“首届贺兰山东麓葡萄与葡萄酒国际学术会议”

“1st International Conference on Vine and Wine in Eastern Foot of Helan Mountain”

摘要集

Abstracts

2018 年 9 月 7 日-10 日

September 7th-10th, 2018

宁夏大学

宁夏大学是教育部与自治区人民政府“部区合建”高校，国家“211 工程”重点建设高校。

宁夏大学始建于 1958 年。1997 年 12 月，宁夏大学与原宁夏工学院、银川师专（含宁夏教育学院）合并；2002 年 2 月，与宁夏农学院合并，组建了新的宁夏大学，揭开了学校改革发展崭新的一页。学校坐落在历史悠久、风光秀丽的塞上历史文化名城银川市，校园楼宇林立、花木繁茂、环境幽雅，是读书治学的理想园地。

在 50 多年的办学历程中，学校不断弘扬“不怕困难，不畏风寒，根深叶茂，本固枝荣”的“沙枣树”精神和一代代宁大人“艰苦创业、负重拼搏”的传统，勇于创新，开拓进取。特别是近年来，学校抢抓西部大开发、省部共建、中西部高校综合实力提升工程等历史性机遇，着力促进内涵发展，提高办学质量，走特色发展之路，各项事业快速发展，整体办学实力显著增强。

学校占地面积 2938 亩，教学实验农场 1890 亩。在校教职工 2627 人。面向 28 个省、自治区、直辖市招生，现有全日制普通本科在校生 17323 人，研究生 3725 人，少数民族预科生 2211 人，在校留学生 141 人。公开出版学术期刊 4 种。1995 年成为中国教育和科研计算机网（CERNET）西北地区宁夏主节点。拥有现代化的数字化图书馆和多功能体育馆。

学校现有 77 个本科专业。有 1 个国家重点学科、1 个国家重点（培育）学科，18 个自治区重点学科，8 个“十三五”自治区优势特色学科、8 个“十三五”自治区重点学科，10 个学科被选为自治区“一流学科”立项建设。6 个一级学科博士点，31 个一级学科硕士点，15 个专业硕士学位授权点。有民族学、水利工程、草学 3 个博士后科研流动站。设有能源化工、设施农业、生物技术、生态恢复、土木与水利工程、草畜产业、食品质量与安全等 12 个自治区院士工作站。现有国家级大学生校外实践教育基地 1 个、国家级教学名师 2 人、国家级精品课程 1 门、国家级精品资源共享课 1 门、国家级实验教学示范中心 1 个、国家级教学团队 3 个、国家级特色专业 8 个、双语教学示范课程建设项目 1 个、国家级大学生创新实验计划 240 项。

师资队伍中，有“长江学者奖励计划”特聘教授 1 人，国家“万人计划”哲学社会科学领军人才 3 人，国家“万人计划”青年拔尖人才 1 人，教育部“长江学者和创新团队发展计划”创新团队 2 个，自治区科技创新团队 9 个。柔性引进院士 29 人，柔性引进知名专家 34 人。入选国家“百千万人才工程”第一、二层次 7 人，入选国家“百千万人才工程”第三层次 15 人，1 人获国家科技进步二等奖，3 人获“国家有突出贡献的中青年专家”称号，2 人获“国家级教学名师奖”，1 人获全国宣传文化系统“四个一批”人才称号，16 人享受“国务院特殊津贴”，17 人享受“自治区政府特殊津贴”，13 人入选教育部“新世纪优秀人才支持计划”，3 人被遴选为教育部普通高校学科教学指导委员会委员，4 人入

选宁夏回族自治区“塞上英才”工程，14 人入选宁夏回族自治区“海外引才百人计划”，11 人入选宁夏回族自治区“国内引才 312 工程”，20 人入选宁夏回族自治区“313 人才工程”，2 人入选宁夏回族自治区“青年拔尖人才培养工程”国家级学术技术带头人后备人选，4 人入选宁夏回族自治区“青年拔尖人才培养工程”自治区级学术技术带头人后备人选，1 人入选宁夏回族自治区“青年拔尖人才培养工程”自治区优秀青年后备骨干人选。2 人获宁夏回族自治区宣传文化系统“四个一批”人才称号。

学校拥有一批水平先进、设施完善的实验室和科研基地。现有省部级科技创新平台 35 个，各学科领域实验室 93 个。煤炭高效利用与绿色化工重点实验室为省部共建国家重点实验室，西北土地退化与生态恢复重点实验室为省部共建国家重点实验室培育基地，宁东基地煤化工资源循环利用实验室为国家地方联合工程实验室，宁夏大学阿拉伯研究中心为教育部区域和国别研究培育基地，西部特色生物资源保护与利用重点实验室、西北退化生态系统恢复与重建重点实验室为教育部重点实验室，中阿旱区特色资源开发与环境治理实验室为教育部国际合作联合实验室，葡萄与葡萄酒工程研究中心、旱区现代农业水资源高效利用工程研究中心为教育部工程研究中心，西夏学研究院为教育部人文社科重点研究基地。建有国家级新农村发展研究院。获批建设了国家大学科技园。

学校始终坚持以人为本，不断提高人才培养质量。强化人才培养的中心地位，按照“基础扎实、人格健全、具有社会适应能力和发展潜力”的目标培养创新型人才，确定了“加强基础、强化实践、发展特长、注重创新、分流培养”的教学改革思路，并且通过构建两个方案（专业培养方案、人格培养方案）、完善两个体系（“四位一体”课堂教学质量评价体系和教学质量监控体系）、打造五个平台（通识教育平台、教师教育平台、课程建设平台、学生实践能力培养平台、学生创新能力培养平台）加以实施。学校力求通过努力，使所有本科生以不同方式参与创新精神和创新能力的培养活动，并且使其中 30%的学生具备一定的创新能力。

面向未来，学校将进一步坚持“以人为本、科学发展、争创一流、依法治校和综合改革”的原则，推进学校特色发展、创新发展和可持续发展，为把宁夏大学建设成为“区域特色鲜明、服务地方能力突出、西部一流的高水平教学研究型大学”而努力奋斗。

Ningxia University

Ningxia University (NXU), situated in the city of Yinchuan in the northwest part of China and founded in 1958, is one of China’s national key “211 project” universities and one of "Co-construction universities of departments and districts" of ministry of education and Ningxia Autonomous region. In December 1997, theformer Ningxia University merged with the former Ningxia Institute of Technology and Yinchuan Teachers College; in February 2002, it merged with Ningxia Agricultural College to form the present Ningxia University. Ningxia University totally consists of 24 shcools and 77 undergraduate disciplines, including 1 national key discipline, 1 national key discipline under cultivation, 18 autonomous region key disciplines, 8 "The 13th Five-Year Plan" regional superior-characteristic disciplines, 8"The 13th Five-Year Plan" regional key disciplines, 10 disciplines underthe construction of regional"first-class disciplines".

Ningxia University has a number of advanced and well-equipped laboratories andresearchbases,including 35 ministerial- and provincial- level scientific and technological innovation platforms and 93 laboratories in various disciplines. Since "The 13th Five-Year Plan", Ningxia University has undertaken more than 2200 scientific research projects at the autonomous-region level or above, and has won 25 autonomous-region science and technology progress awards and 164 autonomous-region social science outstanding achievement awards. Ningxia University is striving to build itself into a "high-level teaching and research university with distinctive regional characteristics, outstanding service capacity and western first-class level".

宁夏自治区葡萄产业发展局

2014 年 10 月，自治区成立了宁夏贺兰山东麓葡萄产业园区管理委员会(下设办公室，与自治区葡萄产业发展局一个机构、两块牌子)。管委会对贺兰山东麓葡萄产业文化长廊建设实行统一领导、统一规划、统筹建设、协调管理，管委会办公室履行地、市级部分经济管理权限。自治区葡萄产业专门管理机构的成立，在全国首开先河，在国际葡萄酒界也引起了瞩目，充分体现了自治区党委、政府大力发展葡萄产业的信心和决心。

管委会及办公室成立运行以来，积极贯彻落实自治区党委、政府赋予的职能，认真履行“三统一、一管理”职责，从顶层设计上研究推出了一些开创性举措，推动了宁夏产区与国际知名产区对标发展；组织出台了一系列行业标准，确立了国内领先地位；促进了葡萄产业一二三产融合发展，综合效益逐步显现；吸引集聚了一批高层次专业人才，为产业发展提供了有力的智力支撑；推动了宁夏与国内外的交流合作，提升了宁夏的对外开放水平，产业发展质量和效益不断提升。截至目前，全区葡萄种植面积达到 57 万亩，建成酒庄 86 个，年产葡萄酒 1.2 亿瓶，综合产值超过 200 亿元，葡萄酒已成为宁夏独具特色的“紫色名片”。2017 年，宁夏贺兰山东麓葡萄酒品牌价值达 271.44 亿元，位列中国地理标志产品区域品牌榜第 14 位。2016 年，习近平总书记来宁视察时指出:“中国葡萄酒市场潜力巨大。贺兰山东麓酿酒葡萄品质优良，宁夏葡萄酒很有市场潜力，综合开发酿酒葡萄产业，路子是对的，要坚持走下去”。

Administration of Development of Grape Industry of Ningxia

In October 2014, our autonomous region set up the Management Committee of Grape Industry Park and its office at the Helan Mountain's East Foothill in Ningxia (also called the Grape Industry Development Bureau of Ningxia Autonomous Region, they are the same organization, but two names). The management committee has the authority of unified leadership, unified planning, overall planning, coordinated management, administrative committee office, and municipal economic management over the construction of the cultural corridor of grape industry in the Helan Mountain's East Foothill. The establishment of the special management agency of grape industry in our autonomous region has been the first in the country, and it has also aroused the attention of the international wine world, which fully reflects the confidence and determination of the autonomous regional party committee and the government to vigorously develop the grape industry.

Since the establishment and operation of the Administrative Committee and the Office, it has actively carried out the functions entrusted to it by the party committee and government of our autonomous region, conscientiously carried out the duties of "three unification and one management," and has studied and pushed forward some pioneering measures from the top level design, promoting the development of Ningxia Region under the standards of international premium wine regions; it has issued a series of industry standards and established a leading position in the country; it has promoted the integration and development of the primary, secondary and tertiaty industries of the grape industry and gradually displayed comprehensive benefits; it has gathered a number of high-level professionals and provided a strong intellectual support for the development of industry; it has promoted the exchange and cooperation between Ningxia and domestic and foreign countries, and the level of Ningxia's opening to the outside world, so the quality and efficiency of industrial development have been improved. Up to now, the area of grape cultivation in the whole region has reached 570,000 mu, 86 wineries have been built, with an annual production of 120 million bottles of wine, with a comprehensive output value of more than 20 billion yuan. Wine has become a unique "purple card" of Ningxia. In 2017, the brand value of the wine of the Helan Mountain's East Foothill reached 27.144 billion Yuan, ranking 14th in the list of China's Geographical Indication Product Region. "China's wine market has great potentials. The quality of wine grape of the Helan Mountain's East Foothill is excellent, and Ningxia's wine has tremendous market potentials. The road of comprehensive development of wine grape industry is right, so we must adhere to it and go it on." Said General Secretary Xi Jinping during his visit to Ningxia in 2016.

主办方专家简介

Organizing Committee

张军翔，教授，宁夏大学葡萄酒学院副院长。主要从事埋土防寒产区葡萄栽培模式和葡萄酒酿造方面的研究，近 5 年发表相关论文 50 余篇，出版论著 2 部。

Dr. Junxiang Zhang, professor, the vice dean of the Wine School of Ningxia University. Heis studying on patterns of viticulture and chemistry of enology in Soil-Buried and Cold-Proof Wine Regions. He published more than 50 papers and 2 books in the recent 5 years.

张亚红，教授，博士生导师，宁夏大学葡萄酒学院院长，研究方向为设施葡萄需冷及需热量研究、设施园艺环境等，发表论文 80 余篇，主编专著 1 部，教材 1 部。

Dr. Yahong Zhang, professor, Doctoral Supervisor, the dean of the Wine School of Ningxia University. Sheis studying on cold and heat requirement of facility grape and facility horticultural environment.He has published more than 80 papers.

