



2024年第17期 总430期

茶学研究专题

本期导读

▶ 前沿资讯

1. 2024年世界茶叶博览会宣布首届饮料挑战赛获胜者

▶ 学术文献

1. 新烟碱类杀虫剂吡虫啉诱导非靶标寄生蜂的化学感知缺陷
2. 昆虫对植物挥发性物质的感知机制及其利用
3. 基于两种密切相关物种中雌性偏好气味受体及其同源物功能分析的昆虫引诱剂的发现
4. 挥发性微生物信息化学物与昆虫对花朵的感知

▶ 相关专利

1. 用于生产昆虫信息素的方法和细胞工厂

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➤ 前沿资讯

1. World Tea Expo 2024 Announces Winners of Inaugural Beverage Challenge (2024年世界茶叶博览会宣布首届饮料挑战赛获胜者)

简介: The largest gathering in the tea industry, World Tea Expo, announces the winners of the 2024 Beverage Challenge, a new competition that allows brands to highlight their finest teas on a global scale and gain recognition from industry experts. These winners represent the best teas and producers in the international tea market. Producers from all over the world submitted teas to be evaluated by a panel of expert judges. Teas were sampled and scored live on the World Tea Expo Stage on merits of leaf style, make, cup character, liquor, appearance and overall finish.

来源: World Tea News 网站

发布日期: 2024-03-19

全文链接: <http://agri.nais.net.cn/file1/M00/03/6C/Csgk0WYlTfmAeyxrAAUkjqQeTMc898.pdf>

➤ 学术文献

1. Neonicotinoid insecticide imidacloprid induces chemosensory deficits in a nontarget parasitoid wasp (新烟碱类杀虫剂吡虫啉诱导非靶标寄生蜂的化学感知缺陷)

简介: Chemical pesticides are widely used to manage the population of arthropod pests. Their increasing use in agriculture has raised concerns about their harmful effects on nontarget organisms, particularly some beneficial insects such as parasitoid wasps. To assess the potential risk and ecological safety of chemical pesticides, it is necessary to understand their impacts on the physiology and behaviour of those important natural enemies of arthropod pests. Here, we applied the *Drosophila* parasitoid *Leptopilina drosophilae* as a study model to investigate the effects of sublethal doses of imidacloprid, a widely used neonicotinoid insecticide. Our results demonstrated the detrimental effects of imidacloprid on the host-searching behaviour of *L. drosophilae* females and the courtship behaviour of *L. drosophilae* males. Comparative transcriptome and functional analysis provided further insights into the potential mechanisms underlying the impaired behaviours, with the downregulated expression of certain chemoreception genes in both female and male exposed wasps. Our findings thus emphasize the importance of understanding the risks associated with the use of chemical pesticides and the need to develop more eco-friendly pest management strategies for a sustainable balance between chemical and biological control.

来源: Science of The Total Environment 期刊

发布日期: 2024-01-10

全文链接: <http://agri.nais.net.cn/file1/M00/03/6C/Csgk0WYGai-AOSskABycAa9Sgwk170.pdf>

2. The Plant Volatile-Sensing Mechanism of Insects and Its Utilization (昆虫对植物挥发性物质的感知机制及其利用)

简介: Plants and insects are engaged in a tight relationship, with phytophagous insects often

utilizing volatile organic substances released by host plants to find food and egg-laying sites. Using plant volatiles as attractants for integrated pest management is vital due to its high efficacy and low environmental toxicity. Using naturally occurring plant volatiles combined with insect olfactory mechanisms to select volatile molecules for screening has proved an effective method for developing plant volatile-based attractant technologies. However, the widespread adoption of this technique is still limited by the lack of a complete understanding of molecular insect olfactory pathways. This paper first describes the nature of plant volatiles and the mechanisms of plant volatile perception by insects. Then, the attraction mechanism of plant volatiles to insects is introduced with the example of *Cnaphalocrocis medinalis*. Next, the progress of the development and utilization of plant volatiles to manage pests is presented. Finally, the functions played by the olfactory system of insects in recognizing plant volatiles and the application prospects of utilizing volatiles for green pest control are discussed. Understanding the sensing mechanism of insects to plant volatiles and its utilization will be critical for pest management in agriculture.

