

中国土壤与肥料

ZHONGGUO TURANG YU FEILIAO

双月刊(1964 年创刊)

2018 年第 6 期(总第 278 期)

2018 年 12 月 10 日出版

主 编 徐明岗

副 主 编 卢昌艾

编 委(以姓名笔画为序)

王 旭 王秋兵 石孝均

白由路 刘宝存 孙建光

李 俊 李晓林 杨俊诚

吴立忠 张甘霖 张旭东

林新坚 周建斌 郑海春

赵秉强 逢焕成 黄子蔚

黄鸿翔 曾思坚 谢良商

鲁剑巍 魏 丹

责任编辑 单秀枝

英文编辑 武淑霞

主办单位 中国农业科学院农业资源与农业
区划研究所

中国植物营养与肥料学会

协办单位 国家化肥质量监督检验测试中心
(北京)

农业部微生物肥料和食用菌菌种
质量监督检验测试中心

编辑出版 《中国土壤与肥料》编辑部

地 址 北京中关村南大街 12 号

邮政编码 100081

网 址 <http://chinatrfl.alljournal.net.cn>

电子信箱 trfl@caas.cn

电 话 (010)82108656

传 真 (010)82106225

印 刷 北京科信印刷有限公司

发 行 北京市报刊发行局

订 阅 全国各地邮局

邮发代号 2-559

订 价 15.00 元

中国标准连续出版物号 ISSN 1673-6257
CN 11-5498/S

广告经营许可证 京海工商广字第 0082 号

目 次

• 专题综述 •

土壤生态系统硝化微生物研究进展 杨赛, 朱琳, 魏巍(1)

表面活性剂在农业中的应用及对水环境的危害 王曼如, 闫湘, 李秀英(11)

• 研究报告 •

生物炭的 10 年土壤培肥效应 史思伟, 娄翼来, 杜章留, 王芊, 韩硕, 张庆忠(16)

东北主要类型旱田土壤持水特性研究 王秋菊, 焦峰, 刘峰, 常本超, 姜宇, 米刚, 周鑫, 朱宝国(23)

脲酶/硝化抑制剂双控下红壤性水稻土氮素变化特征 唐贤, 陆大伟, 黄晶, 张旭博, 高菊生, 孙楠, 徐明岗(30)

脲酶抑制剂不同用量对土壤氮素供应的影响 张文学, 王萍, 孙刚, 王少先, 刘增兵, 罗晓燕, 李祖章, 刘光荣(38)

品种演替和土壤肥力对小麦产量和磷生理效率的影响 宋晓, 黄绍敏, 郭斗斗, 张水清, 张珂珂, 宋阿琳, 岳克, 张玉亭(45)

短花针茅荒漠草原土壤呼吸及其对施肥的响应 红梅, 赵巴音那木拉, 包乌云, 德海山, 常国军(53)

有机氮与无机氮不同配比对设施菜地次生盐渍化土壤改良效果 吴荣, 刘善江, 孙昊, 田野, 陈益山, 杜颖, 马良(61)

不同还原物料及土壤改良剂对冬水田水稻生长、养分吸收和土壤性状的影响 陈琨, 康思文, 武法池, 秦鱼生, 喻华, 钟习兵, 涂仕华(67)

菌肥对混播牧草土壤酶活性及微生物的影响 徐忠山, 杨彦明, 陈晓晶, 张博文, 张兴隆, 刘景辉(77)

轮作与连作对烟田土壤微生物区系及多样性的影响 张笑宇, 段宏群, 王闷灵, 李红丽, 芦阿虔, 王岩(84)

玉米间作种植对黑土区农田中小型土壤动物群落的影响 刘鹏飞, 红梅, 平翠枝, 美丽, 王文东, 赵乌英嘎(91)

滴灌水肥一体化条件下番茄氮肥适宜用量探讨 汪俊玉, 刘东阳, 宋霄君, 武雪萍, 李晓秀, 黄绍文, 李若楠(98)