徐伟荣，博士，副教授，硕士生导师。美国农业部农业研究中心访问学者。研究方向为葡萄分子育种。发表学术论文 20 余篇。

Dr. Weirong Xu, Associate professor, Master Supervisor. He was the visiting scholar in ‘Appalachian Fruit Research Station’ in US for one year. He is studying on grape molecular breeding. He has published more than 20 scientific papers.

金刚，博士，讲师。西北农林科技大学与阿德莱德大学联合培养博士。主要研究方向：发酵工程、酿酒微生物资源开发与利用、葡萄酒新工艺等。

Dr. Gang Jin, Lecturer.His doctoral thesis was jointly directed by Northwest A&F University and Adelaide University. He is studying on fermentation engineering, development and utilization of wine microbial resources, and new technology for enology.

王锐，博士，副教授。宁夏土壤学会理事，宁夏生态学会理事，国家现代农业技术体系贺兰山东麓葡萄实验站土肥水专家。主要从事干旱区土壤、水资源和肥料高效利用研究。

Dr. Rui Wang, Associate professor. Heis studying on soil and water resources in arid area and efficient utilization of fertilizer.

顾沛雯，博士，教授，硕导。中国植物病理学会理事。先后主持国家、省部级项目 10 余项。获省部级科技进步奖 5 项，发表论文 40 余篇，编写教材 2 部。

Dr. Peiwen Gu, PhD, professor, Master Supervisor, director of Chinese society of plant pathology.She is studying on disease and insect pest in vineyard.

毛凤玲，教授。宁夏回族自治区十二届人大代表。主要承担“葡萄酒文化旅游研究专题”“葡萄酒旅游学”等课程的讲授工作。主持自治区哲学社会科学研究项目 2 项；主持教育厅质量工程项目 1 项；主持教育厅本科工程 3 项；出版著作一部；发表论文 15 篇。

Ms. Fengling Mao, Professor. She is the director of the major of Wine Tourism.

徐国前，博士，讲师，宁夏回族自治区引进高层次人才，主攻方向为葡萄栽培与酿酒、葡萄酒营养。为宁夏现代农业技术支撑体系葡萄酿酒产业专家，为区内外多家酒庄作技术指导。参与或主持国家科技攻关、国家自然科学基金和宁夏回族自治区自然科学基金、宁夏回族自治区农业推广等项目多项，发表论文 10 余篇；现致力于埋土防寒区葡萄园标准化、集约化、机械化省工生态栽培研究与技术推广工作。

Dr. Guoqian Xu, Lecturer, He is studying on viticulture and grape nutrition.

孙悦，博士，讲师。西北农林科技大学与美国加州大学戴维斯分校联合培养博士。主要研究方向：酿酒微生物的选育、发酵性能及代谢产物研究，

Dr. Yue Sun, Lecturer. Her doctoral thesis was jointly directed by Northwest A&F University and University of California, Davis.She is studying on breeding, fermentation property analysis and metabolite of wine microorganism.

李茹一，讲师，澳大利亚阿德莱德大学葡萄酒科学与商业学博士。主要研究方向：葡萄酒市场学及品尝学。

Dr. Ruyi Li, Lecturer. PhD of Wine Science and Business of UniversityofAdelaide, Australia. She is studying on wine marketing and wine tasting.

张宁波，讲师，西北农林科技大学硕士。主要研究方向葡萄与葡萄酒化学。

Ms. Ningbo Zhang, Lecturer. Master of Northwest A&F University. She is studying on grape and wine chemistry.

马雯，讲师，西北农林科技大学与法国波尔多大学联合培养博士。法国波尔多大学博士后，主要研究方向葡萄酒化学及感官分析。

Dr. Wen MA, Lecturer. Her doctoral thesis was jointly directed by Northwest A&F University and University of Bordeaux.She did her post-doc research in University of Bordeaux. She is studying on wine Chemistry and sensory analysis of wine.

牛一凡，助教。西班牙布尔戈斯大学硕士。古巴哈瓦那大学对外西班牙语专业本科。专业方向：葡萄酒旅游与文化。

Ms. Yifan Niu, Assistant professor. She got her Master and bachelor degree from Universidad De Burgos (Spain) and UniversidaddeLaHabana (The Republic of Cuba). She is studying on Wine tourism.

陈小艺，助教。宁夏大学葡萄酒学院教学办公室职员。宁夏大学葡萄与葡萄酒专业硕士。专业方向：葡萄酒文化鉴赏。

Ms. Xiaoyi Chen, Assistant professor. She works in teaching office of Wine School ofNingxia University. She got her Master degree on viticulture and enology from Ningxia University. She is studying on cultural appreciation of wine.

刘娜，助教。宁夏大学葡萄酒学院综合办公室职员。宁夏大学葡萄与葡萄酒专业硕士。专业方向：葡萄酒发酵工艺。

Ms. Na Liu, Assistant professor. She works in central office of Wine School ofNingxia University. She got her Master degree on viticulture and enology from Ningxia University. She is studying on Enology.

周星辰，助教。宁夏大学葡萄与葡萄酒学硕士。宁夏大学葡萄酒学院教学办公室职员。专业方向：葡萄病虫害防治。

Mr. Na Liu, Assistant professor. He works in teaching office of Wine School ofNingxia University. He got her Master degree on viticulture and enology from Ningxia University. He is studying on disease and insect pest in vineyard.

会议日程

日期		时间	报告人单位	报告人	职称/职务	报告题目
9 月 7 号		全天报到				
9 月 8 号	上午 主持人：房玉林	8:00-8:30	开幕式（主持人：张军翔）			
		8:35-8:50	合影留念			
		8:50-9:20	西北农林科技大学	李华	教授/终身名誉院长	中国产区葡萄酒感官特征研究
		9:20-9:40	茶歇			
		9:40-10:10	西北农林科技大学	王跃进	教授	中国野生葡萄品种的研究与应用简介
		10:10-11:45	美国俄亥俄州立大学	伊梅德·达米	教授	葡萄冷胁迫在抗寒中的应用研究进展
		10:45-11:00	美国俄亥俄州立大学	王洪睿	硕士研究生	对 Imed Dami 报告内容中的技术问题进行阐述
		11:00-11:50	美国密苏里州立大学	邱文平	教授	诺顿葡萄：从基因表达到培育抗逆性新品种
		12:00-13:50	午餐及休息			
	下午 主持人：房经贵	14:30-15:30	澳大利亚阿德莱德大学	弗拉迪米尔·吉拉内克	教授/食品葡萄酒负责人	深入研究酵母行为并发现全新菌种
		15:30-16:30	意大利佛罗伦萨大学	保拉·多米齐奥	助理教授	酵母、甘露蛋白与葡萄酒品质
		16:30-16:50	茶歇			
		16:50-17:20	西北农林科技大学	刘延琳	教授	贺兰山东麓本土酵母的研究与应用
		17:20-17:50	甘肃农业大学	韩舜愈	教授/院长	河西走廊产区葡萄酒安全快速评价方法的建立
		17:50-18:20	宁夏大学	张军翔	教授/副院长	贺兰山东麓产区红葡萄酒的陈酿特性研究
		19:00-21:00	晚宴			

9 月 9 号	上午 主持人：邱文平	8:00-8:30	中国农业大学	段长青	教授/国家葡萄产业体系首席科学家	地面处理对贺兰山东麓葡萄园‘赤霞珠’葡萄果实和葡萄酒香气品质的影响
		8:30-9:00	南京农业大学	房经贵	教授/副院长	分子农业在葡萄产业中的应用
		9:00-9:30	西北农林科技大学	房玉林	教授/院长	浅谈酿酒葡萄的简约化栽培模式
		9:30-9:50	茶歇			
		9:50-10:20	北京农学院	李德美	副教授	中国消费者葡萄酒消费倾向研究初步分析
		10:20-10:50	新疆农业大学	杨新元	教授/院长	中国葡萄酒活化石--慕萨莱斯工艺特点
		10:50-11:20	西北农林科技大学	陶永胜	教授	葡萄萜烯类香气糖苷的化学模式及其酵母酶促增香机制
		11:20-11:50	宁夏气象科学研究所	张晓煜	研究员	宁夏酿酒葡萄风土区划初探
		11:50-14:00	午餐及休息			
	下午 主持人：张军翔	14:30-14:50	宁夏大学	顾沛雯	教授	宁夏贺兰山东麓酿酒葡萄霜霉病监测方法研究
		14:50-15:10	华中农业大学	张秀艳	副教授	宁夏贺兰山东麓葡萄产区酵母收集及开发利用
		15:10-15:30	宁夏大学	徐伟荣	副教授	山葡萄抗寒优异基因挖掘与种质创新研究
		15:30-15:50	宁夏大学	张光弟	教授	宁夏贺兰山东麓葡萄材料覆盖越冬防寒栽培研究与应用
		15:50-16:10	茶歇			
		16:10-16:30	宁夏大学	王锐	副教授	化肥减施对贺兰山东麓土壤肥力及酿酒葡萄品质的影响
		16:30-17:00	西部电子、中国科学院	耿洪良	副总经理	基于全产业链的智慧葡萄生产与溯源体系设计
		17:00-17:20	宁夏林业研究院有限公司	徐美隆	副研究员	几个葡萄砧木品种对干旱的应答
		18:00-20:30	晚餐（自助餐）			
9 月 10 号	9:00-17:00		宁夏国际葡萄酒交易博览中心及宁夏葡萄酒庄参观学习			

Program

Date		Time	Affiliation	Reporter	Job Title/Position	Report Topic
Sept. 7		Registration for all day				
Sept. 8	AM. Host: Yulin Fang	8:00-8:30	Opening ceremony (Junxiang Zhang)			
		8:35-8:50	Group photo			
		8:50-9:20	Northwest A&F University	Hua Li	Professor/ Honorary dean	Study on Sensory Characteristic of Wines from different regions in China
		9:20-9:40	Coffee break			
		9:40-10:10	Northwest A&F University	Yuejin Wang	Professor	Brief Introduction of Studying and Using for Chinese Wild Vitis Species
		10:10-11:45	Ohio State University, USA	Imed Dami	Professor	Grapevine and Cold Stress: Applied Research Advances in Cold Mitigation
		10:45-11:00	Ohio State University, USA	Hongrui Wang	M.Sc student	Technical explanation of the reports of Dr. Dami
		11:00-11:50	Missouri State University, USA	Wenping Qiu	Professor	The fascinating ‘Norton’ grape: from gene expression to breeding new cultivars for stress tolerance
		12:00-13:50	Lunch			
	PM. Host: Jinggui Fang	14:30-15:30	University of Adelaide，Australia	Vladimir Jiranek	Professor/leading official of Food Wine	Better understanding yeast behavior and finding entirely new strains
		15:30-16:30	University of Florence, Italy	Paola Domizio	Assistant professor	Yeasts, mannoproteins and wine quality
		16:30-16:50	Coffee break			
		16:50-17:20	Northwest A&F University	Yanlin Liu	Professor	Study and Application of Native yeast in the Eastern foot of Helan Mountain
		17:20-17:50	Gansu Agricultural University	Shunyu Han	Professor/ Dean	Establishment of Safe and Rapid Evaluation Method of Wine in Hexi Corridor Region
		17:50-18:20	Ningxia University	Junxiang Zhang	Professor/ Vice Dean	Study on aging characteristics of red wine in Helan Mountain’s East Foothill
		19:00-21:00	Banquet			

