

中文核心期刊  
中国农业核心期刊  
美国化学文摘社 (CAS) 收录期刊

全国优秀农业期刊  
中国北方优秀期刊  
黑龙江省优秀期刊

ISSN 1001-0009  
CN 23-1247/S

# 北方园艺

NORTHERN HORTICULTURE

黑龙江省农业科学院  
黑龙江省园艺学会 主办

4  

---

2015

# 北方园艺

(1977年创刊·半月刊)

BEIFANG YUANYI

总第 331 期      2015 年第 4 期      2 月(下)

## 目 次

### ◆试验研究◆

---

- 四个大白菜品种光合日变化比较 ..... 杜社妮,白岗栓(1)
- 不同蓝莓品种的叶片结构和气孔特性比较..... 谢兆森,宋世鑫,曹红梅(5)
- 辽宁省苹果盛果期树调冠改形增效关键技术研究与应用 ..... 何明莉,刘 志,宋 哲,等(9)
- 不同氮素水平对彩椒几项生理指标及活性氧清除系统的影响 ..... 鲜开梅(17)
- 钙处理对‘3-18’桃果实品质的影响 ..... 方 庆,尚霄丽,张建鹏(22)
- 匍匐茎克隆植物可倒插繁殖研究 ..... 杜 琿,陈晓德,范庭兴(26)

### ◆研究简报◆

---

- 废糟有机栽培基质对番茄生长的影响..... 张 杰,阮先乐,侯小歌,等(31)

### ◆设施园艺◆

---

- 基于 E601-B 型蒸发器大棚西瓜膜下滴灌试验研究 ..... 任自力,张 显(34)

- 不同营养液配方对秸秆沼渣基质穴盘育苗的影响..... 王西芝,王吉庆,申晓芳,等(40)
- 日光温室燃池形状和深度的模拟研究..... 刘文合,许 封(44)
- 拉萨市闭锁型人工光照育苗系统的设计与研发..... 朱荣杰,李宝海,王世彬,等(49)
- 北京地区连栋温室番茄岩棉栽培适宜密度的研究..... 许 路,李新旭,高丽红,等(53)

## ◆栽培技术◆

---

### ☆菜园☆

- 北方旱寒区白菜型冬油菜品种抗寒性与适应性分析..... 王世发,黄淑兰(58)
- 苦芥菜大棚栽培技术要点 ..... 李 静(61)

## ◆园林花卉◆

---

### ☆植物☆

- 硬枝碱蓬种子萌发对盐旱胁迫的响应..... 韩占江,程 龙,杨赵平,等(63)
- 滇西北不同海拔梯度下丽江云杉叶片的生态解剖结构特征研究..... 唐 探,姜永雷,冯程程,等(67)
- 东北地区四种常见灌木的光合和蒸腾特性研究..... 苏 欣,张 雨,蔡英杰,等(71)
- 沙埋和供水对毛乌素沙地沙芥与斧形沙芥出苗的影响..... 黄修梅,郝丽珍,张凤兰,等(76)
- 六种观赏植物的水培催根条件优化研究..... 陈 莹,陈永华,王 佩,等(81)

### ☆景观☆

- 庐山野生花灌木植物资源及应用研究..... 黄 江,李晓花,梁同军,等(84)

## ◆生物技术◆

---

- 雏菊 *rbcl* 基因的克隆及其生物信息学分析 ..... 熊 勇,赵春艳,杨青松,等(89)

- 早花忍冬离体快繁技术..... 王 欢,姜 哲,许士钊,等(95)
- 延边苹果梨 *PyDFR* 基因的克隆及表达分析..... 杨宏霞,曲柏宏,刘振坤,等(99)
- 蒙古黄芪体细胞染色体核型及带型分析..... 林 勤,阿布地热合木·热合曼,任 贤(104)
- 龙葵毛状根诱导条件的研究 ..... 王 丽,刘 琪,宁明明,等(107)
- 太空环境对仙客来诱变效应的研究 ..... 李 谨,耿金鹏,曹天光,等(112)

