

第 59 卷 | 第 1 期 | Vol.59 | No. 1

CHINESE JOURNAL OF
APPLIED ENTOMOLOGY

Q K 2 2 1 9 4 1 0

1

双月刊

应用昆虫学报

全国中文核心期刊 / 全国科技核心期刊

2022



ISSN 2095-1353



01>
9 772095万方数据



中国科学院动物研究所 主办
中国昆虫学会

应用昆虫学报 (YINGYONG KUNCHONG XUEBAO)

第 59 卷 第 1 期 Chinese Journal of Applied Entomology 2022 年 1 月 26 日

目 次

前沿与综述

1 微流控芯片在昆虫研究中的应用

欧英琪 薛 娅

16 UV 对昆虫的生物学效应及昆虫适应机制

王姿烨 王飞凤 何万财 邱宝利 雷朝亮 桑 文

29 应用昆虫病原线虫防控白蚁的研究现状

陈 彤 曾文慧 颜 珩 李志强

昆虫行为专栏

40 烟蓟马成虫对不同植物挥发物的行为选择

李彩虹 张 浩 陆宴辉

50 褐飞虱对水稻特异性挥发物的行为反应

王晓辉 金奕轩 王艳辉 钟燕妮 李立坤 陈法军

58 东方蜜蜂和西方蜜蜂对红阳猕猴桃雌花挥发性气味响应的差异

张爱馨 吴 杰 黄家兴

66 蝇蛆对斜纹夜蛾和棉铃虫幼虫捕食能力及捕食选择性研究

孙婧婧 王孟卿 张礼生 赵 萍 彩万志 李 虎

75 光周期对小菜蛾羽化节律的影响

田厚军 徐瑞斌 陈 勇 陈艺欣 林 硕 余 芸
杨 广

84 大蜡螟的性选择行为

罗丽林 李从春 龙立炎 黄振兴 王兴红 杨广明
乙天慈 罗雪丹 刘 曼 姜文娜

93 大麦虫幼虫取食塑料的研究

李深静 王 哲 张雅林

104 瓜氨酸对锯叶裂臀瓢虫成虫取食的干扰作用

陈保林 陈钰晴 但建国

研究论文

109 饥饿胁迫下黑腹果蝇长链非编码 RNA 的差异表达和调控

网络分析

高丽斌 李美珍 贺 康 李 飞

124 取食不同夏季寄主对牧草盲蝽若虫生长发育和成虫寿命的影响

张仁福 王 伟 刘海洋 姚 举

134 温度对军配盲蝽生长发育及繁殖的影响

罗 优 肖 峰 黄 敏 何应琴 陈文龙

142 温度对广重粉蛉生长发育和繁殖的影响

梁建锋 韩阅叶 张龙杰 关月娟 王兴民

148 两种生态型空心莲子草对莲草直胸跳甲发育和繁殖的影响

周细欢 王在凌 王佳博 赵常伟 李传仁

156 两种植绥螨种内和种间捕食及适合度

李玉晶 田 宇 尹云飞 迟元铭 曾科科 齐 慧
孟瑞霞

165 植物次生代谢物对甜菜夜蛾生长发育及解毒酶的影响

范能能 王金彦 万年峰 蒋杰贤

172 亚致死剂量吡虫啉对麦二叉蚜生存和繁殖的影响

谢佳燕 吴 聪 林 佳 李 睿 蔡光华

179 根结线虫对斜纹夜蛾幼虫生长及营养利用随龄期变化的研究

王 伟 郭文峰 阳 莎 李晓琼

186 紫外灯对麦蛾卵的杀胚效果

杜社会 吕 兵 崔一凡 代晓彦 郑 礼 陈 浩

193 白龙江林区地表甲虫沿海拔梯度的群落结构及动态分析

李丹春 付作霖 罗子渝 林 媛 蔡建华 唐明代

203 为害陕西眉县猕猴桃的小绿叶蝉族害虫学名更正

王益梅 徐 业 李建军 秦道正

技术与方法

213 一种使用 Image J 重构昆虫感器支配神经的方法

程振丰 付丙鲜 祝增荣 洪 健

封面照片:悬铃木方翅网蝽 *Corythucha ciliata* (Say)----- 张润志 摄,文(74)



Contents

Vol. 59 No. 1 January 26, 2022

Frontiers and Reviews

1 Application of microfluidic chips in insect studies

OU Ying-Qi, XUE Kun

16 Biological effects of ultraviolet light on insects

WANG Zi-Ye, WANG Fei-Feng, HE Wan-Cai, QIU Bao-Li, LEI Chao-Liang, SANG Wen

29 Current status of research on the use of entomopathogenic nematodes as a biological control for termites

CHEN Tong, ZENG Wen-Hui, YAN Xun, LI Zhi-Qiang

Special Column

40 Behavioral responses of adult female *Thrips tabaci* to different plant volatiles

LI Cai-Hong, ZHANG Tao, LU Yan-Hui

50 Responses of the brown planthopper, *Nilaparvata lugens* (Stål) to specific rice plant volatile organic compounds (VOCs)