Sept. 9	AM. Host: Wenping Qiu	8:00-8:30	China Agricultural University	Changqing Duan	Professor/Chief scientist of the national grape industry system	Effects of Ground Managements on the Aroma Quality of 'Cabernet Sauvignon' Berries and Wines for East Helan Mountain Vineyards
		8:30-9:00	Nanjing Agricultural University	Jinggui Fang	Professor/ Vice Dean	Molecular Farming in Grape Industry
		9:00-9:30	Northwest A&F University	Yulin Fang	Professor/ Dean	Preliminary Study on The Light and Simplified Cultivation Mode of Wine Grapes in Northwest China
		9:30-9:50	Coffee break			
		9:50-10:20	Beijing University of Agriculture	Demei Li	Associate professor	A Preliminary Results of Research on Chinese Consumers' Preference on Wine
		10:20-10:50	Xinjiang Agricultural University	Xinyuan Yang	Professor/ Dean	The Characteristics of Xinjiang Musalais—Living Fossle of Chinese wine–Making Technology
		10:50-11:20	Northwest A&F University	Yongsheng Tao	Professor	Chemical Profile of Terpene Glycosides in Grapes and Its Yeast Enzymatic Catalysis
		11:20-11:50	Ningxia Institute of Meteorology	Xiaoyu Zhang	Researcher	A Preliminary Study on Terrior Regionalization of Wine Grapes in Ningxia
		11:50-14:00	Lunch			
	PM. Host: Junxiang Zhang	14:30-14:50	Ningxia University	Peiwen Gu	Professor	Studies on The Epidemical Regularity and Monitoring Method of Downy Mildew Disease of Wine Grape in Eastern Foot Of Helan Mountain, Ningxia
		14:50-15:10	Huazhong Agricultural University	Xiuyan Zhang	Associate professor	Collection and utilization of yeasts from viny region from eastern foot of Helan Mountain in Ningxia
		15:10-15:30	Ningxia University	Weirong Xu	Associate professor	Research progress of Favorable Gene Mining from *Vitis amurensis* and Germplasm Innovation
		15:30-15:50	Ningxia University	Guangdi Zhang	Professor	Study and Application on Materal Cover Overwintering for grapevine Planting at the Eastern Foot Helan Mountainof Ningxia
		15:50-16:10	Coffee break			
		16:10-16:30	Ningxia University	Rui Wang	Associate professor	Effect of Chemical Fertilizer Reduction on Soil Fertility and Wine Grape Quality in the East Piedmont Area of Helan Mountain, Ningxia

		16:30-17:00	Western electron & Chinese Academy of Sciences	Hongliang Geng	Vice-general manager	Design of Wisdom Grape Production and Traceability System Based on Whole Industry Chain
		17:00-17:20	Ningxia Forestry Research Institute Co., Ltd.	Meilong Xu	Associate Researcher	Responses of several Grape Rootstock Varieties to drought
		18:00-20:30	Dinner (Buffet)			
Sept. 10	9:00-17:00		Visiting Ningxia International Wine Trade Expo Center Wineries of Ningxia			

邀请嘉宾简介
及报告摘要

Introduction of Invited Speakers

& Abstracts

李华

Hua Li

李华，男，汉族，重庆梁平人，中共党员，二级教授，博士生导师，法国波尔多第二大学葡萄与葡萄酒学博士，葡萄酒学院终身名誉院长。创办了亚洲第一所葡萄酒学院，奠定了我国葡萄与葡萄酒工程学科的科学基础。

获国家级教学团队 1 个，国家级精品课程 2 门，国家级规划教材 1 部，获评国家级教学名师。在葡萄优质抗病育种、葡萄酒工艺学、葡萄酒品尝学等方面取得丰硕成果。先后主持完成国家、省部级项目 40 余项，培育优质抗病葡萄新品种 2 个，新品系 3 个，开发新产品 20 余种，9 项科研成果鉴定，获 28 项专利，出版专著 23 部，发表论文 400 余篇，主办国际会议 17 次。

获国家科技进步二等奖 1 项，省部级科学技术一等奖 2 项，二等奖 4 项，三等奖 3 项，其他科技奖 20 余项。先后获"五一"劳动奖章、全国先进科技工作者、国家突出贡献专家、国家百千万人才工程第一层次人选等 20 多项国家级、省部级荣誉称号。曾任第九、十届全国人大代表，全国青联常委，第四、第五届国务院学位委员会学科评议组成员，国际葡萄与葡萄酒组织（OIV）亚洲葡萄与葡萄酒科技发展中心主任，中国葡萄酒技术委员会副主任委员，中国食品工业协会葡萄酒果酒专家委员会主任委员，国务院食品安全委员会专家委员等 50 余项任职和兼职。

王跃进

Yuejin Wang

王跃进，西北农林科技大学教授，美国佛罗里达农工大学博士后，博士生导师，现任西北农林科技大学国家重点学科果树学学科学术带头人，是陕西省"三五人才"，国务院政府特殊津贴获得者；教育部跨世纪优秀人才。兼任农业部西北园艺作物生物学与种质创制重点实验室主任；国务院学位委员会第五、六、七届学科评议组成员；教育部农业推广硕士专业学位教育指导委员会委员；教育部高等学校实验教学指导委员会副主任委员；中国园艺学会常务理事；陕西省园艺学会理事长；陕西省科协副主席；陕西省学位委员会第三届委员、陕西省学位委员会学科评议组成员；《中国农学通报》副主编、《西北植物学报》副主编、《园艺学报》、《果树学报》、《中外葡萄与葡萄酒》、《西北农林科技大学学报》（自然科学版）、《研究生教育研究》等编委会委员。主要研究方向为果树种质资源与遗传育种；果树功能基因研究与应用。主持及完成了国家自然科学基金 9 项、国家“863”等科技项目。获得国家授权发明专利 10 项。在国际 GenBank 数据库提交与葡萄抗逆、无核有关的基因序列、EST 序列等 6000 多条。发表论文 230 多篇，其中 SCI 论文 60 多篇。获陕西省科学技术进步奖一等奖一项、二等奖一项。

中国野生葡萄的研究与利用现状

介绍中国野生葡萄的分布和类型，研究中国野生葡萄的主要性状，品种选育和直接酿造葡萄酒情况。此外，还进行了中国野生葡萄品种基因的功能分析和进一步研究。第三，结合国内外葡萄与葡萄酒的实际与宁夏的现状，提出了对宁夏葡萄与葡萄酒的思考与建议。

Brief Introduction of Studying and Using for Chinese Wild *Vitis* Species

The presentation showed the distribution and types of Chinese wild *Vitis* species, research on the main characters of Chinese wild *Vitis* species, breeding for varieties and wine-making used directly. Additionally, the functional analysis and further research of genes of Chinese wild *Vitis* species were demonstrated in thispresentation.Thirdly, combining the actual situation of grapes and wine at domestic and abroad with the current situation of Ningxia, the presentation puts forward some suggestions and suggestions for Ningxia grape and wine.

段长青

Changqin Duan

段长青博士，教授，博士生导师，国家高级酿酒师，国家高级品酒师

中国农业大学葡萄与葡萄酒研究中心主任

国家葡萄产业技术体系首席科学家

农业部葡萄酒加工重点实验室主任

中国葡萄酒技术委员会主任

中国葡萄（果）酒专家委员会主任

中国园艺学会葡萄与葡萄酒分会执行理事长兼秘书长

中国农学会葡萄分会副理事长

Dr. Changqing Duan, Professor, Senior winemaker and Senior Wine Taster

Director of Center for Viticulture & Enology, China Agricultural University

Chief Scientist of China Agriculture Research System for Grape Industry

Director of Key Laboratory for Viticulture & Enology, Ministry of Agriculture

Director of China Wine Technology Committee

Director of China Wine Expert Committee

Secretary-General & Exc-President of China Society for Viticulture & Enology, CSHS

Vice-President of China Society for Grape, CAASS

艾米德戴密

Imed Dami

Imed Dami 教授于科罗拉多州立大学获得博士学位，曾先后进入弗吉尼亚理工大学及南伊利诺伊大学从事葡萄种植相关研究并成功带领了伊利诺伊州葡萄及葡萄酒产业的发展。Dami 教授于 2003 年入职俄亥俄州立大学并担任教授及俄亥俄州首席葡萄种植专家至今。他的研究方向主要包括葡萄的抗寒机制及研发新式葡萄防冻措施，利用栽培技术提高葡萄及葡萄酒品质，以及葡萄种质资源评估。

Dr. Dami received his advanced education at Colorado State University and worked as a Viticulture Extension Associate and State Viticulture Specialist at Virginia Polytechnic Institute and State University, and Southern Illinois State University, respectively. In 2003, Dr. Dami joined The Ohio State University and began working as professor and State Viticulture Specialist in Ohio till now. Dr. Dami’s research interests include cold hardiness of grapevines and developing methods of cold protection; improving fruit and wine quality using cultural practices; and germplasm evaluation.

葡萄与冷胁迫：预防冻害的最新研究进展

冻害是严重威胁美国冷凉产区葡萄可持续化生产的主要环境因素。一些葡萄品种能够通过自我调控一系列抗寒机制以适应零下 20 度或者温度更低的环境。由于具有较高的果实品质及较好的酿酒特性，欧亚种葡萄是目前在世界范围内的栽种范围最大的品种。但是由于其抗寒性较差，多种欧亚种葡萄的种植生产在美国东部地区常年受到冻害影响。在本次会议中，影响葡萄抗寒性的各种因素会被简要说明，同时也会介绍一些在戴米实验室开展的关于葡萄冬季冻害及预防措施的最新研究。

Grapevine and Cold Stress: Applied Research Advances in Cold Mitigation

Cold damage is the most limiting environmental factor that hinders the sustainable grape production in the cold regions of the U.S. Grapevines have adapted to cold stress by developing mechanisms that enable them to survive extreme low temperatures of -20C or lower depending on the genotype. Due to its desired fruit and wine quality, Vitis vinifera is the most widely planted species worldwide. However, this species is cold tender and several cultivars sustain damage on a regular basis in eastern U.S. At this conference, factors affecting cold hardiness of grapevines will be presented. Research advances, from the Dami Laboratory, in dealing with winter-damaged vines and mitigating cold damage will also be communicated.

邱文平

Wenping Qiu

邱文平，美国密苏里州立大学教授，密苏里州立大学葡萄分子生物技术研究所主任，他的研究小组致力于研究葡萄中新出现的病毒的分子流行病学，并通过功能基因组学了解诺顿葡萄的抗病性。他带头的国家中西部葡萄脱毒中心为提供脱毒葡萄进行病毒测试。邱文平于 1997 年获北卡罗来纳州立大学植物病理学博士学位，是密苏里州大学植物科学系和中国农业大学植物科学系的外聘教授，同时也是宁夏苗木生物工程国家重点实验室植物病毒检测与预防领域的首席专家。2010 年，他被中国宁夏回族自治区授予“100 名优秀人才”的称号。

Dr. Wenping Qiu is Clif & Gail Smart Endowed Professor in Agriculture and Director of the Center for Grapevine Biotechnology in the W. H. Darr College of Agriculture, Missouri State University. His research group focuses on the molecular epidemiology of new emerging viruses in grapevines and understanding of Norton grape’s disease resistance through functional genomics. He directs the Midwest Center of National Clean Plant Network-Grapevine that provides clean grapevines and services of testing viruses.

Wenping Qiu received his Ph. D. degree in Plant Pathology from North Carolina State University in 1997. Wenping Qiu is also an Adjunct Faculty in the Division of Plant Sciences in the University of Missouri and in China Agricultural University. He is appointed as Chief Scientist in the areas of plant virus detection and prevention in The State Key Laboratory of Seedling Bioengineering, Ningxia, China. In 2010, he was awarded with One of the 100 Talents by Ningxia Hui Autonomous Region, China.

