

CHINESE JOURNAL OF  
APPLIED ENTOMOLOGY



QK2031659

双月刊

3

# 应用昆虫学报

全国中文核心期刊 / 全国科技核心期刊

# 2020



ISSN 2095-1353



9 772095 135202 05

万方数据



中国科学院动物研究所 / 中国昆虫学会 主办  
福建农林大学植物保护学院 / 广东省生物资源应用研究所 协办

# 应用昆虫学报 (YINGYONG KUNCHONG XUEBAO)

第 57 卷 第 3 期 Chinese Journal of Applied Entomology 2020 年 5 月 26 日

## 目 次

- 中国昆虫学 70 年前沿与综述专栏**
- 477 二十一世纪以来棉花害虫治理成就与展望  
陆宴辉 梁革梅 张永军 杨现明
- 491 中国寄生蜂研究及其在害虫生物防治中的应用  
时敏 唐璞 王知知 黄健华 陈学新
- 549 小菜蛾种群灾变及抗药性治理研究进展  
李振宇 肖勇 吴青君 谌爱东 王兴亮 章金明 冯夏
- 568 昆虫母体效应基因功能研究进展  
杨梅 何静怡 林佳 王方海
- 574 蚜虫取食中的细胞壁修饰与免疫功能  
佟佳慧 郭慧娟 赵紫华 孙玉诚
- 586 植食性瘦蚊化学通讯中的信息化学物质  
张凡 陈君 陆鹏飞 刘赛 郭昆 徐荣 乔海莉 徐常青
- 600 昆虫肠道微生物的研究进展和应用前景  
周帆 庞志倡 余小强 汪肖云
- 研究论文**
- 608 草地贪夜蛾幼虫肠道细菌的分离鉴定及纤维素降解细菌的筛选  
李宏伟 杨晓洁 向奕舟 林连兵 张棋麟
- 617 不同地理种群赤拟谷盗肠道细菌群落多样性分析  
王争艳 王洋 何梦婷 鲁玉杰
- 623 沙葱萤叶甲保幼激素结合蛋白基因 *GdJHBP* 的克隆及表达分析  
陈龙 周晓榕 谭瑶 庞保平 新巴音
- 632 褐飞虱基因 *BphMIF1* 克隆及表达分析  
叶穗 冯佩 钟肖 马琪琪 曾曼 齐静雯 王香萍 杨亚珍 张建民
- 640 番茄斑萎病毒  $G_N$  与西花蓟马互作蛋白的初步筛选  
郑晓斌 万岩然 张友军 吴青君
- 658 基于转录组数据的意大利蝗微卫星位点分析与分子标记开发  
桑迪 徐叶 王伟亮 向敏 季荣 王晗
- 667 联苯菊酯与茚虫威对茶尺蠖中肠细胞结构及血淋巴解毒酶的影响  
李良德 刘丰静 王定锋 吴光远
- 676 大豆蚜对不同浓度吡虫啉药剂胁迫的适应性  
张傲楠 韩岚岚 赵奎军 张雯林 肖建飞 陈娟 高丽瞳
- 682 八种常用农药与蜡蚧轮枝菌 JMC-01 的相容性及对烟粉虱若虫的毒力测定  
谢婷 景亮亮 张晓霞 张英 马跃 姜灵 王新谱 贾彦霞
- 690 巴氏新小绥螨甲氧菊酯抗性品系生物学特性及其对常用药剂的交互抗性  
侯栋元 丛林 陈飞 杨娟生 周浩楠 成禄艳 于士将 雷双 刘浩强 冉春
- 700 高温胁迫六斑月瓢虫对其生物学特性及其捕食作用的影响  
金海峰 付步礼 邱海燕 杨石有 周世豪 马晓彤 李善光 张方平 唐良德 刘奎
- 708 江苏沿海地区小麦天敌种群动态与群落特征分析  
孙星星 王凯 孙鑫 李红阳 高波 王凡 蒋颖洁 顾慧玲 张俊喜 马晶晶 周加春
- 718 不同邻作玉米田节肢动物群落特征及稳定性  
张金龙 陈强 钊叠 李强 张晓明 陈国华
- 729 辽宁黄椅山森林公园寄蝇多样性研究  
赵颖 关环环 郝博 何巧巧 张春田
- 735 烟青虫的分类地位和起源地辨析  
宋南 李为争 董钧锋 丁识伯 汤清波 马继盛
- 技术与方法**
- 744 昆虫共生菌对宿主功能研究的方法体系  
王争艳 苗世远 何梦婷 王文芳 鲁玉杰
- 759 使用数字绘图方法绘制透翅毛瓣寄蝇彩图  
李丹 董文彬 贾文英 崔建新