WANG Xiao-Hui, JIN Yi-Xuan, WANG Yan-Hui, ZHONG Yan-Ni, LI Li-Kun, CHEN Fa-Jun

58 Response of the honeybees *Apis cerana* and *Apis mellifera* to Hongyang kiwifruit female flower volatiles

ZHANG Ai-Xin, WU Jie, HUANG Jia-Xing

66 The predatory capacity of *Arma custos* for *Spodoptera litura* and *Helicoverpa armigera* larvae

SUN Jing-Jing, WANG Meng-Qing, ZHANG Li-Sheng, ZHAO Ping, CAI Wan-Zhi, LI Hu

75 Effect of photoperiod on the timing of eclosion in the diamondback moth, *Plutella xylostella* (Lepidoptera: Plutellidae)

TIAN Hou-Jun, XU Rui-Bin, CHEN Yong, CHEN Yi-Xin, LIN Shuo, YU Yun, YANG Guang

84 Sexual selection in the greater wax moth *Galleria mellonella* L.

LUO Li-Lin, LI Cong-Chun, LONG Li-Yan, HUANG Zhen-Xing, WANG Xing-Hong, YANG Guang-Ming, YI Tian-Ci, LUO Xue-Dan, LIU Man, JIANG Wen-Na

93 Research on the consumption and degradation of plastics by *Zophobas atratus* larvae

LI Chen-Jing, WANG Zhe, ZHANG Ya-Lin

104 Adverse impacts of citrulline on the feeding of adult *Henosepilachna pusillanima*

CHEN Bao-Lin, CHEN Yu-Qing, DAN Jian-Guo

Research Articles

109 The differential expression of long non-coding RNAs and their associated regulation networks in *Drosophila melanogaster* subject to starvation stress

GAO Li-Bin, LI Mei-Zhen, HE Kang, LI Fei

124 Effects of different summer host plants on the developmental duration and adult longevity of *Lygus pratensis* Linnaeus (Heteroptera: Miridae)

ZHANG Ren-Fu, WANG Wei, LIU Hai-Yang, YAO Ju

134 Effects of temperature on the development and reproduction of *Stethoconus japonicus* (Hemiptera)

LUO You, XIAO Feng, HUNAG Min, HE Ying-Qin, CHEN Wen-Long

142 Effects of temperature on the development and reproduction of *Semidalis aleurodiformis* (Neuroptera: Coniopterygidae)

LIANG Jian-Feng, HAN Yue-Ye, ZHANG Long-Jie, GUAN Yue-Shan, WANG Xing-Min

148 The effects of feeding on different ecotypes of *Alternanthera philoxeroides* on the development and reproduction of *Agasicles hygrophila*

ZHOU Xi-Huan, WANG Zai-Ling, WANG Jia-Bo, ZHAO Chang-Wei, LI Chuan-Ren

156 Effect of feeding on conspecific and heterospecific prey on the fitness of two species of phytoseiid mites

LI Yu-Jing, TIAN Yu, YIN Yun-Fei, CHI Yuan-Ming, ZENG Ke-Ke, QI Hui, MENG Rui-Xia

165 Effects of plant secondary metabolites on the growth, development and detoxification enzyme activity of *Spodoptera exigua*

FAN Neng-Neng, WANG Jin-Yan, WAN Nian-Feng, JIANG Jie-Xian

172 Sublethal effects of imidacloprid on the survival and reproduction of *Schizaphis graminum* (Rondani)

XIE Jia-Yan, WU Cong, LIN Jia, LI Rui, CAI Guang-Hua

179 Effects of the root-knot nematode, *Meloidogyne incognita*, on the growth and nutrient utilization of different instars of *Spodoptera litura* larvae

WANG Wei, GUO Wen-Feng, YANG Sha, LI Xiao-Qiong

186 Effectiveness of using ultraviolet light to kill angoumois grain moth eggs

DU Hui-Ling, LÜ Bing, ZHAI Yi-Fan, DAI Xiao-Yan, ZHENG Li, CHEN Hao

193 Community structure and dynamics of ground beetles along an altitudinal gradient in the Bailongjiang forest

LI Dan-Chun, FU Zuo-Lin, LUO Zi-Yu, LIN Yuan, CAI Jian-Hua, TANG Ming-Dai

203 Identifying the species of Empoascine pests damaging kiwifruit in Meixian, Shaanxi

WANG Yi-Mei, XU Ye, LI Jian-Jun, QIN Dao-Zheng

Techniques and Methods

213 A method of reconstructing innervating nerves of insect sensilla using Image J

CHENG Zhen-Feng, FU Bing-Xian, ZHU Zeng-Rong, HONG Jian



Contents

Vol. 59 No. 1 January 26, 2022

Frontiers and Reviews

1 Application of microfluidic chips in insect studies

OU Ying-Qi, XUE Kun

16 Biological effects of ultraviolet light on insects

WANG Zi-Ye, WANG Fei-Feng, HE Wan-Cai, QIU Bao-Li, LEI Chao-Liang, SANG Wen

29 Current status of research on the use of entomopathogenic nematodes as a biological control for termites

CHEN Tong, ZENG Wen-Hui, YAN Xun, LI Zhi-Qiang

Special Column

40 Behavioral responses of adult female *Thrips tabaci* to different plant volatiles

LI Cai-Hong, ZHANG Tao, LU Yan-Hui

50 Responses of the brown planthopper, *Nilaparvata lugens* (Stål) to specific rice plant volatile organic compounds (VOCs)