诺顿葡萄：从基因表达到培育抗逆性新品种

由于春寒和病害的原因，在美国中西部地区种植葡萄是很有挑战性的。然而，“诺顿”这种红色品种葡萄已经在美国种植了 180 多年，并在东南部和中西部用于生产优质葡萄酒。诺顿是葡萄属的一个偶然获得的杂交种，也是一个未经证实

的葡萄品种，具有较高的抗逆性尤其是对温度的耐受性。我们以诺顿为材料，研究了抗逆性和基因调控在受胁迫和浆果发育中的分子机制。我们发现，与抗病草本植物相比，诺顿对白粉病菌具有明显的先天防御作用。在浆果发育过程中，诺顿在黄酮类化合物的合成过程中也表现出独特的基因表达和生物合成特性。最近，我们发现诺顿对中西部葡萄藤上出现的一种导致植株衰弱的病毒也有抵抗力。我们用诺顿和赤霞珠进行杂交，并对 7 个子代进行了评价，其中一个白色品种已被酿制成风味独特的白葡萄酒，有可能成为一个新品种。从多年的历史和研究中，我们了解到，必须实施一项引进、培育和选择适合区域的葡萄品种的战略计划，从而维持区域葡萄和葡萄酒产业的发展。该项目还以提供新的品种和宝贵的种质资源来了解葡萄的抗胁迫的生物学和遗传学特性。

The fascinating ‘Norton’ grape: from gene expression to breeding new cultivars for stress tolerance

It is challenging to grow grape cultivars of *Vitis vinifera* in the Midwest of the United States due to unpredictable spring freezing and high disease pressure. However, the ‘Norton’ grape has been grown in the US for more than 180 years as a red varietal for making high quality wine in the Southeast and Midwest. ‘Norton’ is an incidental hybrid of *Vitis aestivalis* and a cultivar of *V. vinifera* with unconfirmed identity. It is highly resistant to fungal pathogens and tolerant of freezing and fluctuating temperatures. We have used ‘Norton’ as a model to study molecular mechanism of disease resistance and gene regulation in stress tolerance and berry development. We found that ‘Norton’ has distinct innate defense to the powdery mildew fungus (Erysiphe necator) by regulating gene expressions constitutively in comparison with disease-resistant herbaceous plants. ‘Norton’ also exhibits unique patterns of gene expressions and biosynthesis in the pathway of flavonoid compounds during berry development. Recently, we discovered that ‘Norton’ is also resistant to a debilitating virus emerging on grapevines in the Midwest. We have made crosses of ‘Norton’ with ‘Cabernet Sauvignon’ and evaluated seven selected varieties; a white variety has been made into white wine of distinct flavor and has potential to become a new cultivar. From years of history and research, we learn that a strategic program for introducing, breeding and selecting regionally adapted grape cultivars must be implemented to sustain the regional grape and wine industry. The program also will contribute new cultivars and provide valuable germplasm for understanding grapevine’s stress-tolerant biology and genetics.

伊梅德·达米

Vladimir Jiranek

澳大利亚阿德莱德大学农业、食品和葡萄酒学院葡萄酒与食品系主任、教授；加拿大英属哥伦比亚大学兼职教授；澳大利亚科学研究工作委员会（Australian Research Council）葡萄酒产品创新训练中心主任。主要从事葡萄酒微生物学和生物技术教学领域的工作，研究核心是葡萄酒、啤酒生产过程中对微生物的开发及优化利用。Vladimir Jiranek 的课题组研究发酵过程中酵母与细菌的多个方面，特别是快速发酵的基因学基理。同时他们也关注了酿酒微生物的“自然规律”，包括研究它们之间如何传递信号以使种群得以存活，以及如何与其他生物之间传递信号，并吸引这些生物（例如果蝇）来帮助本不能运动的酵母得以传播和存活。Vladimir Jiranek 经常考察世界各大葡萄酒产区，参加各种国际会议，也是很多国际顶级期刊的审稿人，他的学生遍布世界上各个葡萄酒产区，许多著名的酿酒师、以及葡萄酒产业或相关研究机构中的重要人物都参与过他的项目。

更好的理解酵母的行为习性及寻找全新的菌株

葡萄酒的酿造过程给葡萄酒酵母和细菌带来多重的挑战，这些会给工艺过程带来不确定性。此外，非传统的菌株会通过新陈代谢贡献增强葡萄酒感官特性的机会。我们的研究的两个突出的方面在于：1）从基因组水平上定义酵母氮利用效率基因；2）探寻新的微生物菌株。前者承认酵母可吸收氮的关键价值，事实上酵母可吸收氮通常是有限的，通过删除来鉴定基因，因此代谢途径对于酵母可吸收氮的利用效率具有重要作用。第二个领域的目标是鉴定从非接种发酵分离的菌株或新的与葡萄酒酿造无关的方法得来的菌株。以期获得有不寻常特性的菌株。本研究将展示这些最新的发现。

Better understanding yeast behavior and finding entirely new strains

Winemaking presents multiple challenges for wine yeast and bacteria that can result in uncertainty in process reliability. In addition, there remain opportunities to enhance the sensory properties of wine through the metabolic contribution made by non-traditional strains. Two aspects of our research will be highlighted here: 1) genome-wide approaches to define genes for yeast nitrogen efficiency and 2) bio-prospecting for novel microbial strains. The former recognises the critical importance of yeast assimilable nitrogen (YAN) to successful fermentation, the fact that YAN is typically limiting and the opportunities presented by deletion collections to identify genes and therefore metabolic pathways important to efficient use of YAN. The second area aims to identify isolates from uninoculated fermentations or more novel settings unrelated to winemaking, in the hope of finding strains with unusual properties. Recent findings from these studies will be presented.

保拉·多米齐奥

Paola Domizio

Paola Domizio，意大利佛罗伦萨大学助理教授兼研究学者，微生物生物技术博士学位。主要从事葡萄酒相关酵母菌代谢活性（包括酶活性以及对葡萄酒质量有提升作用的代谢产物活性）、非酿酒酵母在酒精发酵过程中释放生物活性化合物的特性、以及利用混合发酵来优化葡萄酒的发酵等方面的研究。

Paola Domizio Assistant Professor - Researcher at University of Florence, Italy. She earned her PhD in Microbial Biotechnologies. Her scientific activity is focused on the characterization of the metabolic activity of wine-related yeasts (enzymatic activities, production of compounds of interest for wine quality), on the characterization of bioactive compounds released by non-Saccharomyces yeasts during alcoholic fermentation and on the optimization of wine fermentation with mixed starters.

酵母、甘露蛋白与葡萄酒品质

甘露蛋白是酵母细胞壁中重要的成分之一，它可以在酒精发酵和酒泥陈酿期间被释放到葡萄酒中。很多研究均表明甘露蛋白对葡萄酒品质具有积极的作用，它可以降低蛋白质和酒石酸盐的不稳定性、提升葡萄酒的口感饱满度、减少收敛感、提升葡萄酒的甜度和圆润度、以及保留葡萄酒香气物质。除此之外，甘露蛋白还能吸收葡萄酒中的有毒物质比如赭曲霉毒素 A、提升起泡酒气泡的质量、并促进乳酸菌进行苹乳发酵。但是通常情况下酿酒酵母释放的甘露蛋白的量比较低，一般在 50~150mg/L，而非酿酒酵母比如假丝酵母、有孢汉逊酵母、耐温菌、梅奇酵母、毕赤酵母、类酵母、有孢圆酵母以及接合酵母等在发酵期间能够释放将近 600mg/L 的甘露蛋白，对于裂殖酵母来说，甚至更多（大约是酿酒酵母的 3~7

倍），而且在以上各属酵母内也存在着种与种之间释放甘露蛋白能力的不同。而实际上，在葡萄酒酿造过程中许多非酿酒酵母也被建议与酿酒酵母混合使用以提升葡萄酒香气的复杂度，并且非酿酒酵母产生的甘露蛋白也弥补了一些酿酒酵母的不足。

Yeasts, mannoproteins and wine quality

Mannoproteins represent one of the main components of the yeast cell wall and they can be released in the media during alcoholic fermentation and wine aging on lees. Numerous scientific works have shown that mannoproteins have many positive effects on wine quality, as they contribute to reduce protein and tartrate instability, to improve the mouthfeel and fullness, to decrease the perception of astringency, to increase sweetness and roundness and to retain aromatic compounds. Moreover, mannoproteins can adsorb toxic compounds such as ochratoxin A, improve the foam quality of sparkling wines and stimulate malolactic fermentation by lactic acid bacteria.

While Saccharomyces cerevisiae generally releases low amounts of mannoproteins, normally ranging from 50 to 150 mg/L, non-Saccharomyces wine yeasts, such as those ascribed to the genera Candida, Hanseniaspora, Lachancea thermotolerans, Metschnikowia, Pichia, Saccharomycodes, Torulaspora, and Zygosaccharomyces, may release up to 600 mg/L of mannoproteins during the alcoholic fermentation, and even higher amounts (approximately 3-7 times more than S. cerevisiae) for the yeasts belonging to the genus Schizosaccharomyces. In any case, wide biodiversity for this characteristic is observed within each genera.

Indeed, many non-Saccharomyces yeasts have been proposed to be used in combination with Saccharomyces yeasts in winemaking to obtain wines with a more complex aroma and the possibility to increase the content of mannoproteins by the use of non-Saccharomyces yeasts could represent an added value to the interest towards these wine yeasts.

刘延琳

Yanlin Liu

刘延琳，女，1966 年生。博士，西北农林科技大学葡萄酒学院教授，博士研究生导师。国家葡萄产业技术体系加工与贮运研究室主任、酿酒微生物岗位科学家。国际国内多项葡萄酒大赛评委，Wine Tasting Panel 专业葡萄酒品鉴平台（简称 TP）创始人。

一直从事葡萄-葡萄酒方面的教学、科研和推广工作，以葡萄酒酿造和质量控制及酿酒微生物资源与育种为主要研究方向。主持国家自然基金及省部级研究课题多项，发表研究论文 100 余篇，出版著作 4 本，获批专利一项，申报专利 2 项，获省部级科研奖励 4 项。研发本土葡萄酒酵母菌种两个（CECA、CEC01）。

Yanlin Liu, Professor & Doctoral Supervisor of Viticulture and Enology, College of Enology, Northwest A&F University, Scientist of China Agriculture Research System (CARS) for Wine Microbiology. Prof. Dr. Liu serves as director of Processing and Storage Laboratory of CARS for Grapes and Wine industry. She is a well-known wine experts and wine judge for several international and domestic wine competitions. She also is the founder of a platform (Wine Tasting Panel) for professional wine tasting.

Prof. Dr. Liu is a long time educator and scientist of grape and wine. Her research program mainly focuses on enology, yeast screening and breeding for enological microbiology, and the control of wine quality. She has headed over 2 research projects of National Natural Science Foundation named as Mapping and dissecting the QTLs associated with low temperature tolerance in native wild yeast of saccharomyces cerevisiae and Molecular mechanism regulating hydrogen sulfide production by the sulfate reduction pathway in saccharomyces cerevisiae. She also participated in several national, ministerial or provincial research projects. Prof. Liu published more than 150 articles in academic journals and 4 monographs as the first author or corresponding author, in which there are about 20 papers indexed by SCI. She has been awarded 4 ministerial or provincial research awards. A germplasm repository containing thousands of native wine yeast strains has been established by her research team. And two fine indigenous Saccharomyces cerevisiae strains CECA and CEC01 were selected and had come into the stage of wine industrialization application.

贺兰山东麓本土酵母的研究和应用

介绍贺兰山东麓葡萄酒产区葡萄酒相关酵母的种类多样性、酿酒酵母的遗传多样性以及贺兰山东麓产区酿酒酵母菌株的耐受性、酿酒特性及优良菌株的筛选和产业应用。应用 WLN 培养基、26S rDNA D1/D2 区域序列进行培养分离菌株的种类鉴定，应用 ARISA 和 T-RFLP 技术分析非培养状态酵母菌株的鉴定，建立了葡萄酒常见酵母种类的 T-RFLP 数据库；应用 Interdelta 指纹图谱进行酿酒酵母菌株多样性的鉴定。分离鉴定的宁夏贺兰山东麓产区的酵母有 8 属 10 种，H. uvarum、I. orientalis、C. zemplinina 和 S. cerevisiae 为优势种类。鉴定了来自宁夏贺兰山东麓产区 9 个主要品种的酿酒酵母菌株，获得 33 种基因型，不同品种的优势基因型不同。绝大多数野生酿酒酵母菌株都具有良好的抗逆性，部分菌株具有良好的酿酒特性。进行了优良菌株的筛选，NX11424 具有良好的工业应用价值。

Study and Application of Native yeast in the Eastern foot of Helan Mountain

The species diversity of wine related yeast, genetic diversity of Saccharomyces cerevisiae and tolerance, wine-making characteristics, screening of excellent strains and industrial application of S. cerevisiae in the eastern foot of Helan Mountain were introduced. The species of the isolated strains were identified by using WLN medium and 26s rDNA D1/D2 sequence. The identification of non-cultured yeast strains was analyzed by ARISA and T-RFLP techniques. The T-RFLP database of common yeast species in wine was established. Identification of the diversity of S. cerevisiae strains was carried by Interdelta fingerprinting. There are 10 species belonging to 8 genera in the eastern foothills of Helan Mountain, while H. uvarum, I. orientalis, C. zemplinina and S. cerevisiae were dominant species. The S. cerevisiae strains of 9 major varieties from the eastern foot of Helan Mountain in Ningxia were identified and 33 genotypes were obtained. The dominant genotypes of different varieties were different. Most of the wild S. cerevisiae strains exhibit good resistance to stress and some strains show good winemaking properties. The screening excellent strain named NX11424 has good industrial application value.