封面照片:草地贪夜蛾 *Spodoptera frugiperda* (Smith)成虫-----张润志 摄,文(639)



# Contents

Vol. 57 No. 3 May 2020

## Special Column

- 477 **Advances in the management of insect pests of cotton in China since the 21<sup>st</sup> century**  
LU Yan-Hui, LIANG Ge-Mei, ZHANG Yong-Jun, YANG Xian-Ming
- 491 **Review of research on parasitoids and their use in biological control in China**  
SHI Min, TANG Pu, WANG Zhi-Zhi, HUANG Jian-Hua, CHEN Xue-Xin
- 549 **Progress in research on diamondback moth (*Plutella xylostella*) outbreaks and the management of resistance in this pest**  
LI Zhen-Yu, XIAO Yong, WU Qing-Jun, SHEN Ai-Dong, WANG Xing-Liang, ZHANG Jin-Ming, FENG Xia
- 568 **Progress in research on the functions of insect maternal effect genes**  
YANG Mei, HE Jing-Yi, LIN Jia, WANG Fang-Hai
- 574 **Effects of aphid saliva on plant cell wall structure and defensive mechanisms**  
TONG Jia-Hui, GUO Hui-Juan, ZHAO Zi-Hua, SUN Yu-Cheng
- 586 **Semiochemicals used in chemical communication by phytophagous gall midges**  
ZHANG Fan, CHEN Jun, LU Peng-Fei, LIU Sai, GUO Kun, XU Rong, QIAO Hai-Li, XU Chang-Qing
- 600 **Insect gut microbiota research: Progress and applications**  
ZHOU Fan, PANG Zhi-Chang, YU Xiao-Qiang, WANG Xiao-Yun

## Research Articles

- 608 **Isolation and identification of the intestinal bacteria, and screening of the cellulolytic bacteria, of *Spodoptera frugiperda* (Lepidoptera: Noctuid) larvae**  
LI Hong-Wei, YANG Xiao-Jie, XIANG Yi-Zhou, LIN Lian-Bing, ZHANG Qi-Lin
- 617 **Diversity of intestinal bacteria in different geographic populations of *Tribolium castaneum* (Coleoptera: Tenebrionidae)**  
WANG Zheng-Yan, WANG Yang, HE Meng-Ting, LU Yu-Jie
- 623 **Cloning and expression profiling of the *Galeruca daurica* juvenile hormone binding protein gene, *GdJHBP***  
CHEN Long, ZHOU Xiao-Rong, TAN Yao, PANG Bao-Ping, XINBAYIN
- 632 **Gene cloning and expression analysis of the *Nilaparvata lugens* (Hemiptera:Delphacidae) *BphMIF1* gene**  
YE Sui, FENG Pei, ZHONG Xiao, MA Qi-Qi, ZENG Man, QI Jing-Wen, WANG Xiang-Ping, YANG Ya-Zhen, ZHANG Jian-Min
- 640 **Identifying proteins in western flower thrips that interact with *Tomato spotted wilt orthotospovirus G<sub>s</sub>***  
ZHENG Xiao-Bin, WAN Yan-Ran, ZHANG You-Jun, WU Qing-Jun
- 658 **Analysis of microsatellite loci from *Calliptamus italicus* (Orthoptera: Acrididae) based on a transcriptome dataset**  
SANG Di, XU Ye, WANG Wei-Liang, XIANG Min, JI Rong, WANG Han