### ◆植物保护◆

---

- 梨树树形与梨木虱种群发生关系研究 ..... 路晓楠,刘奇志,乐文全,等(116)
- 杨树叶缘枯病病原菌鉴定及生物学特性 ..... 高国平,王 红,邓秋越,等(119)

### ◆贮藏保鲜加工◆

---

- MA 包装对鲜食核桃冷藏期货架品质及内源激素的影响 ..... 李 晴,刘 丹,马艳萍,等(123)
- 杏鲍菇花生复合植物蛋白饮料的工艺研究 ..... 刘亚琼,王 颖,赵 松,等(129)
- 莲子心总黄酮的超声波萃取工艺研究 ..... 黄中梅,何自强,赵 婉,等(133)
- 酶法提取刺玫果总黄酮工艺研究 ..... 王晓林,钟方丽,薛健飞,(136)
- 软枣猕猴桃黄酮的提取及体外抗氧化研究..... 温 钢,刘海燕,杨 梅(140)

### ◆食用菌◆

---

- 野生泡囊侧耳的鉴定及其驯化栽培 ..... 李 蝶,吴 浩,李红玉,等(143)
- 广西野生鳞盖红菇原种培养研究 ..... 曾广宇,甘福丁,秦文弟,等(147)
- 糙皮侧耳杂交后代遗传多样性分析 ..... 盛春鸽,王延锋,潘春磊,等(149)
- 松杉灵芝液体发酵培养营养条件优化 ..... 于海洋,弥春霞,陈 欢,等(152)

## ◆中 草 药◆

---

- ICP-AES 法测定五种理气类中药材中的十种元素含量 ..... 李利华(156)
- 生态有机肥对宁夏枸杞品质形成的影响..... 王 晶(159)

## ◆土壤与肥料◆

---

- 接种微生物菌剂对葡萄连作土壤速效养分及酶活性的影响 ..... 张立恒,李 坤,胡熙禧,等(162)
- 秸秆反应堆与生物菌剂对番茄土壤碳氮比与酶活性的影响 ..... 张雪艳,田 蕾,王 冠,等(165)

## ◆产业论坛◆

---

- 北京市设施蔬菜产业发展及对策 ..... 李 瑾,韩瑞娟(170)
- 北京市果业发展现状、面临问题及对策研究..... 刘 玉,郜允兵,孙 超,等(174)

## ◆专题综述◆

---

- 珍稀濒危植物 DNA 条形码研究进展 ..... 谢伟玲,邹 蓉,杨 雪,等(178)
- 苦瓜强雌性系的研究进展 ..... 张景云,万新建,黄月琴,等(183)
- 特色植物辣木栽培及病虫害防治相关技术研究 ..... 刘子记,曹振木,党选民,等(186)
- 苹果的贮藏与保鲜技术研究进展..... 袁云香(189)
- 蔬菜原生质体培养及融合的研究现状与展望 ..... 张金鹏,韩玉珠,张晓旭,等(192)
- 园林植物防治雾霾的应用研究..... 王志磊,赵红霞,翟付顺(196)

## ◆农业经纬◆

---

- 基于农业多功能性视角下的区域农业旅游综合竞争力评价研究 ..... 陈理军,姚 娟(199)

# NORTHERN HORTICULTURE

(Started in 1977, Half Monthly)

Total NO. 331, NO. 4(2015), The Second Half of February

## Contents

### ◆ Experimentation and Research ◆

- Comparison of Four Chinese Cabbage on Daily Dynamics of Photosynthesis ..... DU She-ni ,BAI Gang-shuan(1)
- Comparisons of Leaf Anatomical Structure and Stoma Characteristic Among Three Different Blueberry Varieties  
..... XIE Zhao-sen,SONG Shi-xin,CAO Hong-mei(5)
- Key Technology Research and Application of Increasing Efficiency About Adjustable Crown Modification to Apple Trees in Full Fruit Period in Liaoning Province  
..... HE Ming-li,LIU Zhi,SONG Zhe,et al(9)
- Effect of Different Nitrogen Levels on the Several Physiological Indicators and Reactive Oxygen Removal System of Color Pepper ..... XIAN Kai-Mei(17)
- Effect of Calcium Treatments on Fruit Quality of Peach '3-18' ..... FANG Qing,SHANG Xiao-li,ZHANG Jian-peng(22)
- Study on Stoliferous Clonal Plants that can Reverse Cuttage ..... DU Hui,CHEN Xiao-de,FAN Ting-xing(26)