来源: Plants-Basel 期刊

发布日期:2024-01-10

全文链接:<http://agri.nais.net.cn/file1/M00/03/6C/Csgk0WYGXi2AGmYnABz7TgNslGk774.pdf>

3. Discovery of Insect Attractants Based on the Functional Analyses of Female-Biased Odorant Receptors and Their Orthologs in Two Closely Related Species (基于两种密切相关物种中雌性偏好气味受体及其同源物功能分析的昆虫引诱剂的发现)

简介: Olfaction plays an instrumental role in host plant selection by phytophagous insects. *Helicoverpa assulta* and *Helicoverpa armigera* are two closely related moth species with different host plant ranges. In this study, we first comparatively analyzed the function of 11 female-biased odorant receptors (ORs) and their orthologs in the two species by the *Drosophila* T1 neuron expression system and then examined the electroantennography responses of the two species to the most effective OR ligands. Behavioral assays using a Y-tube olfactometer indicate that guaiene, the primary ligand of HassOR21-2 and HarmOR21-2, only attracts the females, while benzyl acetone, the main ligand of HassOR35 and HarmOR35, attracts both sexes of the two species. Oviposition preference experiments further confirm that guaiene and benzyl acetone are potent oviposition attractants for the mated females of both species. These findings deepen our understanding of the olfactory coding mechanisms of host plant selection in herbivorous insects and provide valuable attractants for managing pest populations.

来源: Journal of Agricultural and Food Chemistry 期刊

发布日期:2023-12-01

全文链接:<http://agri.nais.net.cn/file1/M00/03/6C/Csgk0WYGZciAJSXUAGxwZeXI8hI463.pdf>

4. Volatile microbial semiochemicals and insect perception at flowers (挥发性微生物信息化学物与昆虫对花朵的感知)

简介: Many plant-associated microbial communities produce volatile signals that influence insect responses, yet the impact of floral microorganisms has received less attention than other plant microbiomes. Floral microorganisms alter plant and floral odors by adding their own emissions or

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modifying plant volatiles. These contextual and microbe species-specific changes in floral signaling are detectable by insects and can modify their behavior. Opportunities for future work in floral systems include identifying specific microbial semiochemicals that underlie insect behavioral responses and examining if insect species vary in their responses to microbial volatiles. Examining if documented patterns are consistent across diverse plant-microbe-insect interactions and in realistic plant-based studies will improve our understanding of how microbes mediate pollination interactions in complex system.

来源: Current Opinion in Insect Science 期刊

发布日期: 2021-04-20

全文链接: <http://agri.nais.net.cn/file1/M00/10/3F/Csgk0EGvr-CAX7jzAAoDBWpkrV4413.pdf>

➤ 相关专利

1. METHODS AND CELL FACTORIES FOR PRODUCING INSECT PHEROMONES (用于生产昆虫信息素的方法和细胞工厂)

简介: 本发明涉及信息素的生产, 利用表达酰基辅酶A氧化酶的重组酵母将脂肪酰基辅酶A缩短两个碳, 删除内源性酰基辅酶A酶, 表达去饱和酶以引入至少一个双键, 酰基辅酶A还原酶将脂肪酰基CoA转化为脂肪醇, 制备去饱和脂肪醇或醛或乙酸酯。此外, 乙酰转移酶可转化为去饱和的酰基脂肪乙酸酯, 醇脱氢酶或脂肪酰基氧化酶可转化为不饱和脂肪醛。

来源: 美国专利

发布日期: 2023-10-19

全文链接: <http://agri.nais.net.cn/file1/M00/10/3F/Csgk0EG1CXyAcBNzALBwX4TYmng842.pdf>