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韩舜愈

Shunyu Han

韩舜愈，男，汉族，1963 年生，教授，甘肃农业大学食品科学与工程学院院长，甘肃省葡萄与葡萄酒工程学重点实验室主任，中国葡萄酒技术委员会委员，农业部葡萄栽培与葡萄酒加工重点实验室学术委员会委员，中国食品技术学会葡萄酒分会常务理事，甘肃省葡萄种植与酿酒技术委员会主任，甘肃省葡萄酒产业技术协会常务理事兼副秘书长，甘肃省马铃薯产业技术协会常务理事兼专家委员会副主任，甘肃省亚麻油产业技术创新联盟专家委员会副主任，甘肃省食品安全委员会专家委员会副主任。1985 年本科毕业于西北农业大学果树学专业，同年在甘肃农业大学园艺系任教，1989 年调入甘肃农业大学食品科学与工程学院。

多年来从事葡萄、籽瓜、杏、苹果、马铃薯等果蔬的深加工及风味物质的研究，现主要从事葡萄酒酿造及品质分析的研究工作。作为主要完成人参加国家自然基金、国家“十一五”科技支撑计划、教育部春晖计划、甘肃省科技攻关和甘肃省生物技术专项等课题。已完成省部级科研项目 16 项，申请科技发明专利 3 项，获省科技进步二等奖 2 项，甘肃省高校科技进步二等奖 1 项、三等奖 2 项，地厅科技进步一等奖 1 项、二等奖 4 项，中共中央宣传部和中国科协“科普列车西部行活动”突出贡献奖 1 项，甘肃省营养学会优秀青年人才奖等。先后主讲了《果品蔬菜加工工艺学》、《软饮料工艺学》、《食品工艺学》、《食品加工高新技术》等多门本科、研究生课程。出版《水果制品加工工艺与配方》专著 1 部、编写《果品蔬菜加工工艺学》、《食品工艺学》和《食品工厂设计》“十一五”高等学校通用教材 3 部。近年来在《Journal of Food Processing and Preservation》、《Basic & Clinical Pharmacology & Toxicology》、《Journal of Investigative Medicine》、《Food Science and Nutrition》、《Application of Chemical Engineering》、《农业工程学报》、《中国农业科学》、《硅酸盐学报》、《食品科学》、《食品与发酵工业》、《食品工业科技》和《食品科学技术学报》等国内外学术刊物及国际会议论文集上发表论文 100 余篇。指导毕业硕士研究生 50 余名。

河西走廊产区葡萄酒安全快速评价方法的建立

食品安全评价与预警能有效预防和减少食品安全事件的发生，保障食品安全及其质量。甘肃农业大学食品科学与工程学院自 2016 年起依托甘肃省葡萄与葡萄酒工程学重点实验室的科研力量，在葡萄酒安全监测方面开展了相关的研究工作，通过优化现有技术手段，构建了适应甘肃河西走廊产区的葡萄酒安全分析检测方法，实现了对葡萄原料和葡萄酒产品中真菌毒素（21 种）、农残（50 种）、生物胺（6 种）和氨基甲酸乙酯等多项监测指标的快速、高效测定，其中部分研究结果已在生产中进行了应用和检验，得到了较好地评价和客观的预警效果，从而为增强甘肃河西走廊产区葡萄酒安全评价与预警的科学性，为政府部门和企业制定有关葡萄酒安全监管与风险治理政策和措施提供了现实的科学依据。

Establishment of Safe and Rapid Evaluation Method of Wine in Hexi Corridor Region

Food safety evaluation and early warning can effectively prevent and reduce the occurrence of food safety affairs and ensure food safety and quality. Relying on the scientific research power of Gansu Key Laboratory of Viticulture and Enology, relevant research work on wine safety monitoring has been carried out in College of Food Science and Engineering of Gansu Agricultural University since 2016, and by means of optimizing the existing technological means, the safety analysis and detection method of wine for Gansu Hexi Corridor region has been established, which has realized rapid and efficient measurement of a number of monitoring indexes such as mycotoxins (21 types), pesticide residues (50 types), biogenic amines (6 types) and ethyl carbamate in grapes and wines. Some of the research results have been applied and tested in production and achieved good evaluation and objective early warning effect, thereby enhancing the scientificity of wine safety evaluation and early warning in Hexi Corridor region and providing a realistic scientific basis for government sectors and enterprises to formulate policies and measures on wine safety supervision and risk government.

张军翔

Junxiang Zhang

张军翔，教授，宁夏大学葡萄酒学院副院长。主要从事埋土防寒产区葡萄栽培模式和葡萄酒酿造方面的研究，近 5 年发表相关论文 50 余篇，出版论著 2 部。

Junxiang Zhang, professor, The vice president of the Wine School of Ningxia University. Study on patterns of viticulture and chemistry of enology in Soil-Buried and Cold-Proof Wine Regions; Publsihed more than 50 papers and 2 books in the recent 5 years.

贺兰山东麓赤霞珠葡萄酒陈酿特性研究

本文对宁夏贺兰山东麓赤霞珠干红葡萄酒陈酿特性进行研究，以揭示其陈酿潜力。选取宁夏贺兰山东麓同一酒庄，相同酿造工艺和储存环境的 10 个不同年份的赤霞珠干红葡萄酒，系统的研究了其颜色、香气、口感的感官指标及理化特性的变化，结果表明：随着陈酿时间的增加，贺兰山东麓赤霞珠干红萄酒的颜色由紫色、宝石红色向砖红色转变，总花色苷含量并在陈酿 7 年后趋于稳定，颜色也保持稳定；葡萄酒的香气由果香味、烘烤味向香料味、脂味和动物味转变，陈酿 5~7 年整体香气最好，香气成分总含量整体上呈增加的趋势，在 7~9 年后略有降低，陈酿过程中酯类物质比增高、醇类物质比例降低和酸类物质比例增高；随着陈酿时间的增加，在口感柔顺度增加。2~8 年的葡萄酒总体评分均在 85 分以上，具有较高的品质，陈酿 8 后年的葡萄酒仍具有较深的颜色，并且香气浓郁度和复杂度得到了提升，口感柔顺度增加，8 年后品质开始下降，贺兰山东麓赤霞珠红葡萄酒有较好的陈酿潜力，在陈酿 7-8 年后品质达到最高。

Study on aging characteristics of red wine in Helan Mountain’s East Foothill

In order to study the aging potential of Cabernet Sauvignon dry red wine in the Eastern Foot of Helan Mountain. Physical and chemical and sensory quality of wines during the aging process were studied in this paper. Cabernet Sauvignon dry red wines of 10 different vintages in the same winery as materials were selected. The result was as follows:

With the increase of aging years, the color of Cabernet Sauvignon dry red wine is changed from purple, ruby red to brick red. The total anthocyanin content is gradually decreasing during the aging process and after 7 years of aging tends to a relatively stable level.

The aroma of the wine changes from a fruity aroma to spice, fat, and animal, and aroma quality after 5 to7 years of aging were best. The total content of aroma components as a whole shows an increasing trend as the vintage increases, and it slightly decreases after 7 to 9 years of aging.

With the increase of aging time, the sensory of the dry astringency decreased the velvety astringency increase in wine, and taste soft.

The sensory evaluation analysis showed that the overall score of wines aged 2 to 8 years was more than 85 points, with high quality. Wines aged 8 years still have deeper colors, and the aroma intensity and complexity are enhanced, and the softness.Tthe Cabernet Sauvignon dry red wine in the Eastern Foot of Helan Mountain had good aging potential, and the highest quality is achieved after 7 to 8 years of aging.

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房经贵

Jinggui Fang

房经贵，教授，博士生导师，南京农业大学园艺学院副院长，江苏省果树品种改良与苗木繁育工程中心主任。教育部新世纪优秀人才支持计划入选者，江苏省“青蓝工程”中青年学术带头人培养对象，江苏省现代农业产业技术体系葡萄育种岗位科学家，南京农业大学“133 重点人才工程”优秀中青年学术带头人培养对象。主要研究方向有：葡萄遗传育种、葡萄发育生物学、葡萄栽培技术的研发与推广、DNA 技术与基因信息在果树生产实践中的应用。在国内外核心期刊上发表论文近 300 篇，其中 SCI 论文 100 余篇，SCI 论文单篇最高被引频次 164，总被引频次 1155。主编《葡萄分子生物学》、《葡萄遗传育种与基因组学》等学术专著 5 本。先后主持或参加国际、国家、省部级及校地合作科研项目 40 余项，荣获省部级等科研奖励 5 项，江苏省教学成果二等奖 1 项。

葡萄分子耕田

生物体的生命活动与性状都是由多个基因直接或间接控制的。随着生物技术的发展，产生了海量的 DNA 与 RNA 等大分子信息，其中大量的有关信息可以用于揭示生命体的活动规律。因此，如何利用葡萄中的这些生命大分子信息服务葡萄产业具有重要价值，相关研究逐渐得到了重视并取得了很好的成效。为此，本报告就 DNA 标记在葡萄种质创新中的应用、基因信息与葡萄生长发育诊断、基因信息指导葡萄施肥、葡萄基因工程等方面的初步研究结果进行介绍。

Molecular Farming in Grape Industry

Biological activities and traits are directly or indirectly controlled by multiple genes. With the development of biotechnology, a great deal of macromolecular information, such as DNA and RNA, have been produced, among which a large amount of relevant information can be used to reveal the law of life activity.

Therefore, how to use the information of these macromolecules in grape to serve grape industry is of great value, and the related research has gradually been paid attention to and good results have been achieved. In this paper, preliminary results of the application of DNA markers in grape germplasm innovation, genetic information and diagnosis of grape growth and development, gene information guiding grape fertilization, and grape genetic engineering will be introduced.

房玉林

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房玉林，男，河南省兰考县人，博士，教授，博士生导师，西北农林科技大学葡萄酒学院院长。2003 年毕业于西北农林科技大学果树专业，获得农学博士学位。2008 年 1 月-2009 年 1 月，美国加州州立大学访学。目前主要从事葡萄栽培生理、酿酒葡萄种质资源利用、果实品质调控等方面的教学与科研工作。先后担任中国农学会葡萄分会常务理事、陕西省果协葡萄分会副会长、中青科协理事、陕西省葡萄产业体系岗位专家等职务。担任 Food Chemistry 等 10 多个国际学术期刊审阅人。主持和参加“十三五”重点研发计划、国家自然科学基金等科研项目 30 余项。发表学术论文 130 余篇，其中 SCI 收录 27 篇。获批国家发明专利 7 项，实用新型专利 5 项。获得国家科技进步二等奖 1 项，陕西省科技进步一等奖 1 项，参与培育酿酒葡萄新品种“媚丽”。转化国家发明专利 4 项。获得陕西省教学成果一等奖 1 项，二等奖 1 项。参编出版著作、译著 3 部，作为副主编出版国际会议论文集 3 部，被 ISTP 全刊收录。参编 The Wine Value Chain in China 一书由 Elsevier Limited 出版。

西北地区酿酒葡萄轻简化栽培模式初步研究

——兼论酿酒葡萄与鲜食葡萄生产系统的分离

我国酿酒葡萄的栽培历史短，研究基础薄弱，栽培技术多来源于鲜食葡萄管理，导致生产效率和种植效益低下，严重制约了中国葡萄酒产业发展的可持续发展。因此，研究酿酒葡萄调亏灌溉和简约化叶幕管理技术，对缓解我国西部地区水资源紧缺、劳动力不足及葡萄酒产业的可持续发展具有重要意义。针对这一产业科学问题，本课题组进行了轻简化栽培的理论和实践探索，本报告主要呈现的研究内容如下：1. 酿酒葡萄与鲜食葡萄对品质及风格要求的区别，生产系统的区别；2. 以宁夏立兰酒庄为基地，进行了酿酒调亏灌溉和简约化叶幕管理的相关研究，研究表明，1）调亏灌溉能显著增加葡萄果实的糖分含量，最大增幅为 5.13%；在一定程度上降低了总酸含量；2）调亏灌溉能够显著葡萄果皮和种子中总酚、单宁、黄烷-3-醇含量，显著降低果皮中类黄酮含量；3）显著提高葡萄皮

