

动物营养学报

DONGWU YINGYANG XUEBAO

百种中国杰出学术期刊 期刊数字影响力 100 强(学术类期刊)

中国精品科技期刊 中国科学引文数据库(CSCD)核心库来源期刊 中国科技核心期刊

中文核心期刊 中国科学评价研究中心权威期刊(A⁺级)

英国 CAB Abstracts 收录期刊 美国 Chemical Abstracts 收录期刊

第 33 卷 第 8 期 2021 年 8 月

目 次

综述

4201 丁酸在亚急性瘤胃酸中毒和动物健康方面作用机制的研究进展	朱智	纪邑奇	黄文明	左福元
4213 硒对奶牛乳腺氧化应激及炎症反应的调控作用及其机制	郭咏梅	闫素梅		
4221 反刍动物瘤胃噬菌体研究进展	李陇平			
4231 木聚糖酶对肉鸡生长性能和肠道健康的影响	王剑	尚庆辉	张连华	朴香淑
4244 牛奶中脂肪酸的合成机理及影响因素研究进展	陈美庆	张养东	郑楠	王加启
4255 金银花提取物对围产期奶牛乳房炎的防控作用及其机制研究进展	李玉琴	汪悦	蒋林树	熊本海
4263 基于指纹图谱技术的饲料营养活性物质结构-谱-量-效关系的研究进展	熊安然	熊本海	蒋林树	
4271 稻米资源在畜禽饲粮中应用的研究进展	康芳菲	何贝贝	王永伟	李爱科
4285 支链氨基酸在畜禽低蛋白质饲粮体系中的应用	简华锋	章旭春	董信阳	邹晓庭
4294 黄酮类化合物的益生机理及其在畜禽生产上的应用	陈庆菊	胡萍	曾艳	唐志如
4304 过氧化物酶体增殖物激活受体 $\beta(\delta)$ 对肌纤维类型转化和肉品质的影响及其调控因素研究进展	孙冰	侯艳茹	苏琳	靳烨
4315 肉碱棕榈酰转移酶 1 的生物学功能及其对肉品质影响的研究进展	张月	靳烨	郭月英	要铎

猪营养与饲料

4323 饲粮添加香菇多糖对轮状病毒攻毒断奶仔猪回肠屏障功能的影响	毛湘冰	胡海燕	陈代文	余冰
	何军	郑萍	虞洁	罗钧秋
	罗玉衡	阎辉		
	杨宽民	申远航	王丽	蒋宗勇
4332 枯草芽孢杆菌对断奶仔猪生长性能影响的 Meta 分析	莫家远	路玉洁	綦文晶	朱思燃
4342 巴马香猪回肠、结肠消化特征研究	奉玲丽	高九昱	梁靓	王晖
	兰干球	梁晶		
4353 有机铁对猪生长性能影响的 Meta 分析	丁浩轩	张倩	冯杰	
4364 白藜芦醇对生长肥育期宁乡猪肉品质的影响	段平男	杨婷	陈佳亿	秦昆鹏
	赵玉蓉			
4373 饲用凝结芽孢杆菌对感染产肠毒素大肠杆菌 K88 断奶仔猪生长性能和肠道健康的影响	柳成东	肖明霞	赵平	李琦华
	白华毅	程志斌		
4384 不同储存时间小麦在生长猪上的营养价值评定	董文轩	张刚	赵金标	李忠超
	丑有财	臧建军	李习龙	倪寿清
	刘岭			