沙土地有机肥替代化肥与灌溉优化在苜蓿上的耦合效应研究 侯俊, 王帅, 崔士通, 王会刚, 张卫峰(104)

温室沟灌条件下不同水氮用量对番茄产量、品质及水肥利用的影响	刘东阳,汪俊玉,武雪萍,李若楠,黄绍文,李晓秀(112)
不同浓度 CO ₂ 与化肥配施对番茄生长和养分吸收的影响	刘汉文,武国慧,王玲莉,张蕾,高纪超,丁芳,张雷,段刚强,李杰,王丽希,石元亮(118)
不同施肥水平对山药生长发育的影响及基于产量反应的养分用量推荐	张月萌,司焕森,薛澄,孙志梅,齐红茹,马文奇(126)
指数施肥对美国山核桃幼苗生长及叶片养分含量的影响	王益明,卢艺,张慧,鞠昌华,裴文明,胡菲,万福绪(136)
设施栽培黄瓜临界氮浓度和氮营养指数模拟	赵敏华,王爱花,赵薇,张治平,江解增,方松林,缪曼珉(141)
钾素水平对 CO ₂ 加富条件下黄瓜光合适应发生的影响	达布希拉图,李珊珊,何丽琼,海梅荣(148)
镁肥对缺镁葡萄叶片活性氧含量和保护酶活性的影响	马晓丽,颜秋阳,刘雪峰,袁项成,向莘苇,杨梅(154)
叶面喷施亚硒酸钠对葡萄果实品质及叶片衰老的影响	薛竟一,王瑞雪,魏蓉,张朝红(161)
杂卤石对玉米生长及养分吸收的影响研究	王媛,李文庆,赵丽娅,李晗灏(166)
增施 CO ₂ 对设施土壤栽培番茄的生长、产量和养分吸收特性的影响	王立革,郭珺,韩雄,王劲松,董二伟,武爱莲,焦晓燕(174)
猪场粪污源大量元素水溶肥料在叶菜上的肥效研究	冯瑶,高艳珍,常会庆,刘元望,孟学良,李兆君(182)
生物有机肥料对连作马铃薯根际营养及生长发育的影响	王文丽,靳海波,李娟,赵旭(187)
牛粪和秸秆好氧发酵堆肥的初始条件研究	田智辉,王亚妮,邹超,卢军党(192)

• 研究简报 •

土壤渗透剂对番茄生长发育的影响	王亮亮,宋伟杰,高志山,宋涛(198)
-----------------	---------------------

• 分析测试 •

硝酸汞滴定法测定复混肥料中氯离子的含量	代阿芳,杨俊,孙月婷(202)
---------------------	-----------------

• 广告・信息 •

《中国土壤与肥料》征稿与征订启事	(10)
欢迎订阅 2019 年期刊	(15)
江苏淮安大华生物科技有限公司	(76)
中国农业科学院微信版“养分专家”上线	(封二)
双龙集团有限公司	(封三)
北京新禾丰农化资料有限公司	(封底)

《中国土壤与肥料》2018 年总目次	(I)
--------------------	-----

SOIL AND FERTILIZER SCIENCES IN CHINA

Bimonthly (Started in 1964)

No. 6, 2018 (Tot. No. 278)
Published on Dec. 10, 2018

Editor in Chief XU Ming-gang

Deputy Editor in Chief LU Chang-ai

Members of Editorial Board

WANG Xu WANG Qiu-bing SHI Xiao-jun
BAI You-lu LIU Bao-eun SUN Jian-guang
LI Jun LI Xiao-lin YANG Jun-cheng
WU Li-zhong ZHANG Gan-lin ZHANG
Xu-dong LIN Xin-jian ZHOU Jian-bin
ZHENG Hai-chun ZHAO Bing-qiang
PANG Huan-cheng HUANG Zi-wei
HUANG Hong-xiang ZENG Si-jian XIE
Liang-shang LU Jian-wei WEI Dan