中总花色苷以及9种花色苷糖苷单体的含量，采收时总花色苷最大增幅为20.19%；4）显著改变葡萄果实、葡萄酒香气物质含量，随着水分亏缺程度的加大，葡萄果实香气含量呈现增加的趋势；5）调亏灌溉显著提高了葡萄果实品质，其中60%的RDI处理果实品质最佳，为最佳灌溉方案。

Preliminary study on the light and simplified cultivation mode of wine grapes in Northwest China ——Discussion on the separation of wine grape and table grape production system

The cultivation history of wine grapes in China is short with weak research foundation andthe cultivation techniques of wine grapesare mostly derived from the management of table grapes, which leads to low production efficiency and planting efficiency, and seriously restricts the sustainable development of China's wine industry.Therefore, it is of great significance to investigate the effects ofregulated deficit irrigation(RDI) and simplified canopy management technology on the quality of wine grape berries and wines,for the purpose of relieving the shortage of water resources and manual labor, which would benefit forthe sustainable development of wine industry in the western region of China. In view of this industrial science problem, the theoretical and practical explorations on light and simplified cultivation were conducted, and the main contents of this reports would be as follows: 1. The differences of grape berry quality and styles required, and the production system between wine grapes and table grapes; 2. Taking the vineyard of Ningxia Chateau Lilan as an example, researches on the RDI and simplifiedcanopy management were carried out. The results showed that, 1) RDI could significantly increase the sugar content of grape berry, with the maximum increase amount of 5.13%, and reduced the total acid content to some extent; 2) RDI could significantly increasethe contents of total phenols, tannins and flavan-3-ol in grape skin and seeds, while decreased the content of flavonoids; 3)RDI could promote the accumulation of total anthocyanin with the maximum increase amount of 20.19%, and the 9 individual anthocyanin glycosides in grape skin were also significantly increased; 4) Both thearomacomponentcontentsin grape berriesand their derived-wineswere modulated. The aroma content of grape berries increased with the increase of water deficit. 5) RDI significantly improved the quality of grape berry, among which 60% of RDIgot the best quality of grape berries, and would be the optimal irrigation program.

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获得 2012 年“Wine Intelligence”世界葡萄酒商业十佳人物，2013 《Decanter》“世界葡萄酒行业最有影响力 50 人”榜单，2013 获《Drinks Business》“世界最有影响力的十大葡萄酒顾问”。

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Demei won the 2012 Wine Intelligence 10-for-10 Business Award, and on the Decanter 2013 Power List, and named one of the Top 10 Most Influential Wine Consultants by the Drinks Business in 2013.

As a columnist, Demei contributes to many prestigious wine publications, including DecanterChina.com. He is one of the contributors for The Oxford Companion to Wine(4th edition).

中国消费者葡萄酒消费倾向研究初步分析

本文以问卷调查、品尝实验、统计分析等方法，针对中国消费者对葡萄酒消费的倾向性开展研究工作；初步对影响消费者葡萄酒消费因素、消费者对葡萄酒类型以及香气与口感特点的偏好进行结果分析。

初步结果表明：质量和品牌是影响消费者葡萄酒消费的主要因素；消费者偏好葡萄酒中柠檬、蓝莓、樱桃、苹果、麝香葡萄、香蕉、菠萝等果香，其次为槐花、玫瑰花等花香类香气，不喜欢葡萄酒中皮革、辛辣、泥土、青椒、黄油和烟熏味等气味；消费者整体而言喜欢口味甜润、中等酸度、中等偏低单宁的葡萄酒，女性对葡萄酒甜味偏好程度以及对苦味和单宁的排斥程度高于男性；具有不同饮食习惯的消费者对葡萄酒的香气类型以及甜味、酸味、苦味、单宁等强度的偏好存在差异。

关键词：葡萄酒消费、消费倾向、饮食习惯

A preliminary results of research on Chinese consumers' preference on wine

This research focus on the Chinese consumers' preference on wine by questionnaire survey, designed tasting and statistical analysis methods. Preliminary results on the factors affecting consumption, consumers' preference on wine aromas and mouth feeling were analyzed.

It shows that wine quality and brand are the main factors affecting wine consumption. Chinese consumers prefer the aromas of lemon, blueberry, cherry, apple, muscat grape, banana and pineapple from wines than leathery, spicy, earthy, green, buttery and smoky aromas from wines. Chinese consumers generally prefer sweet, moderately acidic, with medium or low tannins wine, but the females more like sweeter and dislike tannic or bitter wines than the males do. Chinese consumers with different diet habits have different preferences on the sweetness, acidity, bitterness and astringency/tannin in the wines.

Key words：wine consumption, consumers preferences, diet habits

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中国葡萄酒活化石—新疆慕萨莱思工艺特点

中国古代的葡萄酒具有非常辉煌的历史，但除了新疆慕萨莱思，其他中国古代葡萄酒的酿造技艺均已失传。调查研究了大量的慕萨莱思酿造师的酿造技艺，总结提炼了慕萨莱思的工艺特点。主要特点是，不用二氧化硫、加热浓缩、自然发酵、多种配料添加、酒体浑浊不清等等。

关键词：慕萨莱思酿造工艺消失

The Characteristics of Xinjiang Musalais—Living Fossle of Chinese wine－Making Technology

Wine of ancient China has a glorious history. However, except for xinjiang musalais , other ancient Chinese wine brewing techniques have disappeared. The brewing techniques of a large number of musales brewers have been investigated, the technological characteristics of musalais are summarized. The distinguishing feature are: SO2 free, heating concentration, natural fermentation, add various kind of ingredients，the body of the wine is cloudy，and so on.

Key words: musalais, brewing technique, characteristics

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陶永胜，男，江苏句容人，博士，教授，博士生导师。1996-2008 年就读于西北农林科技大学葡萄酒学院，获得学士、硕士和博士学位，2008-2010 年在西班牙拉里奥哈大学进行葡萄酒学博士后研究，现为西北农林科技大学葡萄酒学院教授，研究方向为葡萄酒、果酒酿造与风味化学，主讲国家级精品资源共享课—《葡萄酒工艺学》。社会兼职有中组部/团中央博士服务团成员、陕西省青联委员、国家/陕西省自然科学基金评议专家、教育部发酵工程学科点通讯评审专家、高等学校博士学科点专项基金网评专家、中国食品科技学会食品真实性与溯源分会理事。近五年来，主持 8 项国家和省部级科研项目，包括 3 项国家自然科学基金项目，获得中国轻工业联合会科技进步一等奖 1 项，陕西省优秀博士论文奖 1 项，优选野生酵母菌种 3 株，以第一或通讯作者发表学术论文 60 多篇，其中中科院一区收录的 SCI 论文 7 篇，EI 收录论文 21 篇，转化国家发明专利 2 项。

葡萄萜烯类香气糖苷的化学模式及其酵母酶促增香机制

—— 葡萄酒增香酿造的理论与实践系列研究之一

我国北方大部分地区属于季风气候区，成熟季高温多雨常常导致酿酒葡萄提前采收，西北干旱半干旱区酿酒葡萄容易糖酸成熟过快，致使葡萄酒典型香气的表现困难。针对这一产业科学问题，本课题组进行了葡萄酒增香酿造的理论和实践探索，本报告展示系列研究结果之一——“葡萄萜烯类香气糖苷的化学模式及其酵母酶促增香机制”。研究结果：1）葡萄香气糖苷前体物质的含量是其游离态苷元的数倍甚至十倍，萜烯类香气糖苷是其中最为重要的一部分，有很大的呈香潜力，并且不同葡萄品种中萜烯类香气糖苷差异显著；2）高产糖苷酶酵母菌株多为非酿酒酵母菌株，酵母胞外酶中除 β-D-葡萄糖苷酶外，α-L-阿拉伯糖苷酶、α-L-鼠李糖苷酶、β-D-木糖苷酶等的酶活是其促进葡萄香气糖苷前体水解呈香的重要因素；3）优选酵母与酿酒酵母混合发酵以及优选酵母胞外酶处理，

能够促进香气糖苷的水解释放出品种香气成分，达到增香酿造目的。

关键词：葡萄酒香气；萜烯类糖苷；化学模式；酵母酶促水解；增香酿造

Chemical Profile of Terpene Glycosides in Grapes and Its Yeast Enzymatic Catalysis

—— One of the series work of winemaking for aroma enhancement

Most of north China is monsoon climate, the high temperature and much rain during grape maturity often leads to early harvest before reaching technological maturity. For China northwest dry and semi-dry area, wine grapes are easy to get higher sugar and lower acidity before getting sufficient polyphenol maturity. These two problems make wine difficult to give good aroma. Aim to resolve the above problem of wine industry, our group is exploring the theory and practice of winemaking for aroma enhancement. This report gives one of the series achievements, “Chemical profile of terpene glycosides in grapes and its yeast enzymatic catalysis”. Results showed that: 1) the content of aroma precursors is several or ten times than that of their free compounds. Terpene glycosides are the most important aroma precursors in grapes, and the profiles of them among grapes are significantly different. 2) The selected wild yeast strains with high β-D-glucosidase in our work were non-Saccharomyces. Except the activities of β-D-glucosidase, the enzyme activity of α-L-arabinosidase, α-L-rhamnosidase, β-D-xylosidase, β-D-galactosidase, even esterase might be the important factors influencing the enzymatic hydrolysis of aroma glycosides. 3) Mixed inoculation of selected yeasts and commercial S.cerevisiae, and the treatment of extracellular extracts of yeast isolates could improve the hydrolysis of aroma precursors and produce more varietal aroma compounds in winemaking, which leaded to aroma enhancement.

Keywords: Wine aroma; Terpene glycosides; Chemical profile; Yeast enzymatic hydrolysis; Winemaking for aroma enhancement

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宁夏酿酒葡萄风土区划初探

根据宁夏 22 个气象台站 1981～2010年逐日气象资料，结合酿酒葡萄取样化验结果和其它区划指标，采用集优法以无霜期和活动积温为一级区划指标，结合土壤、地形、灌溉等风土条件和冬季越冬温度条件，将宁夏代表性酿酒葡萄品种风土区分为 4级，即最优区、适宜区、次适宜区和不适宜区，利用 1：25 万基础地理数据结合 ArcGIS 系统图形分析功能，制作了宁夏主要红色品种和白色品种精细化风土区划图，给出宁夏主要酿酒葡萄品种最佳风土区，提出各区域发展酿酒葡萄的限制性风土因子和生产建议，为宁夏葡萄与葡萄酒产业化发展和酿酒葡萄区域化布局提供理论参考。

关键词：酿酒葡萄；品种；区划；风土； GIS

A Preliminary Study on Terrior Regionalization of wine grapes in Ningxia

Based on data of 24 weather stations in Ningxia from 1981 to 2010, combined with the wine grape sampling test results and other zoning indexes, starting from the concept of terrior of viticulture, the frost free period, 10 accumulated temperature, precipitation in harvest period, soil type and slope position were used in terrior

regionalization of wine grape varieties in Ningxia by using optimization method and GIS technique. The distribution maps of high quality viticulture of main red varieties and white varieties were suggested for wine grape growers. All red varieties including extremely late ripening variety ‘Grenache’, mid to late ripening variety ‘Cabernet Sauvignon’, mid ripening variety ‘Merlot’, and early ripening variety of ‘Pinot Noir’ are suitable for planting in Ningxia, and those varieties had great potential for exploitation. It should be focused on the development in high quality terrior zone of wine grape in the Western Xia imperial tombs region in Yinchuan，Gezi Mountain in Qingtongxia, and the Baima and Shikong mountain areas in Zhongning.Regional planting areas for early and mid ripening varieties, such as ‘Pinot Noir’, ‘Chardonnay,’ ‘Riesling’, should be located in the central arid zone and Qingshui River basin.

Key words: wine grape; variety; regionalization; terrior; GIS.