禽营养与饲料

4395 饲粮代谢能和粗蛋白质水平对1~6周龄北京油鸡新配套系生长性能和血清生化指标的影响	耿爱莲 张 剑 刘华贵 王一冰 范秋丽 羊秀美 闵育娜 朱随亮 王世琼 乔英英 黄雪冰 夏伟光 陈 伟 刘晨龙 孔 敏 汪 超	王海宏 晏志勋 曹 娟 李 辉 苟钟勇 吕 静 郭丽娟 叶金玲 蒋守群 郭丽娟 张小月	张 帆 曹 娟 初 芹 张 盛 李 辉 叶金玲 蒋守群 郭丽娟 张小月
4405 天然叶黄素替代阿朴酯对黄羽肉鸡不同部位皮肤着色的影响			
4415 乳酸链球菌素对肉鸡生长性能、抗氧化和免疫性能及肠道形态的影响			
4424 抗菌肽、酸化剂和功能性寡糖联合添加对肉仔鸡生长性能、肠道形态以及盲肠微生物区系的影响			
4438 长时期饲喂杂粕型饲粮对蛋鸭产蛋性能、生殖器官及卵巢激素受体mRNA表达水平的影响			
4448 饲粮叶酸添加水平对初产种鹅繁殖性能、蛋品质及血清生殖激素和抗氧化指标的影响			

反刍与草食动物营养与饲料

4456 饲粮添加活性干酵母对肉牛营养物质表观消化率和瘤胃真菌菌群组成的影响	彭全辉 王立志 付 瑶 齐志国 李佳龙 豆思远 王建福 马 静 马 静	岳双明 田 刚 王 俊 郭江鹏 张 瑞 曾金焱 雷赵民 王 迅 柴沙驼	王之盛 康 坤 李胜利 路永强 吴建平 刘 婷 孙 璐 孙 璐	薛 白 胡 瑞 路永强 张 科 宫旭胤 刘书杰 刘书杰
4467 饲喂模式对蒙贝利亚×荷斯坦杂交犊牛生长性能、体尺指标及血清学指标的影响				
4478 牛至精油对平凉红牛生长性能、血液生理指标、肉品质及肌肉脂肪酸的影响				
4491 青海地区不同海拔高度牦牛乳微生物多样性研究				
4502 青海地区不同海拔高度天然牧草与牦牛乳常规营养指标的相关性分析				
4511 饲粮能量水平对舍饲育肥牦牛生长性能、体尺增长及血清生化和内分泌激素指标的影响				
4520 代乳粉中添加单宁酸对湖羊羔羊生长性能、养分表观消化率和肌肉脂肪酸组成的影响				
4533 茶多酚对奶山羊生产性能、血液指标和抗氧化功能的影响				
4541 血根碱对奶山羊生产性能、抗氧化和免疫功能的影响				
4549 饲粮中添加不同比例黄芪副产物对绵羊屠宰性能、内脏器官发育及肉品质的影响				
4560 青贮甜高粱替代不同比例甜高粱青干草对德州驴驹生长性能、营养物质消化率及血清生化指标的影响				

水产动物营养与饲料

4569 金针菇菇头对草鱼生长、消化酶活性、肠道组织结构、肌肉品质及血清生化指标的影响	杨琳霖 魏泽宏 程 卓 杨 航 罗雅婷	胡 毅 唐 涛 张国奇 李小勤 刘 益	朱 波 张俊智 周 陆 冷向军 刘金梦	钟 蕾 徐 禎 肖调义
4580 柠檬酸对草鱼生长性能、营养物质利用、血清生化指标和肠道组织形态的影响				
4592 湖南省稻田养殖的不同规格克氏原螯虾的肌肉营养成分分析				

