



2024年第8期 总421期

茶学研究专题

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2024年02月19日

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学术文献

1. Chemical Communication in Insects: New Advances in Integrated Pest Management Strategies (昆虫的化学通讯: 害虫综合治理策略的新进展)

简介: In this Special Issue, a number of articles aim to highlight recent new advances in IPM strategies, such as the discovery of novel sex and aggregation pheromones; benefits associated with pheromone-baited traps in monitoring and mass trapping; simultaneous monitoring for several different pests with food-baited lures; and mating disruption experiments to manage forest pest populations. In addition, a review dealing with the development of attractive targeted sugar baits (ATSBs) to suppress outdoor biting mosquito populations and the discovery of new attractants for Brachyceran flies using generic noctuid lures is also presented.

来源: Insects 期刊

发布日期: 2023-10-03

全文链接: <http://agri.nais.net.cn/file1/M00/03/64/Csgk0WW4utOALy IAAOKx2Ilpck771.pdf>

2. Identification of sex pheromone in *Macdunnoughia crassisigna* Warren (Lepidoptera: Noctuidae) and field optimization of the sex attractant (银锭夜蛾性信息素的鉴定及性引诱剂的田间优化)

简介: **BACKGROUND**

Sex pheromones have proven to be a viable tool for monitoring and controlling pests and is an important part of integrated pest management (IPM). The noctuid moth *Macdunnoughia crassisigna* Warren poses a significant threat as a defoliator pest, impacting soybean and cruciferous vegetable production and quality in East Asia. However, a lack of comprehensive knowledge about its sexual chemical signaling hampers the development of semiochemical-based IPM approaches for *M. crassisigna*.

RESULTS

We first determined the mating rhythms of *M. crassisigna*. We then collected pheromones from the sex glands of virgin females at the mating peak and analyzed their components using gas chromatography–electroantennogram detection analysis. The results showed that three components elicited significant electrophysiological responses in male antennae. Gas chromatography–mass spectrometry analysis characterized these components as (*Z*)-7-dodecene acetate (*Z*7-12:OAc), (*Z*)-9-tetradecene acetate (*Z*9-14:OAc), and (*Z*)-11-hexadecen-1-ol (*Z*11-16:OH). Further field experiments indicated that the mixture of *Z*7-12:OAc and *Z*9-14:OAc at a ratio of 3:1 displayed significant attractivity to males, confirming its role as a putative sex pheromone of *M. crassisigna*. Long-term monitoring tests showed that traps baited with these pheromone lures effectively mirrored the population dynamics of *M. crassisigna*.

CONCLUSION

This study successfully identified and validated the sex pheromone released by female *M. crassisigna* and formulated potent sex lures for field-based pest monitoring. These findings

enriched our understanding of chemical communication in Noctuidae and laid a foundation for developing practical monitoring and control methods against *M. crassisigna*.

来源: Pest Management Science 期刊

发布日期:2023-09-21

全文链接:http://agri.nais.net.cn/file1/M00/10/37/Csgk0EFiBWCAeKISACRT_wURyzw555.pdf

3. Knockout of the odorant receptor co-receptor, orco, impairs feeding, mating and egg-laying behavior in the fall armyworm *Spodoptera frugiperda* (气味受体协同受体orco的敲除损害了草地贪夜蛾的进食、交配和产卵行为)