- 667 **Effects of bifenthrin and indoxacarb on the midgut cell structure and hemolymph detoxification enzyme of *Ectropis obliqua* Prout (Lepidoptera: Geometridae)**  
LI Liang-De, LIU Feng-Jing, WANG Ding-Feng, WU Guang-Yuan
- 676 **Effects of semilethal and sublethal doses of imidacloprid on *Aphis glycines* (Hemiptera: Aphididae)**  
ZHANG Ao-Nan, HAN Lan-Lan, ZHAO Kui-Jun, ZHANG Wen-Lin, XIAO Jian-Fei, CHEN Juan, GAO Li-Tong
- 682 **Compatibility of 8 common pesticides with *Lecanicillium lecanii* JMC-01 and the toxicity of different pesticide- *L. lecanii* combinations toxicity to *Bemisia tabaci* nymphs**  
XIE Ting, JING Liang-Liang, ZHANG Xiao-Xia, ZHANG Ying, MA Yue, JIANG Ling, WANG Xin-Pu, JIA Yan-Xia
- 690 **Biological characteristics of a fenpropathrin-resistant strain of *Neoseiulus barkeri* including cross-resistance to commonly used pesticides in orange orchards**  
HOU Dong-Yuan, CONG Lin, CHEN Fei, YANG Juan-Sheng, ZHOU Hao-Nan, CHENG Lu-Yan, YU Shi-Jiang, LEI Shuang, LIU Hao-Qiang, RAN Chun
- 700 **Effects of high temperature stress on the biology and predatory behavior of *Menochilus sexmaculatus***  
JIN Hai-Feng, FU Bu-Li, QIU Hai-Yan, YANG Shi-You, ZHOU Shi-Hao, MA Xiao-Tong, LI Shan-Guang, ZHANG Fang-Ping, TANG Liang-De, LIU Kui
- 708 **Population dynamics and community characteristics of the natural enemies of wheat pests in coastal Jiangsu**  
SUN Xing-Xing, WANG Kai, SUN Xin, LI Hong-Yang, GAO Bo, WANG Fan, JIANG Ying-Jie, GU Hui-Ling, ZHANG Jun-Xi, MA Jing-Jing, ZHOU Jia-Chun
- 718 **Arthropod community characteristics and stability in maize fields adjacent to different crop types**  
ZHANG Jin-Long, CHEN Qiang, CHUAN Die, LI Qiang, ZHANG Xiao-Ming, CHEN Guo-Hua
- 729 **Diversity of Tachinidae in Mt. Huangyi Forest Park, Liaoning, China**  
ZHAO Yin, GUAN Huan-Huan, HAO Bo, HE Qiao-Qiao, ZHANG Chun-Tian
- 735 **Phylogeny and origin of the oriental tobacco budworm *Helicoverpa assulta* (Lepidoptera: Noctuidae)**  
SONG Nan, LI Wei-Zheng, DONG Jun-Feng, DING Shi-Bo, TANG Qing-Bo, MA Ji-Sheng

## Techniques and Methods

- 744 **Review of the methodology used in the functional analysis of insect-microbial symbioses**  
WANG Zheng-Yan, MIAO Shi-Yuan, HE Meng-Ting, WANG Wen-Fang, LU Yu-Jie
- 759 **Producing a digital color illustration of *Nemoraea pellucida* (Diptera: Tachinidae)**  
LI Dan, DONG Wen-Bin, JIA Wen-Ying, CUI Jian-Xin

国内外公开发刊

刊号: CN 11-6020/Q  
ISSN 2095-1353

代号: 国外发行: BM-407  
国内邮发: 2-151

定价: 138.00 元



# Contents

Vol. 57 No. 3 May 2020

## Special Column

- 477 **Advances in the management of insect pests of cotton in China since the 21<sup>st</sup> century**  
LU Yan-Hui, LIANG Ge-Mei, ZHANG Yong-Jun, YANG Xian-Ming
- 491 **Review of research on parasitoids and their use in biological control in China**  
SHI Min, TANG Pu, WANG Zhi-Zhi, HUANG Jian-Hua, CHEN Xue-Xin
- 549 **Progress in research on diamondback moth (*Plutella xylostella*) outbreaks and the management of resistance in this pest**  
LI Zhen-Yu, XIAO Yong, WU Qing-Jun, SHEN Ai-Dong, WANG Xing-Liang, ZHANG Jin-Ming, FENG Xia
- 568 **Progress in research on the functions of insect maternal effect genes**  
YANG Mei, HE Jing-Yi, LIN Jia, WANG Fang-Hai
- 574 **Effects of aphid saliva on plant cell wall structure and defensive mechanisms**  
TONG Jia-Hui, GUO Hui-Juan, ZHAO Zi-Hua, SUN Yu-Cheng
- 586 **Semiochemicals used in chemical communication by phytophagous gall midges**  
ZHANG Fan, CHEN Jun, LU Peng-Fei, LIU Sai, GUO Kun, XU Rong, QIAO Hai-Li, XU Chang-Qing
- 600 **Insect gut microbiota research: Progress and applications**  
ZHOU Fan, PANG Zhi-Chang, YU Xiao-Qiang, WANG Xiao-Yun