特种经济动物营养与饲料

4604 左旋肌肽对中华田园犬生长和健康的影响

陈雪薇 李扬 秦顺义 杨华
张建斌

分子与细胞营养

4615 N-氨甲酰谷氨酸、脯氨酸及腐胺对仔猪空肠和回肠 Na^+ 依赖性中性氨基酸转运载体 2 表达及营养感应信号的调控作用

王婧 李光燃 肖玉欣 邓远坤
唐宇龙 谭碧娥

4626 硒代蛋氨酸对种公鸡睾丸基因差异表达的影响及功能预测分析

衡诺 马鑫 郭勇 齐晓龙

盛熙晖 王相国 邢凯 肖龙菲

陈余 王梁 倪和民

4637 褪黑素对脂多糖诱导的奶牛乳腺上皮细胞炎症反应的缓解作用

李洪洋 南雪梅 孙鹏

4645 珍珠龙胆石斑鱼闭锁小带蛋白-1、闭锁蛋白和跨膜蛋白-15a 基因的克隆及其在精氨酸干预下的肠道组织表达

陈东鸿 崔晓 李广 何凯
韩煜轩 陈冠霖 杨奇慧 迟淑艳

4662 基于转录组分析不同硒源调节黄颡鱼适应低温应激的信号通路及关键基因

胡俊茹 袁夕宸 黄文 李国立
张羽帆 王国霞 赵红霞 黄燕华

实验方法与实验动物

4675 固相萃取-反相高效液相色谱法测定蛋黄中的斑蝥黄

王凤芹 刘鑫 程远之 郭冠群

路则庆 汪以真

4684 高效液相色谱同步检测饲料中黄曲霉毒素 B₁、玉米赤霉烯酮及呕吐毒素的方法

刘颖 金永鹏 罗荪琳 陈义强

4694 马齿苋多糖对断奶大鼠肠道菌群影响的研究

黄小流 罗辉 黄玉珊 许东风

邓先清 王伟业

4708 D-天冬氨酸对葡聚糖硫酸钠诱导结肠炎小鼠抗氧化和炎症反应的影响

胡鲜 王晨昱 刘娣 龙静
范文君 何流琴 李铁军 姚继明

4719 溶血性葡萄球菌来源的细胞外囊泡对小鼠生长性能、免疫力、肠道形态与微生物区系的影响

罗梅英 凌铭旺 詹洲玲 郑将鸿
钟晓彤 欧春秀 梁樱倩 冯鑫
王瑞晓 黄得纯 张辉华 柒启恩

研究简报

4730 耐镉乳酸菌对镉暴露仔鸡体重、脏器系数和组织中矿物元素含量的影响

蒲俊华 陈大伟 刘茵茵 李惠嘉
陆俊贤 张小燕 唐梦君 唐修君

高玉时

4740 沙葱精油对肉羊体外瘤胃发酵和底物干物质降解率的影响

赵亚星 白晨 敖长金 吕可欣

徐珊珊 王晓渊 包志碧

4748 不同形式饲粮对生长期白山羊生长性能、肉质性能和血液生理生化指标的影响

戴建军 李丹阳 孙玲伟 吴彩凤
吕玉华 张树山 林月霞 张德福

4760 饲粮纤维水平对不同断奶体重仔猪生长性能、脏器指数、肠道 pH 和抗氧化性能的影响

温晓鹿 蒋宗勇 高开国 肖昊
杨雪芬 吴绮雯 王丽

4769 不同光照条件对后备母猪生长性能、初情启动和血清激素指标的影响

彭继勇 王坤 卓勇 李健
林燕 徐盛玉 车炼强 冯斌

吴德 方正锋

4779 低锌饲粮添加载锌蒙脱石对肉鸡免疫功能和肝脏含锌酶活性的影响

王海波 秦士贞 李金录 武真邑

龚莉媛 裴文刚 车育彦 杨敏敏

史兆国

4791 低海拔舍饲对牦牛和犏牛生长性能、屠宰性能和肌肉品质的影响

袁萍 张翔飞 官久强 安添午

李华德 谭武 谢荣清 罗晓林

江明锋

CHINESE JOURNAL OF ANIMAL NUTRITION

Chinese Core Journals

Abstracted in CAB Abstracts and Chemical Abstracts

Volume 33 Number 8 August 2021 CONTENTS

REVIEW

- 4201 Research Progress on Mechanism of Butyrate in Subacute Ruminal Acidosis and Animal Health
4213 Regulation and Mechanism of Selenium on Oxidative Stress and Inflammation in Dairy Cows
4221 Research Progress of Rumen Bacteriophage of Ruminants
4231 Effects of Xylanases on Growth Performance and Gut Health of Broilers
4244 Advance in Synthesis Mechanism and Influencing Factors of Milk Fatty Acids
4255 Research Progress of Honeysuckle Extract on Prevention and Control of Mastitis in Perinatal Dairy Cows and Its Mechanism
4263 Research Progress on Structure-Spectrum-Quantity-Effect Relationship of Feed Nutritional Active Substances Based on Fingerprint Technology
4271 Research Progress on Application of Rice Resources in Livestock and Poultry Diet
4285 Application of Branched-Chain Amino Acids in Low-Protein Diet System for Livestock and Poultry
4294 Probiotic Mechanism of Flavonoids and Its Application in Livestock and Poultry Production
4304 Research Progress on Effects of Peroxisome Proliferator-Activated Receptor β (δ) on Muscle Fiber Type Transformation and Meat Quality and Its Regulatory Factors
4315 Research Progress on Biological Function of Carnitine Palmitoyl Transferase 1 and Its Influence on Meat Quality