### ◆ Research Notes ◆

- Effect of Waste Lees as Organic Cultural Substrate on Growth of Tomato ..... ZHANG Jie,RUAN Xian-le,HOU Xiao-ge,et al(31)

### ◆ Facilities Horticulture ◆

- Study on Irrigation Experiment of Watermelon Drip Irrigation Under Film Based on E601-B Evaporator in Plastic Shed ..... REN Zi-li ,ZHANG Xian(34)
- Effect of Different Nutrient Solution Formulations on Plug Seedling Production with Straw Biogas Matrix  
..... WANG Xi-zhi,WANG Ji-qing,SHEN Xiao-fang,et al(40)
- A Simulation Study on Shape and Depth of Fire-pit ..... LIU Wen-he,XU feng(44)
- Design and Development of Artificial Lighting Closed-type Seedling Production System ..... ZHU Rong-jie,LI Bao-hai,WANG Shi-bin,et al(49)
- Study on the Optimum Planting Density of Rockwool-Tomato in Multi-span Greenhouse in Beijing ..... XU Lu,LI Xin-xu,GAO Li-hong,et al(53)

### ◆ Cultivation Technique ◆

- Analysis on Cold Resistance and Adaptability of Cabbage Type of Winter Rapeseed in Cold and Drought Region in North  
..... WANG Shi-fa,HUANG Shu-lan(58)
- The Main Cultivation Techniques of Tartary Buckwheat Vegetable in Greenhouse ..... LI Jing(61)

### ◆ Garden Design and Garden Plants ◆

- Response of Seed Germination to Salt and Drought Stress in *Suaeda rigida* ..... HAN Zhan-jiang,CHENG Long,YANG Zhao-ping,et al(63)
- An Eco-anatomical Study on *Picea likiangensis* Leaves at Different Gradient Elevations in Northwest of Yunnan  
..... TANG Tan,JIANG Yong-lei,FENG Cheng-cheng,et al(67)
- Photosynthesis and Transpiration Characteristics of Four Common Shrub Vegetation in Northeast of China ..... SU Xin,ZHANG Yu,CAI Ying-jie,et al(71)
- Effect of Sand Burial and Water Supply on Seedling Emergence of *P. cornutum* and *P. dolabratum* in Mu Us Sandy Land  
..... HUANG Xiu-mei,HAO Li-zhen,ZHANG Feng-lan,et al(76)
- An Optimized Research on the Root Promoting Conditions of Six Kinds of Hydroponics Flowers ..... CHEN Ying,CHEN Yong-hua,WANG Pei,et al(81)
- Plant Resources of Flowering Shrub Wild Plants in Lushan Mountain and Its Application Research  
..... HUANG Jiang,LI Xiao-hua,LIANG Tong-jun,et al(84)

### ◆ Biotechnology ◆

- Molecular Cloning,Bioinformatics Analysis of *rbcL* Gene in *Bellis perennis* ..... XIONG Yong,ZHAO Chun-yan,YANG Qing-song,et al(89)



- Rapid Propagation *in vitro* of *Lonicera prae-florens* ..... WANG Huan,JIANG Zhe,XU Shi-zhao,et al(95)
- Molecular Cloning and Expression Analysis on *PyDFR* Gene of Pingguoli in Yanbian ..... YANG Hong-xia,QU Bai-hong,LIU Zhen-kun,et al(99)
- Karyotype and Banding Pattern Analysis of Somatic Cell Chromosome in *Astragalus mongolicus* ..... LIN Qin,Abudirehemu • REHEMAN,REN Xian(104)
- Study on Inducing Hairy Roots of *Solanum nigrum* L. .... WANG Li,LIU Qi,NING Ming-ming,et al(107)
- Study on the Mutagenic Effects of Space Environment on *Cyclamen persicum* Mill. .... LI Jin,GENG Jin-peng,CAO Tian-guang,et al(112)