## Research Articles

- 608 **Isolation and identification of the intestinal bacteria, and screening of the cellulolytic bacteria, of *Spodoptera frugiperda* (Lepidoptera: Noctuid) larvae**  
LI Hong-Wei, YANG Xiao-Jie, XIANG Yi-Zhou, LIN Lian-Bing, ZHANG Qi-Lin
- 617 **Diversity of intestinal bacteria in different geographic populations of *Tribolium castaneum* (Coleoptera: Tenebrionidae)**  
WANG Zheng-Yan, WANG Yang, HE Meng-Ting, LU Yu-Jie
- 623 **Cloning and expression profiling of the *Galeruca daurica* juvenile hormone binding protein gene, *GdJHBP***  
CHEN Long, ZHOU Xiao-Rong, TAN Yao, PANG Bao-Ping, XINBAYIN
- 632 **Gene cloning and expression analysis of the *Nilaparvata lugens* (Hemiptera:Delphacidae) *BphMIF1* gene**  
YE Sui, FENG Pei, ZHONG Xiao, MA Qi-Qi, ZENG Man, QI Jing-Wen, WANG Xiang-Ping, YANG Ya-Zhen, ZHANG Jian-Min
- 640 **Identifying proteins in western flower thrips that interact with *Tomato spotted wilt orthotospovirus G<sub>s</sub>***  
ZHENG Xiao-Bin, WAN Yan-Ran, ZHANG You-Jun, WU Qing-Jun
- 658 **Analysis of microsatellite loci from *Calliptamus italicus* (Orthoptera: Acrididae) based on a transcriptome dataset**  
SANG Di, XU Ye, WANG Wei-Liang, XIANG Min, JI Rong, WANG Han

- 667 **Effects of bifenthrin and indoxacarb on the midgut cell structure and hemolymph detoxification enzyme of *Ectropis obliqua* Prout (Lepidoptera: Geometridae)**  
LI Liang-De, LIU Feng-Jing, WANG Ding-Feng, WU Guang-Yuan
- 676 **Effects of semilethal and sublethal doses of imidacloprid on *Aphis glycines* (Hemiptera: Aphididae)**  
ZHANG Ao-Nan, HAN Lan-Lan, ZHAO Kui-Jun, ZHANG Wen-Lin, XIAO Jian-Fei, CHEN Juan, GAO Li-Tong
- 682 **Compatibility of 8 common pesticides with *Lecanicillium lecanii* JMC-01 and the toxicity of different pesticide- *L. lecanii* combinations toxicity to *Bemisia tabaci* nymphs**  
XIE Ting, JING Liang-Liang, ZHANG Xiao-Xia, ZHANG Ying, MA Yue, JIANG Ling, WANG Xin-Pu, JIA Yan-Xia
- 690 **Biological characteristics of a fenpropathrin-resistant strain of *Neoseiulus barkeri* including cross-resistance to commonly used pesticides in orange orchards**  
HOU Dong-Yuan, CONG Lin, CHEN Fei, YANG Juan-Sheng, ZHOU Hao-Nan, CHENG Lu-Yan, YU Shi-Jiang, LEI Shuang, LIU Hao-Qiang, RAN Chun
- 700 **Effects of high temperature stress on the biology and predatory behavior of *Menochilus sexmaculatus***  
JIN Hai-Feng, FU Bu-Li, QIU Hai-Yan, YANG Shi-You, ZHOU Shi-Hao, MA Xiao-Tong, LI Shan-Guang, ZHANG Fang-Ping, TANG Liang-De, LIU Kui
- 708 **Population dynamics and community characteristics of the natural enemies of wheat pests in coastal Jiangsu**  
SUN Xing-Xing, WANG Kai, SUN Xin, LI Hong-Yang, GAO Bo, WANG Fan, JIANG Ying-Jie, GU Hui-Ling, ZHANG Jun-Xi, MA Jing-Jing, ZHOU Jia-Chun
- 718 **Arthropod community characteristics and stability in maize fields adjacent to different crop types**  
ZHANG Jin-Long, CHEN Qiang, CHUAN Die, LI Qiang, ZHANG Xiao-Ming, CHEN Guo-Hua
- 729 **Diversity of Tachinidae in Mt. Huangyi Forest Park, Liaoning, China**  
ZHAO Yin, GUAN Huan-Huan, HAO Bo, HE Qiao-Qiao, ZHANG Chun-Tian
- 735 **Phylogeny and origin of the oriental tobacco budworm *Helicoverpa assulta* (Lepidoptera: Noctuidae)**  
SONG Nan, LI Wei-Zheng, DONG Jun-Feng, DING Shi-Bo, TANG Qing-Bo, MA Ji-Sheng

## Techniques and Methods

- 744 **Review of the methodology used in the functional analysis of insect-microbial symbioses**  
WANG Zheng-Yan, MIAO Shi-Yuan, HE Meng-Ting, WANG Wen-Fang, LU Yu-Jie
- 759 **Producing a digital color illustration of *Nemoraea pellucida* (Diptera: Tachinidae)**  
LI Dan, DONG Wen-Bin, JIA Wen-Ying, CUI Jian-Xin

国内外公开发刊

刊号: CN 11-6020/Q  
ISSN 2095-1353

代号: 国外发行: BM-407  
国内邮发: 2-151

定价: 138.00 元