SWINE NUTRITION AND FEED

- 4323 Effects of Dietary Lentinan on Ileal Barrier Function of Weaned Pigs Challenged by Rotavirus

4332 Effects of *Bacillus subtilis* on Growth Performance of Weaned Piglets: a Meta-Analysis
4342 Digestive Characteristics of Ileum and Colon in *Bama Xiang* Pigs

4353 Effect of Organic Iron on Growth Performance of Pigs: A Meta-Analysis
4364 Effects of Resveratrol on Meat Quality of Growing and Fattening *Ningxiang* Pigs
4373 Effect of Dietary *Bacillus coagulans* on Growth Performance and Intestinal Health of Weaned Piglets Challenged with Enterotoxigenic *Escherichia coli* K88
4384 Nutritional Value Evaluation of Wheat Stored under Different Time for Growing Pigs

POULTRY NUTRITION AND FEED

- 4395 Effects of Dietary Metabolizable Energy and Crude Protein Levels on Growth Performance and Serum Biochemical Indexes in *Beijing You* Chicken New Line Aged from 1 to 6 Weeks

4405 Effects of Natural Lutein Instead of Apolylate on Pigmenting of Skins in Different Parts of Yellow-Feathered Chicken

4415 Effects of Nisin on Growth Performance, Antioxidant and Immune Performance and Intestinal Morphology of Broilers

ZHU Zhi, JI Yiqi, HUANG Wenming,
ZUO Fuyuan
GUO Yongmei, YAN Sumei

LI Longping
WANG Jian, SHANG Qinghui, ZHANG Lianhua, PIAO Xiangshu
CHEN Meiqing, ZHANG Yangdong, ZHENG Nan, WANG Jiaqi
LI Yuqin, WANG Yue, JIANG Linshu, XIONG Benhai
XIONG Anran, XIONG Benhai, JIANG Linshu

KANG Fangfei, HE Beibei, WANG Yongwei, LI Aike
JIAN Huafeng, ZHANG Xuchun, DONG Xinyang, ZOU Xiaoting
CHEN Qingju, HU Ping, ZENG Yan, TANG Zhiru
SUN Bing, HOU Yanru, SU Lin, JIN Ye

ZHANG Yue, JIN Ye, GUO Yueying, YAO Duo

MAO Xiangbing, HU Haiyan, CHEN Daiwen, YU Bing, HE Jun, ZHENG Ping, YU Jie, LUO Junqiu, LUO Yuheng, YAN Hui
YANG Kuanmin, SHEN Yuanhang, WANG Li, JIANG Zongyong
MO Jiayuan, LU Yujie, QI Wenjing, ZHU Siran, FENG Lingli, GAO Jiuyu, LIANG Liang, WANG Hui, LAN Ganqiu, LIANG Jing
DING Haoxuan, ZHANG Qian, FENG Jie
DUAN Pingnan, YANG Ting, CHEN Jiayi, QIN Kunpeng, ZHAO Yurong
LIU Chengdong, XIAO Mingxia, ZHAO Ping, LI Qihua, BAI Huayi, CHENG Zhibin
DONG Wenxuan, ZHANG Gang, ZHAO Jinbiao, LI Zhongchao, CHOU Youcui, ZANG Jianjun, LI Xilong, NI Shouqing, LIU Ling

