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学术文献

1. 瘿管法在氨基酸消化率评定中的研究与应用

简介: 氨基酸消化率是评定猪饲料蛋白质营养价值的主要参数。考虑到猪后肠微生物发酵对饲料有效氨基酸含量的干扰和破坏,瘿管法代替传统粪便分析法,已成为猪饲料氨基酸消化率精准评定的标准方法。其中,T型瘿管法以其可信度高、对生理状态影响小和操作简易便行等优势,应用最为广泛。文章以瘿管法为主要对象,主要围绕其工作原理、应用现状及未来发展前景进行综述,旨在就瘿管法测定猪饲料氨基酸利用率方法上的统一和规范研究提供借鉴与思考。

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http://agri.ckcest.cn/file1/M00/03/39/Csgk0Yc-QY2AQYOKABkzUteT_r4134.pdf

2. 集团化种猪企业基因组选育方案制定与基因组早期选择

简介: 基因组选择作为我国种猪遗传评估的一项实用技术已在全国推广应用,近年来国家和区域种猪基因组联合育种平台相继建立,作为该技术落地应用的技术支撑。在企业层面,需要根据自身育种工作基础和育种目标等情况,合理制定本企业的种猪基因组选育方案,利用好种猪基因组育种平台,通过该技术的落地应用来加速育种进展,更快更好地达到既定的育种目标。本文根据基因组选择技术基本原理和种猪育种的特殊情况,对集团化种猪企业基因组选择技术方案制定关键环节进行总结;此外,基于杜洛克种猪群体数据,系统分析了基因组早期选择的准确性和种猪选留效果。结果表明,通过基因组早期选择,断奶时提前阉割排名靠后的45%小公猪的情况下,依然能准确选出top5%和top10%的优秀公猪,表明可以通过基因组早期选择,同时达到准确选出优秀公猪和降低测定量的双重目标。

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3. 断奶应激对仔猪肌肉组织调控机制的影响

简介: 为探究断奶应激对仔猪肌肉组织调控机制的影响,本研究利用断奶7 d后高应激(体重减轻或停滞)组和低应激(体重增加)组的仔猪背最长肌组织构建测序文库,比较不同应激程度对仔猪肌肉组织mRNAs和microRNAs表达模式的影响。结果表明:断奶应激改变了肌肉组织中381个基因的表达量,调控细胞外基质组成、肌肉收缩等相关的生物学过程,其中包括大量的与胶原蛋白、肌动/肌球蛋白相关的基因;断奶应激还引起了肌肉组织中17个microRNAs的差异表达,包括miR-148a-3p、miR-199b-3p、miR-30e-5p等;而miR-148a-3p和miR-30e-5p作为表达丰度最高的差异microRNAs,它们与一些重要差异基因(如ACHE、ADAM12等)存在着靶标关系,进而调控肌肉组织的发育和能量代谢过程。综上所述,断奶应激的确改变了仔猪肌肉组织基因表达模式,影响了肌肉发育,其中筛选的一批重要microRNAs小分子可用于改善断奶应激。

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4 . Effects of dietary arginine supplementation on pig growth performance and health status following weaning stress (日粮精氨酸补充对断奶应激后猪生长性能和健康状况的影响)

简介: Arginine is important for maintenance of intestinal health. However, today's nutritional practices for weaned pigs do not consider the critical roles of arginine in gut health and function. The objective of this study was to test the hypothesis that weaned pigs require more dietary arginine for optimal health and growth performance after weaning. A total of 225 weaned pigs (BW 5.8 ± 0.9 kg) were used in a randomized complete block design and assigned to one of five dietary treatments, with 9 replicate pens of 5 pigs each. A basal diet was formulated to meet current arginine requirement estimates without arginine supplementation (0.66% - NRC, 2012) and L-arginine was supplemented at 0.3, 0.6, 0.9, and 1.2%. Experimental diets were provided during phases 1 (d0-d7) and 2 (d8-d21) with a common diet during phase 3 (d22-d42). Feed disappearance and body weight were measured at d7, 14, 21, and 42. Pen faecal score was assigned daily during weeks 1, 2 and 3. On d7 and 14, blood samples were collected from one pig per pen for plasma IgA. Data was analysed using Proc Reg and Proc Freq procedures in SAS. Increasing dietary arginine supply linearly improved ($P \leq 0.05$) body weight, daily gain, and daily feed intake of pigs in weeks 13. During week 2 and 3, pigs fed diets containing supplemental arginine had less incidence of soft and watery faeces ($\chi^2 < 0.05$) and lower plasma IgA concentration at d14 ($P \leq 0.05$). In comparison to control group, 0.6 and 0.9% supplemental arginine reduced ($\chi^2 = 0.004$) the percentage of pigs that lost weight in week 1 by 29% (15.56 vs 11.11%). Overall, weaned pigs require dietary arginine of 1.6% for optimal nursery performance and health, which includes reducing fall back pigs.

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5 . Coated tannin supplementation improves growth performance, nutrients digestibility and intestinal function in weaned piglets (添加包膜单宁可提高断奶仔猪生长性能、营养物质消化率和肠道功能)

简介: To explore the effect of coated tannin (CT) on the growth performance, nutrients digestibility and intestinal function in weaned piglets, a total of 180 piglets Duroc × Landrace × Yorkshire (28 days old) weighing about 8.6 kg were randomly allotted to 3 treatments: 1) Con: basal diet (contains ZnSO₄); 2) Tan: basal diet + 0.15% CT; 3) ZnO: basal diet + ZnO (Zn content is 1600 mg/kg). The results showed that 0.15% CT could highly increase the average daily gain (ADG) and average daily feed intake (ADFI) of weaned piglets compared with the control group, especially decrease diarrhea incidence significantly ($P < 0.05$). Compared with

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the control group, crude protein (CP) apparent digestibility and digestive enzyme activity of the piglets fed with 0.15% CT were enhanced obviously ($P < 0.05$). Meanwhile, the intestinal villi and microvilli arranged more densely, while the content of serum diamine oxidase (DAO) was decreased and the protein expressions of zonula occludens-1 (ZO-1) and claudin-1 were significantly up-regulated ($P < 0.05$). In addition, CT altered the structure of intestinal microbiota and augmented some butyrate-producing bacteria like Ruminococcaceae and Megasphaera. PICRUSt analysis also showed that the abundances of pathways related to butyrate metabolism and tryptophan metabolism were increased, however the function of lipopolysaccharide biosynthesis proteins was significantly decreased. The results demonstrated that 0.15% CT could improve growth performance, digestibility and intestinal function of weaned piglets, and had the potential to replace ZnO applied to farming.

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