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顾沛雯，博士，教授，硕导。中国植物病理学会理事。先后主持国家、省部级项目 10 余项。获省部级科技进步奖 5 项，发表论文 40 余篇，编写教材 2 部。

宁夏贺兰山东麓酿酒葡萄霜霉病监测方法研究

通过 2015-2017 年对宁夏贺兰山东麓酿酒葡萄霜霉病的系统调查，初步明确酿酒葡萄霜霉病在当地的消长规律。对影响该病流行的相关气象因子进行逐步回归分析，组建了贺兰山东麓酿酒葡萄霜霉病流行的预测模型，并用历史数据对该模型进行检验。病原体的数量和密度是葡萄霜霉病发生和流行的重要因素之一，也是病害预测预报的重要依据。采取孢子捕捉和田间系统调查相结合的方法，研究了葡萄霜霉菌孢子囊的时空扩散动态，并分析其与田间病情的相关性。运用地理信息系统和地统计学分析方法，对 2017 年贺兰山东麓酿酒葡萄霜霉病发生空间结构进行分析，并基于不同模型的普通 Kriging 插值法模拟了酿酒葡萄霜霉病发生空间分布格局。结果表明: 空间分布模拟较好地从时间、空间两个角度直观地模拟不同时期葡萄霜霉病发生的动态变化，易于确定葡萄霜霉病的发生范围和发生程度。

Studies on the epidemical regularity and monitoring method of downy mildew disease of wine grape in eastern foot of Helan mountain, Ningxia

During 2015-2017, according to the sysytematic investigations on grape downy mildew disease in eastern foot of Helan mountain, Ningxia, the epidemical tendancy of the disease was preliminarily studied. By stepwise regression analysis, the weather factors related to the epidemical disease were selected. The regression model for predicting the epidemical disease was set up in eastern foot of Helan mountain, Ningxia. The model was examined using the disease incidence during 2015-2017 and the related factors.

Airborne sporangium concentration of Plasmopara viticola is one of the key factors of grape downy mildew. This study was initiated with the objective to gain a better understanding of the epidemiology based on relationships between airborne sporangium concentrations and disease incidence in field. Environmental conditions, airborne sporangium concentrations of P. viticola, and severity of grape downy mildew were monitored for 3 years in field in eastern foot of Helan mountain , Ningxia. The results showed that airborne sporangium concentration of P. viticola was a significant positive correlation with disease incidence in field.

Based on geographic information system (GIS) and geostatistical analysis，we studied the spatial structure of occurrence of grape downy mildew disease in eastern foot of Helan mountain , Ningxia，with the spatial distribution of the population simulated by ordinary Kriging interpretation．The population dynamics of occurrence of grape downy mildew disease at its different occurrence stages could be easily analyzed and intuitively simulated from the two aspects of time and space by spatial distribution simulation，and thus，the occurrence position and degree of occurrence of grape downy mildew disease could be easily determined．

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张秀艳

Xiuyan Zhang

张秀艳，博士，副教授，华中农业大学硕士生导师。主要研究方向为发酵微生物菌种的选育、发酵性能及代谢调控研究；发酵食品的研究开发、品质分析、改良及其副产物综合利用研究。尤其是在利用基因工程、蛋白质工程和分子进化工程等生物学技术提高微生物菌种的发酵性能和安全性、调控发酵产物的代谢途径等方面积累了一定的经验。

宁夏贺兰山东麓葡萄产区酵母收集及开发利用

目前，我国果酒生产多采用来自法国等国家的酿酒酵母菌株，这些菌株由于“水土不服”等问题造成了国产果酒的风味单一，同时使用进口菌株也增加了果酒生产的成本。为此，选育我国本土特色的酵母菌株具有非常重要的意义。贺兰山东麓独特的地理位置、特殊的气候条件、丰富的葡萄品种资源和众多的葡萄酒厂孕育着丰富的酵母菌，为选育具有我国特色的酵母菌株提供了宝贵资源。本研究从贺兰山东麓不同地域的 9 个葡萄庄园中的葡萄、叶子、土壤以及自然发酵葡萄汁中分离酵母菌，通过形态学和分子生物学方法鉴定酵母菌，在对菌株进行安全性分析的基础上，采用 96 孔板方法分析安全性酵母菌的耐受性和产 *β*-葡萄糖苷酶特性，并对筛选酵母在果酒中的初步应用进行初步分析。本研究共分离酵母菌 1384 株，19 个种。得到耐受性较好的酿酒酵母菌株 14 株，非酿酒酵母菌株 24 株。同时，采用七叶灵显色法和 4-硝基苯基-*β*-D-吡喃葡萄糖苷显色法筛选高产 *β*-葡萄糖苷酶酵母菌 4 株，酶活力分别为 98.51 U/L，76.93 U/L，62.72 U/L 和 47.95 U/L。通过酿酒试验，得到 2 株对果酒风味有明显改善的酵母菌。该研究将为宁夏贺兰山东麓葡萄酒乃至其它区域葡萄酒风味改善和提高提供了菌种和方法。

关键字：酿酒酵母；非酿酒酵母；耐受性； β -葡萄糖苷酶;贺兰山东麓葡萄产区

Collection and utilization of yeasts from viny region from eastern foot of Helan Mountain in Ningxia

At present, saccharomyces cerevisiae from France or other foreign countries are being used to ferment fruit wine in China. However, these foreign yeast strains may cause poor flavor complexes of fermented wine for their poor ability to adapt to domestic fermentation environment and also increased the cost of fruit wine production. Therefore, it is very important to screen yeast strains with regional characteristics in China. The eastern foot of Helan Mountain in Ningxia has abundant yeast resources for its unique geographical location, special climatic condition, rich grape varieties and a large number of wineries, so it will provide valuable resources for screening yeast strains with Chinese characteristics. In this study, the yeast strains will be isolated from grapes, leaves, soil and spontaneous fermentation grape juice from 9 vineyards from eastern foot of Helan Mountain in Ningxia, and will be identified through colonial morphology and molecular biology method. On the basis of safety analysis of yeast strains, the tolerance to glucose, ethanol and SO2 and the β-glucosidase activity of the isolated safety yeast strains will be analyzed through 96-well plate method, and their preliminary application in wine will be analyzed. The main results indicated that 1384 yeast strains were isolated and clustered into 19 species. Fourteen S. cerevisiae strains and 24 non-Saccharomyces yeast strains with good tolerance capacity to glucose, ethanol and SO2 were obtained. Meanwhile, the characteristics of β-glucosidase produced by yeasts were screened through esculetin and p-NPG coloration methods. Four non-Saccharomyces yeast strains with 98.51 U/L, 76.93 U/L, 62.72 U/L and 47.95 U/L β-glucosidase activities, respectively were obtained. The selected strains were used to carry out the wine-making experiment, and two yeast strains with significant ability to improve the flavor of wine were obtained. Totally, the research will provide yeast strains and fermentation methods to improve the flavor of wine from the eastern foot of Helan Mountain in Ningxia or even other regional wine.

Key words: S. cerevisiae; non-Saccharomyces yeast; tolerance; β-glucosidase; viny region in eastern foot of Helan Mountain

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徐伟荣

Weirong Xu

徐伟荣，男，汉族，1978 年 8 月生，博士，副教授，硕士生导师,国家公派留学人员,现为宁夏大学农学院/宁夏葡萄与葡萄酒研究院副教授。长期从事中国野生葡萄优质种质资源发掘与利用、生物和非生物胁迫下葡萄应答机理及葡萄果实品质形成与调控领域的科研工作。发表论文 30 余篇，其中在 SCI 刊物发表学术论文 18 篇；2013 年其博士论文被评为“陕西省优秀博士学位论文”，获得省级科技进步一等奖 1 项，获国家发明专利 2 项；主持国家自然科学基金 3 项、宁夏自然科学基金 1 项、宁夏留学人员创业基金 1 项、中国博士后基金项目 1 项；教育部“春晖计划”项目 1 项。参与完成国家十三五重大专项课题 1 项、国家自然科学基金面上项目 4 项、地区项目等多项国家级科研项目 3 项。

山葡萄抗寒优异基因挖掘与种质创新研究

低温寒害是限制葡萄栽培生产的重要逆境因子，深入开展葡萄抗寒机制研究，是培育抗寒葡萄新品种的关键所在。本研究以高抗寒的中国野生山葡萄为研究材料，基于高通量转录组测序分析，结合低温胁迫响应下的形态、生理生化变化，解析了中国野生山葡萄抗寒网络代谢途径，挖掘了抗寒优异基因资源。开展了抗寒相关转录因子与激酶基因的功能研究，为欧洲葡萄抗寒改良提供了候选基因。其中，类钙调磷酸酶 B 亚基蛋白（CBLs）作为近年来新发现的一类植物 Ca2+传感器蛋白，能与其互作的激酶 CIPKs 选择性特异结合，在调控植物响应非生物胁迫信号转导中发挥重要的作用。我们挖掘了参与低温胁迫的 CBL-CIPK 特异组合；明确其参与低温胁迫的功能特性；酵母双杂交结果表明葡萄 CIPKs 与 CBLs 互作具有特异性，我们进一步聚焦在与所有 CBLs 均互作的 CIPK18 成员，其常温定位于细胞核，低温胁迫下转移至细胞质，该蛋白与 MYB4a 互作参与低温胁迫应答。同时，我们通过农杆菌介导的遗传体系创制了抗寒转录因子转化欧洲葡萄的突变材料（矮化型与超高型），为后续抗寒功能分析及种质创新奠定基础。近期，我们通过基因编辑技术（Cas9&Cpf）靶向欧洲葡萄自身的低温负调控基因的研究，以期获得抗寒性增强的欧洲酿酒葡萄植株。

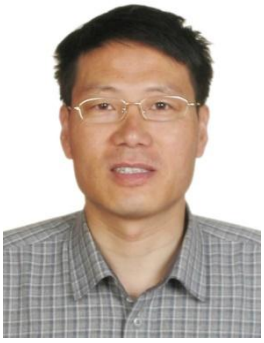
Research progress of Favorable Gene Mining from *Vitis amurensis* and Germplasm Innovation

Weirong Xu

Chilling injury at low temperature is an important adverse factor limiting the viticulture production. In-depth study on the mechanism of grape cold hardiness is the key to cultivate cold-resistant grape. Based on the high-throughput transcriptome sequencing analysis and the morphological, physiological and biochemical changes under the response of low temperature stress, the cold-resistant network metabolic pathway was investigated in Chinese wild *Vitis* species. Favorable genes from this Vitis species were explored. The function research of cold-resistant transcription factors and kinase genes were carried out in recent years, which provided candidate genes for cold-tolerant improvement of European grapes. Among them, Calcineurin B-like proteins (CBLs) represent a family of newly emerging plant-specific Ca2+ sensors, which could selectively interplay with their respective kinase effectors (CBL-interacting protein kinases, CIPKs), thus playing critical roles in response to signaling transduction of various abiotic stresses. We have unearthed a specific combination of CBL-CIPK to cold stress; and clarified its functional properties involved in low temperature stress. Yeast two-hybrid results indicate that CIPKs interact with CBLs with specificity. We further focus on CIPK18, which interacts with all CBLs. VaCIPK18, which is localized in the nucleus at room temperature, is transferred to the cytoplasm under low temperature stress. VaCIPK18 interacts with MYB4a to participate in a low temperature stress response. Concurrently, we created several European grape mutant materials (dwarf and ultra-high) that transformed with transcription factors through Agrobacterium-mediated genetic system, which lays a foundation for subsequent cold tolerance analysis and germplasm innovation. Recently, we have targeted the European grape's own low-temperature negative regulatory genes through gene editing technology (Cas9 & Cpf), with the hope to obtain wine grape plants with enhanced cold resistance.