GENG Ailian, WANG Haihong, ZHANG Fan, CHU Qin, ZHANG Jian, YAN Zhixun, CAO Jing, ZHANG Xiaoyue, LIU Huagui
WANG Yibing, ZHANG Sheng, LI Hui, YE Jinling, FAN Qiuli, LIN Xiaojing, GOU Zhongyong, JIANG Shouqun
YANG Xiumei, CHEN Bingxu, LYU Jing, GUO Lijuan, MIN Yu'na

- 4424 Effects of Antimicrobial Peptide, Acidifier and Functional Oligosaccharide Combined Supplementation on Growth Performance, Intestinal Morphology and Cecal Microflora of Broilers
 ZHU Suiliang, LI Yue, ZHENG Xu, ZHANG Jingjing, WANG Shiqiong, ZHANG Wei, TAN Jing, WANG Fengjiu, QIAO Yingying, LIU Changzhong, WANG Zhixiang
- 4438 Effects of Long-Term Feeding Mixed Meal Diet on Laying Performance, Reproductive Organs and Ovarian Hormone Receptor mRNA Expression Level of Laying Ducks
 HUANG Xuebing, ZHANG Hanxing, LI Kaichao, WANG Shuang, XIA Weiguang, ZHANG Yanan, WANG Shenglin, LIN Yingcai, CHEN Wei, ZHENG Chuntian
- 4448 Effects of Dietary Folic Acid Supplemental Level on Reproductive Performance, Egg Quality and Serum Reproductive Hormone and Antioxidant Parameters of Primiparous Breeding Geese
 LIU Chenlong, WANG Baowei, GE Wenhua, FAN Wenlei, KONG Min, ZHANG Ming' ai, WANG Huansen, XING Yue, WANG Chao, WANG Qiaoli
- RUMINANT AND HERBIVORE NUTRITION AND FEED**
- 4456 Effects of Dietary Active Dried Yeast on Nutrient Apparent Digestibilities and Rumen Fungal Community Composition of Beef Cattle
 PENG Quanhui, YUE Shuangming, WANG Zhisheng, XUE Bai, WANG Lizhi, TIAN Gang, KANG Kun, HU Rui FU Yao, WANG Jun, LI Shengli, LU Yongqiang, QI Zhiguo, GUO Jiangpeng
- 4467 Effects of Feeding Pattern on Growth Performance, Body Size Indices and Serological Indices of Montbeliard × Holstein Crossed Calves
 LI Jialong, ZHANG Rui, WU Jianping, ZAHNG Ke, DOU Siyuan, ZENG Jinyan, LIU Ting, GONG Xuyin, WANG Jianfu, LEI Zhaomin
- 4478 Effects of Oregano Essential Oil on Growth Performance, Blood Physiological Indices, Meat Quality and Muscle Fatty Acids of *Pingliang* Red Cattle
 MA Jing, WANG Xun, SUN Lu, LIU Shujie
- 4491 Study on Microbial Diversity of Yak Milk at Different Altitudes in *Qinghai* Area
 MA Jing, CHAI Shatuo, SUN Lu, LIU Shujie
- 4502 Correlation Analysis of Conventional Nutritional Indexes of Yak Milk and Natural Forage at Different Altitudes in *Qinghai* Area
 SUN Guangming, Luosangdunzhu, Basangwangdui, Pingcuozhandui, ZHANG Qiang, JIANG Nan, JIANG Hui, Dawayangla, ZHU Yanbing
- 4511 Effects of Dietary Energy Level on Growth Performance, Body Size Increase and Serum Biochemical and Endocrine Hormone Parameters of Fattening Yaks under Stall-Feeding
 LIU Huihui, SUN Kang, FAN Huiyu, LIU Ting, ZHANG Qian, ZHENG Chen
- 4520 Effects of Tannic Acid Addition in Milk Replacer on Growth Performance, Nutrient Apparent Digestibility and Muscle Fatty Acid Composition of *Hu* Lambs
 XIAO Hongyan, QU Jintao, LIN Hao, ZHANG Ziyang, HE Youkuan, LIU Yihui, ZHANG Peihua
- 4533 Effects of Tea Polyphenols on Performance, Blood Indexes and Antioxidant Function of Dairy Goats
 LING Hao, XIAO Hongyan, ZHANG Ziyang, HE Youkuan, QU Jingtao, ZHANG Peihua
- 4541 Effects of Sanguinarine on Performance, Antioxidation and Immune Function of Dairy Goats
 YIN Decheng, CHEN Zhili, MA Youji, WANG Xia, YAN Xiaojing, AN Xuejiao
- 4549 Effects of Dietary Different Proportions of *Astragalus* By-Products on Slaughter Performance, Visceral Organ Development and Meat Quality of Sheep
 WANG Fei, HE Zhenfu, CHEN Ping, HE Chungui
- 4560 Effects of Sweet Sorghum Hay Replacement by Different Proportions of Sweet Sorghum Silage on Growth Performance, Nutrient Digestibility and Serum Biochemical Indexes of *Dezhou* Donkey Foals
 YANG Linlin, HU Yi, ZHU Bo, ZHONG Lei, WEI Zehong, TANG Tao, ZHANG Junzhi
- AQUATIC ANIMAL NUTRITION AND FEED**
- 4569 Effects of *Flammulina velutipes* Stembase on Growth, Digestive Enzyme Activities, Intestinal Tissue Structure, Muscle Quality and Serum Biochemical Parameters of Grass Carp (*Ctenopharyngodon idella*)
 CHENG Zhuo, ZHANG Guoqi, ZHOU Lu, XU Zhen, YANG Hang, LI Xiaoqin, LENG Xiangjun
- 4580 Effects of Citric Acid on Growth Performance, Nutrient Utilization, Serum Biochemical Indices and Intestinal Tissue Morphology of Grass Carp (*Ctenopharyngodon idella*)
 LUO Yating, LIU Yi, LIU Jinmeng, XIAO Tiaoyi, LIU Qiaolin
- 4592 Analysis of Muscle Nutritional Components of Different Sizes of *Procambarus clarkii* Cultured in Rice Field in *Hunan* Province
 CHEN Xuewei, LI Yang, QIN Shunyi, YANG Hua, ZHANG Jianbin
- SPECIAL ECONOMIC ANIMAL NUTRITION AND FEED**
- 4604 Effects of *L*-Carnosine on Growth and Healthy of *Canis lupus familiaris*
 WANG Jing, LI Guangran, XIAO Yuxin, DENG Yuankun, TANG Yulong, TAN Bi'e
- MOLECULAR AND CELLULAR NUTRITION**
- 4615 Regulation of N-Carbamyl Glutamate, Proline and Putrescine on Sodium Dependent Neutral Amino Acid Transporter-2 Expression and Nutrition Sensing Signaling in Jejunum and Ileum of Piglets
 CHEN Xuewei, LI Yang, QIN Shunyi, YANG Hua, ZHANG Jianbin