Sponsored by

Institute of Agricultural Resources and Regional Planning, CAAS

Chinese Society of Plant Nutrition and Fertilizer Sciences

Assisted in

National Center (Beijing) for Quality Supervision and Test of Fertilizers

Center for Quality Supervision and Test of Microbial Fertilizers and Mushroom Spawn, Ministry of Agriculture, P. R. China

Published by Editorial Department of Soil and Fertilizer Sciences in China

Address No. 12 South Street, Zhongguancun, Beijing

Postcode 100081

URL <http://chinatrfl.alljournal.net.cn>

E-mail trfl@caas.cn

Tel (010)82108656

Fax (010)82106225

Oversea Distributor

China International Book Trading Corporation

CONTENTS

- Research progress on nitrifying microorganisms of soil ecosystem YANG Sai, ZHU Lin, WEI Wei(1)
- The application of surfactants in agriculture and harm to the water environment WANG Man-ru, YAN Xiang, LI Xiu-ying(11)
- A 10-year field experiment on biochar amendment: effects on soil fertility SHI Si-wei, LOU Yi-lai, DU Zhang-liu, WANG Qian, HAN Shuo, ZHANG Qing-zhong(16)
- Study on the water retention characteristics of the main types of soil in Northeast China WANG Qiu-ju, JIAO Feng, LIU Feng, CHANG Ben-hao, JIANG Yu, MI Gang, ZHOU Xin, ZHU Bao-guo(23)
- Characteristics of nitrogen changing in red paddy soil under different ratios of NBPT and DMPP to urea TANG Xian, LU Tai-wei, HUANG Jing, ZHANG Xu-bo, GAO Ju-sheng, SUN Nan, XU Ming-gang(30)
- Effects of urease inhibitor addition rate on nitrogen transformation in paddy soil ZHANG Wen-xue, WANG Ping, SUN Gang, WANG Shao-xian, LIU Zeng-bing, LUO Xiao-yan, LI Zu-zhang, LIU Guang-rong(38)
- Effects of variety succession and soil fertility on wheat yield and phosphorus physiological efficiency SONG Xiao, HUANG Shao-min, GUO Dou-dou, ZHANG Shui-qing, ZHANG Ke-ke, SONG A-lin, YUE ke, ZHANG Yu-ting(45)
- Soil respiration of *Stipa breviflora* desert steppe and its responses to fertilization HONG Mei, ZHAO Ba-yinnamula, BAO Wu-yun, DE Hai-shan, CHANG Guo-jun(53)
- Study on the effect of organic nitrogen and inorganic nitrogen on the improvement of secondary salinized soil WU Rong, LIU Shan-jiang, SUN Hao, TIAN Ye, CHEN Yi-shan, DU Ying, MA Liang(61)
- Impacts of reducing materials and amendments on rice yield, nutrient uptake and soil properties in the waterlogged paddy field CHEN Kun, KANG Si-wen, WU Fa-ehi, QIN Yu-sheng, YU Hua, ZHONG Xi-bin, TU Shi-hua(67)
- The effects of microbial fertilizer and mixed-sowing on soil enzyme activities and microbial biomass XU Zhong-shan, YANG Yan-ming, CHEN Xiao-jing, ZHANG Bo-wen, ZHANG Xing-long, LIU Jing-hui(77)
- Effects of rotation and continuous cropping on soil microflora and diversity in tobacco field ZHANG Xiao-yu, DUAN Hong-qun, WANG Men-ling, LI Hong-li, LU A-qian, WANG Yan(84)