#### ◆ Plant Protection ◆

- Study on the Relationship Between Pear Trees Structure and Population of *Cacopsylla chinensis* ..... LU Xiao-nan,LIU Qi-zhi,YUE Wen-quan,et al(116)
- Study on Pathogen Identification and Biological Characteristics of Pathogenic Fungal of Poplar Leaf Margin Blight  
..... GAO Guo-ping,WANG Hong,DENG Qiu-yue,et al(119)

#### ◆ Storage and Processing ◆

- Effect of Different Modified Atmosphere Packages on Shelf-Life Quality and Endogenous Hormones Content of Fresh Walnuts  
..... LI Qing,LIU Dan,MA Yan-ping,et al(123)
- Processing Technology of *Pleurotus eryngii*-Peanut Compound Vegetable Protein Beverage ..... LIU Ya-qiong,WANG Jie,ZHAO Song,et al(129)
- Study on Ultrasonic Extraction Process of Total Flavones from Lotus Plumule ..... HUANG Zhong-mei,HE Zi-qiang,ZHAO Wan,et al(133)
- Study on the Extraction Technology of Total Flavonoids in Fruit of *Rosa davurica* Pall. with Enzymes Method  
..... WANG Xiao-lin,ZHONG Fang-li,XUE Jian-fei,et al(136)
- Extraction of Flavonoids from *Actinidia arguta* and Its Antioxidant Activity *in vitro* ..... WEN Gang,LIU Hai-yan,YANG Mei(140)

#### ◆ Edible Fungi ◆

- Domestication and Cultivation of Wild *Pleurotus Cystidiosus* and Its Molecular Identification ..... LI Die,WU Hao,LI Hong-yu,et al(143)
- Study on the Stock Spawn Culture of Wild Guangxi Russula ..... ZENG Guang-yu,GAN Fu-ding,QIN Wen-di,et al(147)
- Analysis for Genetic Diversity of *Pleurotus ostreatus* Hybrids ..... SHENG Chun-ge,WANG Yan-feng,PAN Chun-lei,et al(149)
- The Fermentation Optimization of *Ganoderma tsugae* Murrill Liquid Strain ..... YU Hai-yang,MI Chun-xia,CHEN Huan,et al(152)

#### ◆ Chinese Traditional Medicine ◆

- Determination of Ten Elements in Five Kinds of Qi-regulation Chinese Medicinal Materials by ICP-AES ..... LI Li-hua(156)
- Effect of Ecological Organic Fertilizer on Fruit Quality in *Lycium barbarum* ..... WANG Jing(159)

#### ◆ Soil and Fertilizer ◆

- Effect of Microbial Agents on the Available Nutrient and Enzyme Activity of Grape Replant Soil ..... ZHANG Li-heng,LI Kun,HU Xi-xi,et al(162)
- Effect of Maize Straw Reactor Compound with Biological Fermentation Bacteria on Soil Carbon and Nitrogen Ratio and Enzyme Activity of Tomato  
..... ZHANG Xue-yan,TIAN Lei,WANG Guan,et al(165)

#### ◆ Industry Forum ◆

- Development and Suggestion of Greenhouse Vegetable Industry in the City of Beijing ..... LI Jin,HAN Rui-juan(170)
- Development Status,Existing Problem and Development Countermeasures of Fruit Industry in Beijing ..... LIU Yu,GAO Yun-bing,SUN Chao,et al(174)