- 4626 Effects of Selenomethionine on Gene Differential Expression in Testis of Breeding Cocks and Function Prediction
- 4637 Mitigative Effects of Melatonin on Lipopolysaccharide-Induced Inflammation in Bovine Mammary Epithelial Cells
- 4645 Clone of Zonula Occluden-1, *Occludin* and *Claudin-15a* Genes from Hybrid Grouper (*Epinephelus fuscoguttatus* ♀ × *Epinephelus lanceolatus* ♂) and Its Expression in Intestinal Tissue under Intervention of Arginine
- 4662 Analysis of Different Selenium Sources on Regulation of Signal Pathways and Key Genes of *Pelteobrurus fulvidraco* under Low Temperature Stress Based on Transcriptome

EXPERIMENTAL METHOD AND ANIMAL

- 4675 Determination of Canthaxanthin in Egg Yolk Based on Solid-Phase Extraction and Reversed-Phase High-Performance Liquid Chromatography Method
- 4684 A Method for Simultaneous Determination of Aflatoxin B₁, Zearalenone and Deoxynivalenol in Feed by High Performance Liquid Chromatography
- 4694 Effects of *Portulaca oleracea* L. Polysaccharide on Intestinal Flora in Weaned Rats
- 4708 Effects of D-Aspartic on Antioxidant and Inflammation of Dextran Sodium Sulfate Induced Colitis of Mice
- 4719 Effects of *Staphylococcus haemolyticus*-Derived Extracellular Vesicles on Growth Performance, Immunity, Intestinal Morphology and Microbiota of Mice