Effect of maize intercropping pattern on meso-micro fauna community in black soil	LIU Peng-fei, HONG Mei, PING Cui-zhi, MEI Li, WANG Wen-dong, ZHAO Wu-yingga(91)
Study on the suitable amount of nitrogen fertilizer for tomato under drip irrigation and fertilizer integration ...	WANG Jun-yu, LIU Dong-yang, SONG Xiao-jun, WU Xue-ping, LI Xiao-xiu, HUANG Shao-wen, LI Ruo-nan(98)
The coupling effect on alfalfa from integrated improvement of replacing chemical with organic fertilization and optimized irrigation on sandy soil	HOU Jun, WANG Shuai, CUI Shi-tong, WANG Hui-gang, ZHANG Wei-feng(104)
Greenhouse furrow irrigation under the condition of different water and nitrogen dosage on tomato yield , quality and the influence of water and nitrogen utilization	LIU Dong-yang, WANG Jun-yu, WU Xue-ping, LI Ruo-nan, HUANG Shao-wen, LI Xiao-xiu(112)
Effects of different concentrations of CO ₂ and inorganic fertilizer application on the growth and nutrient utilization of tomato	LIU Han-wen, WU Guo-hui, WANG Ling-li, ZHANG Lei, GAO Ji-chao, DING Fang, ZHANG Lei, DUAN Gang-qiang, LI Jie, WANG Li-xi , SHI Yuan-liang(118)
Effects of different fertilization levels on growth characteristics of yam and nutrient recommendation based on yield response	ZHANG Yue-meng, SI Huan-sen, XUE Cheng, SUN Zhi-meい, QI Hong-ru, MA Wen-qi(126)
Effects of exponential fertilization on growth and foliar nutrient status of pecan seedlings	WANG Yi-ming, LU Yi, ZHANG Hui, JU Chang-hua, PEI Wen-ming, HU Fei, WAN Fu-xu(136)
Simulation of critical nitrogen concentration and nitrogen nutrition index in greenhouse cucumber	ZHAO Min-hua, WANG Ai-hua, ZHAO Wei, ZHANG Zhi-ping, JIANG Jie-zeng, FANG Song-lin, MIAO Min-min(141)
Effect of different potassium concentrations on photosynthetic acclimation of cucumber to elevated CO ₂ concentration	DABU Xi-la-tu, LI Shan-shan, HE Li-qiong, HAI Mei-rong(148)
Effect of magnesium fertilizer on active oxygen content and protective enzyme activity of magnesium deficiency grape leaves	MA Xiao-li, YAN Qiu-yang, LIU Xue-feng, YUAN Xiang-cheng, XIANG Ping-wei, YANG Mei(154)
Effect of foliar-spraying Na ₂ SeO ₃ on the fruit quality and leaf senescence of grapevine	XUE Jing-yi, WANG Rui-xue, WEI Rong, ZHANG Chao-hong(161)
Effect of polyhalite on corn growth and nutrient uptake	WANG Yuan, LI Wen-qing, ZHAO Li-ya, LI Han-hao(166)
The effects of increasing CO ₂ on the growths ,yield and nutrient uptake of tomato cultivated in the greenhouse	WANG Li-ge, GUO Jun, HAN Xiong, WANG Jin-song, DONG Er-wei, WU Ai-lian, JIAO Xiao-yan(174)
Influence of macroelements water soluble fertilizer with pig wastes addition on leaf vegetables yields and qualities	FENG Yao, GAO Yan-zhen, CHANG Hui-qing, LIU Yuan-wang, MENG Xue-liang, LI Zhao-jun(182)
Effects of bio-organic fertilizer on the rhizosphere soil nutrients and growth of continuous cropping potato	WANG Wen-li, JIN Hai-bo, LI Juan, ZHAO Xu(187)
Study on aerobic composting of cow dung and straw under different initial conditions	TIAN Zhi-hui, WANG Ya-ni, ZOU Chao, LU Jun-dang(192)
Effects of soil penetrating agent on tomato growth	WANG Liang-liang, SONG Wei-jie, GAO Zhi-shan , SONG Tao(198)
Chloridion in compound fertilizers determination by mercury nitrate titration	DAI A-fang, YANG Jun, SUN Yue-ting(202)