张光弟

Guangdi Zhang



张光弟，现为宁夏大学农学院教授、硕士生导师。1963 年 2 月生于沈阳；1985 年毕业于原宁夏农学院，学士；从事果树栽培、采后保鲜教学、科研与服务地方工作。在研省级东西部合作项目 3 项。

宁夏贺兰山东麓葡萄材料覆盖越冬防寒栽培研究与应用

在前期葡萄材料覆盖栽培研究与应用的基础上，基于贺兰山东麓葡萄“柱式”免埋土越冬防寒、春季防霜保护仓栽培模式，在实验室条件下设定正负温度阶，以埋土基质为对照通过对保护仓聚苯乙烯材料等传热系数的测定。结果发现，-24℃的干态土壤较 8℃下 R 值增幅 11.80%;干态聚苯乙烯板材、土壤 R 值随温变化均为线性相关，湿态材料 R 值发生变化且与冻结有显著影响。对树体越冬后萌芽率的调查分析认为，通过采用密度 18kg/m^3，阻燃等级 B2、厚度 3.0cm 的保护仓生产性应用，能够实现对树体的 100%保护，较传统埋土方法的植株芽眼萌发率高 7.37%。本研究对指导免埋土越冬保护材料的选择与应用提供参考。

Study and Application onMateral Cover Overwintering for grapevine Planting at the Eastern Foot Helan Mountainof Ningxia

Based on Column-head tree structure of Vinegrape , A kind of the polyethylene Protected VerticalCapsule was used for protect the Vinegrape from the lethal temperature and frost threats while overwintering and late spring.These data of coefficient of polystyrene heat transfer were gained at different temperatures above

and below zero.the results showed that the R value of dry soil at -24 ℃ increased by 11.80% compared with that at 8 ℃,and the correlation between thermal resistance which dry soil, dry polyethylene and temperature was a linear relation.With characteristic of wet materal thermal resistance were reduced,and relating to the temperature gradients below zero. Investigation on germination rate of Vinegrape after overwintering, that 100 % protection of the tree body is realized, and the germination rate of the buds of the polyethylene Protected Capsule method which protected capsule density 18 kg/m^3, flame-retardant grade B2, thickness 3.2cm was 7.37 % higher than that of the traditional burying method by soil. The paper was aimed at providing a reference for the selection and application of non-buried soil protection materials.

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王锐

Rui Wang

王锐（1981 年—），男，博士，副教授，硕士生导师。主要从事酿酒葡萄营养需求及葡萄园土壤质量管理研究，国家现代农业技术体系贺兰山东麓葡萄实验站土肥水专家，宁夏红寺堡葡萄酒协会特聘专家。近 5 年来，主持国家自然科学基金 1 项，宁夏重点研发计划项目课题 1 项，其他自治区级项目 5 项。发表论文 40 篇，其中 SCI 4 篇，EI 1 篇。获宁夏科技进步奖 2 项，宁夏自然科学优秀论文奖 5 项，制定地方标准 3 项。

化肥减施对贺兰山东麓土壤肥力及酿酒葡萄品质的影响

针对贺兰山东麓主要酿酒葡萄产区因过度依赖化肥、土壤贫瘠及长期连作的栽培模式导致的土壤持续生产能力下降、酿酒葡萄品质降低等问题，研究化肥减施对贺兰山东麓土壤肥力及酿酒葡萄品质的影响。以四年生酿酒葡萄品种“赤霞珠”为研究对象，分别设置不施肥、施 100%化肥、施 100%有机肥、施 50%化肥+50%有机肥、施 100%土壤调理剂、施 25%化肥+25%有机肥+100%土壤调理剂，共 6 个处理，探讨化肥减施对酿酒葡萄品质及土壤肥力的影响。结果表明：化肥减半对土壤肥力的影响较全量施用化肥差异不显著，但化肥减半处理浆果花色苷含量较全量施用化肥处理显著提升 132.9%；全量施用有机肥替代化肥能显著提升果园土壤有机质含量，对土壤速效养分提升效果显著，土壤有机质、速效钾、有效磷的含量较单施化肥处理分别增加了 55.05%、130.2%、3.08%，同时施用有机肥能显著增加酿酒葡萄浆果可溶性糖含量；化肥和有机肥各减 75%配合土壤调理剂施用产量较全量施用化肥增加了 69.07%，但葡萄浆果综合品质下降显著。在贺兰山东麓碱性石灰性土壤上，增施土壤调理剂能有效改善土壤环境，提升葡萄品质；过量减少化肥施用不利于优质酿酒葡萄原料的生产，化肥减半配施有机肥是提高土壤肥力和酿酒葡萄品质，提高经济效益的有效措施。

关键词：化肥减施;酿酒葡萄;贺兰山东麓;土壤肥力;品质

Effect of Chemical Fertilizer Reduction on Soil Fertility and Wine Grape Quality in the East Piedmont Area of Helan Mountain, Ningxia

The main wine-making grape production areas in the eastern foothills of Helan Mountain were confronted with the problems such as excessive dependence on chemical fertilizer, poor soil and long-term continuous cropping, which resulted in the decline of soil sustainable production capacity and the decline of wine grape quality, etc. The effects of fertilizer reduction on soil fertility and wine grape quality in the eastern foothills of Helan Mountain were studied. Cabernet Sauvignon (Cabernet Sauvignon), a wine grape variety of four years old, was studied. No fertilizer, 100% chemical fertilizer, 100% organic fertilizer, 50% chemical fertilizer, 100% soil conditioning agent, 25% chemical fertilizer, 25% organic fertilizer, 100% organic fertilizer, and Six treatments were used to study the effect of fertilizer reduction on wine grape quality and soil fertility. The results showed that the effect of chemical fertilizer halving on soil fertility was not significant compared with that of total fertilizer application. But the content of anthocyanin increased 132.9 in half of chemical fertilizer treatment compared with total fertilizer application, organic matter content in orchard soil was significantly increased by using organic fertilizer instead of chemical fertilizer, and soil organic matter content was significantly increased in soil available nutrients. The content of available potassium and available phosphorus increased by 55.05%, 130.2% and 3.08%, respectively, and the content of soluble sugar of wine grape berries was significantly increased by applying organic fertilizer. The yield of chemical fertilizer and organic fertilizer decreased by 75% in combination with soil conditioner, and the yield increased by 69.07%, but the comprehensive quality of grape berry decreased significantly. In alkaline calcareous soil at the eastern foot of Helan Mountain, adding soil conditioner can effectively improve soil environment and improve grape quality, and excessive reduction of chemical fertilizer is not conducive to the production of high quality wine grape raw materials. It is an effective measure to improve soil fertility, wine grape quality and economic benefit by halving fertilizer and applying organic fertilizer.

Key words: fertilizer reduction; wine grape; quality; economic profits

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耿洪良

Hongliang Geng

耿洪良，信息技术副研究员、宁夏智慧农业产业技术协同创新中心副主任、宁夏农业物联网工程技术研究中心副主任、国家农村农业信息化专家，宁夏科技成果评审组专家，自治区、银川市政府采购中心专家组成员。

曾承担了宁夏农村信息化平台建设、农业科技成果转化项目、国家科技支撑计划、自治区重点研发计划项目、自治区东西部科技合作项目等 20 多项国家和区级科技项目，参与了宁夏农业物联网方面的技术研究，申报了 2 项农业物联网技术标准，并获得了温室自动化控制用嵌入式系统、水产养殖自动化控制用嵌入式系统、小型气象站系统 3 项实用新型专利和 30 多项软件著作权。先后在《宁夏科技》、《宁夏大学学报》、《中国农业信息化》发表多篇论文，在农业物联网技术研究与应用、农业项目申报方面经验丰富。

Geng Hongliang, associate researcher of information technology, deputy director of Ningxia Smart Agricultural Industry Technology Collaborative Innovation Center, deputy director of Ningxia Agricultural Internet of Things Engineering Technology Research Center, national rural agricultural informatization expert, Ningxia Science and Technology Achievement Review Group expert, autonomous region, Yinchuan Municipal Government Procurement Center Member of the expert group.

He has undertaken more than 20 national and district-level science and technology projects including Ningxia Rural Informatization Platform Construction, Agricultural Science and Technology Achievement Transformation Project, National Science and Technology Support Program, Autonomous Region Key R&D Program, and Autonomous Region Science and Technology Cooperation Project of the Autonomous Region. In terms of technical research, two agricultural Internet of Things technical standards were declared, and three embedded utility systems for greenhouse automation control, embedded systems for aquaculture automation control, three utility model patents for small weather station systems, and more than 30

software copyrights were obtained. . He has published many papers in "Ningxia Science and Technology", "Journal of Ningxia University" and "China Agricultural Informationization", and has rich experience in agricultural Internet of Things technology research and application, and agricultural project declaration.

基于全产业链的智慧葡萄生产与溯源体系设计

以贺兰山东麓酿酒葡萄全产业链信息为抓手，运用物联网、大数据、云计算、人工智能等现代信息技术，以企业标准化生产管理系统和分段溯源编码体系设计为核心，提出酿酒葡萄从种植、采摘、检验、加工、仓储、物流配送、销售等全产业链信息化解决方案，包括：环境参数的自动化采集、智能化节水灌溉、智慧植保、智能装备、智慧供应链、质量溯源等，为宁夏贺兰山东麓酿酒葡萄生产标准化，企业管理智慧化和产业化提供建设思路。

Design of Wisdom Grape Production and Traceability System Based on Whole Industry Chain

Taking the information of the whole industry chain of Eastern Helan Mountain wine grape as the starting point, using modern information technology such as Internet of Things, big data, cloud computing, artificial intelligence, etc., with the design of enterprise standardized production management system and segment traceability coding system as the core, grapes from the planting, picking, inspection, processing, warehousing, logistics and distribution, sales and other industrial chain information solutions, including: automatic collection of environmental parameters, intelligent water-saving irrigation, smart plant protection, intelligent equipment, smart supply chain, quality traceability, etc., provide the construction ideas for the production standardization of wine grapes in Ningxia Eastern Helan Mountain, and the wisdom and industrialization of enterprise management.

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徐美隆

Meilong Xu

徐美隆，副研究员，种苗生物工程国家重点实验室副主任，国家经济林木种苗快繁工程技术研究中心副主任，宁夏回族自治区青年后备骨干人选。主要从事葡萄脱毒与病毒检测、林木种苗工厂化繁育、葡萄种质资源引选与创新等方面的研究与示范推广工作。主持和参加国家“十二五”支撑计划、农业部 948、国家林业局 948、中央财政林业科技推广示范、宁夏回族自治区重大研发、宁夏回族自治区科技攻关等科研、示范推广项目 20 余项。取得科技成果登记 11 项，获自治区科技进步三等奖 1 项、银川市科技创新三等奖 1 项；授权国家发明专利 3 项，实用新型专利 1 项；制定宁夏回族自治区地方标准 3 部；获得国家植物新品种保护 1 个；审定林木良种 1 个；发表学术论文 30 篇，其中 SCI 收录 3 篇。

几个葡萄砧木品种对干旱的应答及砧穗互作对葡萄抗旱的影响

葡萄砧木的大规模应用源于 19 世纪晚期葡萄根瘤蚜的防治，经过上百年的相关研究和应用，葡萄砧木已在产业生产中得到广泛应用，并在提高葡萄抗病虫能力、增强葡萄抗逆性、改善葡萄果品质量等方面等方面起到积极的作用。本研究结合宁夏的实际，以 5 中不同葡萄砧木品种为材料，设置不同水分梯度进行干旱胁迫处理，比较分析 14 个生理生化指标，采用耐旱系数、相关性分析、主成分分析、隶属函数分析、聚类分析及灰色关联度分析相结合的方法进行耐旱性综合评价，明确了不同砧木品种的抗旱能力；以不同抗旱能力的砧木与酿酒葡萄马瑟兰嫁接，在不同水分梯度下进行干旱胁迫处理，通过生理指标的测定，进一步证明了抗旱砧木有利于提高酿酒葡萄马瑟兰的抗旱能力。为了研究砧穗组合对葡萄抗旱能力的影响，本研究通过在培养基中添加 PEG 人工模拟干旱胁迫，以黑

比诺自嫁接苗为对照，对比抗旱砧木嫁接黑比诺中 microRNA 和 RNA 的差异，通过比较研究发现：自嫁接和抗性嫁接的黑比诺在人工模拟干旱条件下有 43 个 microRNA 存在显著下调，预测其靶基因为 636 个，而转录组分析有 624 个基因为显著上调，通过预测靶基因和转录组的比较，初步预测出有 17 个基因受到 microRNA 显著调控并参与了抗性砧木对接穗品种抗旱能力的提升。

关键词：葡萄砧木，抗旱性，microRNA，转录组

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