SHORT COMMUNICATION

- 4730 Effects of Cadmium-Tolerant *Lactobacillus* on Body Weight, Organ Coefficients and Contents of Mineral Elements in Tissues of Cadmium-Exposed Chickens
- 4740 Effects of *Allium mongolicum* Regel Essential Oil on *in Vitro* Rumen Fermentation and Substrate Dry Matter Degradation Rate of Sheep
- 4748 Effects of Different Diet Forms on Growth Performance, Meat Performance and Blood Physiological and Biochemical Indexes of White Goats
- 4760 Effects of Dietary Fiber Level on Growth Performance, Organ Indexes, Intestinal pH and Antioxidant Capacity of Piglets with Different Weaning Weights
- 4769 Effects of Different Light Conditions on Growth Performance, Onset of Puberty and Serum Hormone Indexes of Replacement Gilts
- 4779 Effects of Adding Zinc-Montmorillonite in Low Zinc Diet on Immune Function and Zinc-Containing Enzyme Activities in Liver of Broilers
- 4791 Effects of Low Altitude House-Feeding on Growth Performance, Slaughter Performance and Muscle Quality of Yak and Cattle-Yak
- HENG Nuo, MA Xin, GUO Yong, QI Xiaolong, SHENG Xihui, WANG Xiangguo, XING Kai, XIAO Longfei, CHEN Yu, WANG Liang, NI Hemin, LI Hongyang, NAN Xuemei, SUN Peng
- CHEN Donghong, CUI Xiao, LI Guang, HE Kai, HAN Yuxuan, CHEN Guanlin, YANG Qihui, CHI Shuyan
- HU Junru, YUAN Xichen, HUANG Wen, LI Guoli, ZHANG Yufan, WANG Guoxia, ZHAO Hongxia, HUANG Yanhua
- WANG Fengqin, LIU Xin, CHENG Yuanzhi, GUO Guanqun, LU Zeqing, WANG Yizhen, LIU Ying, JIN Yongpeng, LUO Sunlin, CHEN Yiqiang
- HUANG Xiaoliu, LUO Hui, HUANG Yushan, XU Dongfeng, DENG Xianqing, WANG Weiye, HU Xian, WANG Chenyu, LIU Di, LONG Jing, FAN Wenjun, HE Liuqin, LI Tiejun, YAO Jiming, LUO Meiying, LING Mingwang, ZHAN Zhouling, ZHENG Jianghong, ZHONG Xiaotong, OU Chunxiu, LIANG Yingqian, FENG Xin, WANG Ruixiao, HUANG Dechun, ZHANG Huihua, QI Qien
- PU Junhua, CHEN Dawei, LIU Yinyin, LI Huijia, LU Junxian, ZHANG Xiaoyan, TANG Mengjun, TANG Xiujun, GAO Yushi, ZHAO Yaxing, BAI Chen, AO Changjin, LYU Kexin, XU Shanshan, WANG Xiaoyuan, BAO Zhibi, DAI Jianjun, LI Danyang, SUN Lingwei, WU Caifeng, LYU Yuhua, ZHANG Shushan, LIN Yuexia, ZHANG Defu, WEN Xiaolu, JIANG Zongyong, GAO Kaiguo, XIAO Hao, YANG Xuefen, WU Qiwen, WANG Li, PENG Jiyong, WANG Kun, ZHUO Yong, LI Jian, LIN Yan, XU Shengyu, CHE Lianqiang, FENG Bin, WU De, FANG Zhengfeng, WANG Haibo, QIN Shizhen, LI Jinlu, WU Zhenyi, GONG Liyuan, PEI Wengang, CHE Yuyan, YANG Minmin, SHI Zhaooguo, YUAN Ping, ZHANG Xiangfei, GUAN Jiujiang, AN Tianwu, LI Huade, TAN Wu, XIE Rongqing, LUO Xiaolin, JIANG Mingfeng