WANG Xiao-Hui, JIN Yi-Xuan, WANG Yan-Hui, ZHONG Yan-Ni, LI Li-Kun, CHEN Fa-Jun

58 Response of the honeybees *Apis cerana* and *Apis mellifera* to Hongyang kiwifruit female flower volatiles

ZHANG Ai-Xin, WU Jie, HUANG Jia-Xing

66 The predatory capacity of *Arma custos* for *Spodoptera litura* and *Helicoverpa armigera* larvae

SUN Jing-Jing, WANG Meng-Qing, ZHANG Li-Sheng, ZHAO Ping, CAI Wan-Zhi, LI Hu

75 Effect of photoperiod on the timing of eclosion in the diamondback moth, *Plutella xylostella* (Lepidoptera: Plutellidae)

TIAN Hou-Jun, XU Rui-Bin, CHEN Yong, CHEN Yi-Xin, LIN Shuo, YU Yun, YANG Guang

84 Sexual selection in the greater wax moth *Galleria mellonella* L.

LUO Li-Lin, LI Cong-Chun, LONG Li-Yan, HUANG Zhen-Xing, WANG Xing-Hong, YANG Guang-Ming, YI Tian-Ci, LUO Xue-Dan, LIU Man, JIANG Wen-Na

93 Research on the consumption and degradation of plastics by *Zophobas atratus* larvae

LI Chen-Jing, WANG Zhe, ZHANG Ya-Lin

104 Adverse impacts of citrulline on the feeding of adult *Henosepilachna pusillanima*

CHEN Bao-Lin, CHEN Yu-Qing, DAN Jian-Guo

Research Articles

109 The differential expression of long non-coding RNAs and their associated regulation networks in *Drosophila melanogaster* subject to starvation stress

GAO Li-Bin, LI Mei-Zhen, HE Kang, LI Fei

124 Effects of different summer host plants on the developmental duration and adult longevity of *Lygus pratensis* Linnaeus (Heteroptera: Miridae)

ZHANG Ren-Fu, WANG Wei, LIU Hai-Yang, YAO Ju

134 Effects of temperature on the development and reproduction of *Stethoconus japonicus* (Hemiptera)

LUO You, XIAO Feng, HUNAG Min, HE Ying-Qin, CHEN Wen-Long

142 Effects of temperature on the development and reproduction of *Semidalis aleurodiformis* (Neuroptera: Coniopterygidae)

LIANG Jian-Feng, HAN Yue-Ye, ZHANG Long-Jie, GUAN Yue-Shan, WANG Xing-Min

148 The effects of feeding on different ecotypes of *Alternanthera philoxeroides* on the development and reproduction of *Agasicles hygrophila*

ZHOU Xi-Huan, WANG Zai-Ling, WANG Jia-Bo, ZHAO Chang-Wei, LI Chuan-Ren

156 Effect of feeding on conspecific and heterospecific prey on the fitness of two species of phytoseiid mites

LI Yu-Jing, TIAN Yu, YIN Yun-Fei, CHI Yuan-Ming, ZENG Ke-Ke, QI Hui, MENG Rui-Xia

165 Effects of plant secondary metabolites on the growth, development and detoxification enzyme activity of *Spodoptera exigua*

FAN Neng-Neng, WANG Jin-Yan, WAN Nian-Feng, JIANG Jie-Xian

172 Sublethal effects of imidacloprid on the survival and reproduction of *Schizaphis graminum* (Rondani)

XIE Jia-Yan, WU Cong, LIN Jia, LI Rui, CAI Guang-Hua

179 Effects of the root-knot nematode, *Meloidogyne incognita*, on the growth and nutrient utilization of different instars of *Spodoptera litura* larvae

WANG Wei, GUO Wen-Feng, YANG Sha, LI Xiao-Qiong

186 Effectiveness of using ultraviolet light to kill angoumois grain moth eggs

DU Hui-Ling, LÜ Bing, ZHAI Yi-Fan, DAI Xiao-Yan, ZHENG Li, CHEN Hao

193 Community structure and dynamics of ground beetles along an altitudinal gradient in the Bailongjiang forest

LI Dan-Chun, FU Zuo-Lin, LUO Zi-Yu, LIN Yuan, CAI Jian-Hua, TANG Ming-Dai

203 Identifying the species of Empoascine pests damaging kiwifruit in Meixian, Shaanxi

WANG Yi-Mei, XU Ye, LI Jian-Jun, QIN Dao-Zheng

Techniques and Methods

213 A method of reconstructing innervating nerves of insect sensilla using Image J

CHENG Zhen-Feng, FU Bing-Xian, ZHU Zeng-Rong, HONG Jian