#### ◆ Summarize ◆

- Research Progress of DNA Barcode in Rare and Endangered Plants ..... XIE Wei-ling,ZOU Rong,YANG Xue,et al(178)
- Research Advance on Subgynocious Line of *Momordica charantia* L. .... ZHANG Jing-yun,WAN Xin-jian,HUANG Yue-qin,et al(183)
- Study on Cultivation,Diseases and Pests Control Techniques of *Moringa olei fera* ..... LIU Zi-ji,CAO Zhen-mu,DANG Xuan-min,et al(186)
- Research Progress on Storage and Preservation Technology of Apple ..... YUAN Yun-xiang(189)
- Research and Prospect of Vegetables Protoplast Culture and Fusion's Status ..... ZHANG Jin-peng,HAN Yu-zhu,ZHANG Xiao-xu,et al(192)
- Application Research on Fog-haze Prevention of Landscape Plants ..... WANG Zhi-lei,ZHAO Hong-xia,ZHAI Fu-shun(196)

#### ◆ Agricultural Relavant Issues ◆

- Study on Based on the Agricultural Versatility Perspective of the Regional Agricultural Tourism Comprehensive Competitiveness Evaluation  
..... CHEN Li-jun,YAO Juan(199)

# 《北方园艺》第五届编委会

主任委员：李文华

副主任委员：李景富 秦智伟 李天来 陈青云 杨文月 陶可全 刘 德 耿月伟 闫文义  
委 员：(以姓氏笔画为序)

于泽源 王秀峰 王清章 王傲雪 车代弟 冯国军 巩振辉 毕洪文 朱延明  
刘 德 刘延杰 刘洪章 齐红岩 闫文义 许 勇 许修宏 李 敏 李文华  
李天来 李玉花 李景富 杨文月 吴凤芝 邹志荣 陈立新 陈青云 陈宗礼  
赵尊练 秦智伟 耿月伟 徐启江 栾非时 高庆玉 高智谋 陶可全 黄家风  
崔继哲 韩贵清

## 编辑出版中心

主 任：毕洪文

副 主 任：苗玉新 黄峰华

主 编：毕洪文

责 任 编 辑：黄峰华

编 辑：李晓晨 张海燕 王 冠 王 超 李 想

广 告 发 行：白晓琳

## 《北方园艺》

BEIFANG YUANYI

(半月刊, 1977年创刊)

2015年第4期(2月下), 总第331期

## NORTHERN HORTICULTURE

(Half Monthly, Started in 1977)

No. 4, 2015(The Second Half of February), Total No. 331

主管单位 黑龙江省农业科学院

Competent Authority Heilongjiang Academy of Agricultural Sciences

主办单位 黑龙江省农业科学院  
黑龙江省园艺学会

Sponsored by Horticulture Society of Heilongjiang Province;  
Heilongjiang Academy of Agricultural Sciences;

编辑出版 《北方园艺》编辑部

Edited and Published by Editorial Department of Northern Horticulture

地 址 哈尔滨市南岗区学府路368号

Address 368 Xuefu Road, Nangang District, Harbin, P.R. of China

邮政编码 150086

Postalcode 150086

电 话 0451-86674276

Tel 0451-86674276

电子信箱 bfybjb@163.com

E-mail bfybjb@163.com

网 址 www.haasep.com

Web www.haasep.com

印 刷 天元铸成实业有限公司

Printed by Tianyuan Zhucheng Industrial Co. LTD

国内发行 哈尔滨市邮局

Domestic Distributed by Harbin Post Office

国外发行 中国国际图书贸易总公司  
(北京399信箱)

Domestic Distributing Code 14-150

Oversea Distributed by International Book Trading Corporation P.O.  
Box 399 Beijing, P.R. of China

广告经营许可证号 2301070000009

Oversea Distributing Code BM 5011

Advertising Business Permit Number 2301070000009

出版日期 每月15、30日

Publishing Date Monthly 15th, 30th

Price RBM 7 yuan

国外邮发代号:BM 5011

国内统一连续出版物号:CN 23-1247/S

国内邮发代号:14-150

定 价:7.00元

ISSN 1001-0009



9 771001 000153