简介: The olfactory transduction system of insects is involved in multiple behavioral processes such as foraging, mating, and egg-laying behavior. In the insect olfactory receptor neurons (ORNs), the odorant receptor co-receptor (Orco) is an obligatory component that is required for dimerization with odorant receptors (ORs) to form a ligand-gated ion channel complex. The ORs/Orco heteromeric complex plays a crucial role in insect olfaction. To explore the function of OR-mediated olfaction in the physiological behavior of the fall armyworm, *Spodoptera frugiperda*, we applied CRISPR/Cas9 genome editing to mutate its *Orco* gene and constructed a homozygous mutant strain of *Orco* (*Orco*^{-/-}) by genetic crosses. Electroantennogram (EAG) analysis showed that the responses of *Orco*^{-/-} male moths to two universal sex pheromones, Z9-14: Ac and Z7-12: Ac, were abolished. We found that *Orco*^{-/-} males cannot successfully mate with female moths. An oviposition preference assay confirmed that *Orco*^{-/-} female moths had a reduced preference for the optimal host plant maize. A larval feeding assay revealed that the time for *Orco*^{-/-} larvae to locate the food source was significantly longer than in the wild-type. Overall, in the absence of *Orco*, the OR-dependent olfactory behavior was impaired in both larval and adult stages. Our results confirm that *Orco* is essential for multiple behavioral processes related to olfaction in the fall armyworm.

来源: Insect Biochemistry and Molecular Biology 期刊

发布日期:2023-01-20

全文链接:<http://agri.nais.net.cn/file1/M00/10/37/Csgk0EFiDpKAelghAD2CifKSWus967.pdf>

4. Latest Developments in Insect Sex Pheromone Research and Its Application in Agricultural Pest Management (昆虫性信息素研究进展及其在农业病虫害防治中的应用)

简介: Since the first identification of the silkworm moth sex pheromone in 1959, significant research has been reported on identifying and unravelling the sex pheromone mechanisms of hundreds of insect species. In the past two decades, the number of research studies on new insect pheromones, pheromone biosynthesis, mode of action, peripheral olfactory and neural mechanisms, and their practical applications in Integrated Pest Management has increased dramatically. An interdisciplinary approach that uses the advances and new techniques in analytical chemistry, chemical ecology, neurophysiology, genetics, and evolutionary and molecular biology has helped us to better understand the pheromone perception mechanisms and

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its practical application in agricultural pest management. In this review, we present the most recent developments in pheromone research and its application in the past two decades.

来源: Insects 期刊

发布日期:2021-05-21

全文链接:<http://agri.nais.net.cn/file1/M00/03/64/Csgk0WW4s6qATljiAA3EH3CIHxg672.pdf>

➤ 科技图书

1. Biotremology: Physiology, Ecology, and Evolution (生物震颤学: 生理学、生态学和进化)

简介: 生物震颤学是生物学中一门新兴学科, 涵盖了与基质传播的机械波相关行为的各个方面。本卷提供了顶尖专家的最新评论和技术贡献, 并邀请了年轻的研究人员, 主题包括: 从信号产生、传播到生态环境下的感知。对研究充分的知识类群进行了回顾, 对研究较少的类群或背景补充了研究观点。特别关注测量基质振动的实际问题以及生物震颤学的应用。

来源: SpringerLink 网站

发布日期:2023-05-25

全文链接:<http://agri.nais.net.cn/file1/M00/10/37/Csgk0EFjAYGAdsjxAROAlcYZURg895.pdf>

➤ 专业会议

1. International Pavilions to Take Center Stage, Unite Industry Professionals at World Tea Expo 2024 (2024年国际展馆将成为世界茶博会的中心舞台 行业专业人士将齐聚一堂)

简介: A key experience that will launch at the newly rebranded World Tea Expo – taking place March 18-20, 2024 at the Las Vegas Convention Center – is the International Pavilions, where buyers will have the opportunity to taste and discover new teas from around the world. Located on the expo hall floor, the International Pavilions will showcase a significantly enhanced presence of global tea suppliers, steeped in culture from various countries, including Japan, China, Taiwan, Kenya, India, Sri Lanka, South Africa and more. Included with all passes, World Tea Expo attendees can discover the rich history, diverse flavors and captivating aromas that these international tea producers have to offer.

来源: World Tea News 网站

发布日期:2024-01-09

全文链接:<http://agri.nais.net.cn/file1/M00/10/37/Csgk0EFjB7uAO8v2AAeCBjHxalY291.pdf>