matrices (新研究：在饲料基质中测试替代非洲猪瘟病毒样藻类病毒的存活)

简介: Because 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 African swine fever virus (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. These NCLDVs are found in a variety of environments, and can infect humans (Poxviridae), fish (Iridoviridae), insects (Ascoviridae), swine (Asfarviridae), amoeba (Marseilleviridae and Mimiviridae) and algae (Phycodnaviridae). 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. Emilia

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huxleyi virus strain 86 (EhV-86) is an ecologically important NCLDV which controls blooms of the marine unicellular phytoplankton *Emiliana huxleyi* and shares many important features with ASFV. Both ASFV and EhV-86 share many physical characteristics, such as complex virion ultrastructure and sensitivity profile to time and temperature exposure. In fact, EhV-86 has recently been shown to be one of the most thermally stable viruses known, with temperatures up to 100°C damaging most of the virus particles yet leaving a subset of intact and potentially viable particles for future re-infections. Given the similarities shared between ASFV and EhV-86, proposed the use of EhV-86 as a surrogate for ASFV. ASFV is stable in a variety of environments, including animal feed ingredients as shown in previous laboratory experiments and simulations. *Emiliana huxleyi* virus has a restricted host range limited to a species of marine algae called *Emiliana huxleyi*. This algal NCLDV has many similar morphological and physical characteristics to ASFV thereby making it a safe surrogate, with results that are applicable to ASFV and suitable for use in real-world experiments. The research team inoculated conventional soybean meal (SBMC), organic soybean meal (SBMO), and swine complete feed (CF) matrices with EhV strain 86 (EhV-86) at a concentration of 6.6×10^7 virus g⁻¹, and then transported these samples in the trailer of a commercial transport vehicle for 23 days across 10,183 km covering 29 states in various regions of the United States. Upon return, samples were evaluated for virus presence and viability using a previously validated viability qPCR (V-qPCR) method. Results showed that EhV-86 was detected in all matrices and no degradation in EhV-86 viability was observed after the 23-day transportation event. Additionally, sampling sensitivity (we recorded unexpected increases, as high as 49% in one matrix, when virus was recovered at the end of the sampling period) rather than virus degradation best explains the variation of virus quantity observed after the 23-day transport simulation. Conclusion: Use of the NCLDV EhV-86 as a surrogate for ASFV in experimentally inoculated conventional and organic soybean meal and complete feed based on corn and soybean meal was present in a viable form after a 23-days transcontinental truck transport journey. 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 transport across the continental United States, thereby providing evidence for the use of EhV as a surrogate for ASFV for evaluating virus survival and inactivation under real-world demonstrations.

来源: The Pigsite 官网

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<http://agri.ckcest.cn/file1/M00/10/27/Csgk0GQF05SALv65ABcyDqfb52E693.pdf>

4 .Lallemand: Yeast fed to sows benefits microbial transfer in offspring and piglet performance post-weaning (饲喂母猪的酵母有利于后代的微生物转移和断奶后的仔猪生产性能)

简介: New data confirms that supplementation of lactating sow diets with a live yeast had a

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positive effect on the performance of progeny during the nursery period, says Lallemand Animal Nutrition. The improvement in piglet performance may be partially explained by changes in gut microbiota, said David Saornil, product manager, swine applications, Lallemand Animal Nutrition. The latest research findings from the company on transgenerational effect of feeding yeast to sows was presented at the French swine research congress, Journées de la Recherche Porcine (JRP), held on January 31 to February 1, and organized by the French swine institute (IFIP) and the French public research institute dedicated to agricultural science, INRAE. Previous data had shown that the live yeast *Saccharomyces cerevisiae* boulardii CNCM I- 1079 (Levucell SB) applied to sows enhances weaning piglets, performance and influences sows, gut microbiota - the microbial maternal imprinting concept, said Lallemand. The objective of the new study was to confirm the effect of Levucell SB (SB) in the sow diet on piglet performance and gut microbiota after weaning. In the current context of pharmacological ZnO removal and antibiotic use reduction in swine production, it is more important than ever to have the best possible start for the progeny, said the company. A piglet that is strong at weaning will be healthier and perform better during the post-weaning stage, it added. In that context, the Lallemand Animal Nutrition swine team has been looking at how sow management and nutrition have a significant influence on piglet development, including aspects like fetal programming or microbial and immune transfer.

来源: Feednavigator 官网

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学术文献

1. 膨化玉米对断奶仔猪生产性能、养分表观消化率和血清指标的影响

简介: 试验旨在研究玉米-面粉-去皮豆粕型日粮中用不同比例膨化玉米替代玉米对仔猪生长性能、养分表观消化率、血清免疫指标和抗氧化应激能力的影响。选择180头体重(6.0±0.5 kg)的21日龄杜×长×大去势仔公猪,随机分为3组,每组4个重复,每个重复15头。玉米组日粮含30%玉米,膨化玉米+玉米组日粮含15%膨化玉米+15%玉米,膨化玉米组日粮含30%膨化玉米。试验期14d。记录21~34日龄仔猪腹泻情况、投料量、死淘头数,试验结束时对猪群进行称重;试验第12~14天收集新鲜粪样,测定计算养分表观消化率;前腔静脉采血测定血清免疫指标、氧化应激指标。结果表明:各组断奶仔猪的平均日增重(ADG)、存活率无显著差异,膨化玉米组耗料增重比(F/G)和腹泻率低于其他两组(P<0.05);膨化玉米+玉米组日粮干物质、粗蛋白质、粗脂肪、钙、磷的表观消化率高于玉米组(P<0.01);各组仔猪血清中免疫指标、氧化应激指标均无显著差异,但膨化玉米+玉米组总蛋白(TP)含量、免疫球蛋白(IgA、IgG、IgM)浓度、总超氧化物歧化酶(T-SOD)活性、乳酸脱氢酶(LDH)活性、皮质醇(COR)浓度高于玉米组(P>0.05)。由此说明,在断奶仔猪日粮中用膨化玉米代替玉米可以降低仔猪腹泻率,提高日粮养分消化率,但对生长性能、血清免疫指标、抗氧化应激能力影响不显

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著。

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