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茶学研究专题

本期导读

前沿资讯

1．什么会吸引下一代茶爱好者？专家和茶侍者分享见解

学术文献

1．茶树的特定挥发物决定了小贯小绿叶蝉(*Empoasca onukii*)的寄主偏好行为

2．茶小贯小绿叶蝉的基因组变异揭示了其适应性进化的基础

3．谷胱甘肽S-转移酶活性升高与茶小绿叶蝉(*Empoasca flavescens*)田间进化抗性有关

4．茶小贯小绿叶蝉沃尔巴克氏体的检测及其对宿主的影响

科技图书

1．植物酚类物质在非生物胁迫管理中的应用

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前沿资讯

1. What Will Captivate the Next Generation of Tea Enthusiasts? Experts, Tea Sommeliers Share Insights（什么会吸引下一代茶爱好者？专家和茶侍者分享见解）

简介：World Tea News spoke with tea sommeliers and tea leaders about what will shape the future of the tea community and attract the next generation of tea drinkers. They cited functional and wellness teas (teas like immune boosters, stress relief blends, teas for insomnia, etc.), instant tea beverages, the importance of creating an experience around tea, and the need to lower the barrier of entry as next-gen key areas. Flavor, Health and Wellness, Tea Mocktails Will Attract the Next Gen of Tea Drinkers.

来源：World Tea News 网站

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全文链接:http://agri.nais.net.cn/file1/M00/03/60/Csgk0YmHM02AVB4oAAbpw7pC5Hw470.pdf

学术文献

1. Specific volatiles of tea plants determine the host preference behavior of *Empoasca onukii*（茶树的特定挥发物决定了小贯小绿叶蝉(*Empoasca onukii*)的寄主偏好行为）

简介：*Empoasca onukii* is a major pest that attacks tea plants. To seek effective and sustainable methods to control the pest, it is necessary to assess its host preference among different species of tea and understand the critical factors behind this behavior. In this study, the behavioral preference of *E. onukii* for volatile organic compounds (VOCs) of three potted tea species was evaluated. The VOCs released by the three tea species were analyzed using gas chromatography-mass spectrometry, and the major components were used to test the pest's preference. Transcriptome analysis was used to infer the key genes that affect the biosyntheses of the VOCs. The results showed that the tendency of *E. onukii* toward the VOCs of the three tea species was the strongest in green tea, followed by white tea, and the weakest in red tea. This behavioral preference was significantly and positively correlated with the relative levels of hexanol, linalool, and geraniol in tea volatiles. Relative hexanol was significantly and positively correlated with the expression of genes *TEA009423 (LOX2.1)*, *TEA009596 (LOX1.5)*, *TEA008699 (HPL)*, *TEA018669 (CYPADH)*, and *TEA015686 (ADHIII)*. Relative linalool was significantly and positively correlated with the expression of genes *TEA001435 (CAD)* and *Camellia_sinensis_newGene_22126 (TPS)*. Relative geraniol was significantly and positively correlated with the expression of genes *TEA001435 (CAD)*, *TEA002658 (CYP76B6)*, *TEA025455 (CYP76T24)*, and *Camellia_sinensis_newGene_22126 (TPS)*. The above findings suggested that three volatiles (hexanol, linalool, and geraniol) determined the behavioral preference of *E. onukii* toward tea plants, and their biosynthesis was mainly affected by nine genes (*TEA009423*, *TEA009596*, *TEA008699*, *TEA018669*, *TEA015686*, *TEA001435*, *TEA002658*, *TEA025455*, and *Camellia_sinensis_newGene_22126*).

来源：Frontiers in Plant Science 期刊

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2. Genomic Variations in the Tea Leafhopper Reveal the Basis of Its Adaptive Evolution（茶小贯小绿叶蝉的基因组变异揭示了其适应性进化的基础）

简介：Tea green leafhopper (TGL), *Empoasca onukii*, is of biological and economic interest. Despite numerous studies, the mechanisms underlying its adaptation and evolution remain enigmatic. Here, we use previously untapped genome and population genetics approaches to examine how the pest adapted to different environmental variables and thus has expanded geographically. We complete a chromosome-level assembly and annotation of the *E. onukii* genome, showing notable expansions of gene families associated with adaptation to chemoreception and detoxification. Genomic signals indicating balancing selection highlight metabolic pathways involved in adaptation to a wide range of tea varieties grown across ecologically diverse regions. Patterns of genetic variations among 54 *E. onukii* samples unveil the population structure and **evolutionary history** across different tea-growing regions in China. Our results demonstrate that the genomic changes in key pathways, including those linked to metabolism, circadian rhythms, and immune system functions, may underlie the successful spread and adaptation of *E. onukii*. This work highlights the genetic and molecular basis underlying the evolutionary success of a species with broad economic impacts, and provides insights into insect adaptation to host plants, which will ultimately facilitate more sustainable pest management.
来源：Genomics, Proteomics & Bioinformatics 期刊
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3. Higher activity of Glutathione S-transferase enzyme is associated with field evolved resistance in *Empoasca flavescens* Fabricius（谷胱甘肽S-转移酶活性升高与茶小绿叶蝉(*Empoasca flavescens*)田间进化抗性有关）

简介：*Empoasca flavescens* Fabricius is one of the most important sucking pests of tea. Earlier this pest was considered as minor pest of tea. But this has become a serious pest in Sub-Himalayan tea plantations of West Bengal, India. In spite of routine application of insecticides there were some incidences of management failure of this pest. Considering the importance of the problem to the tea industry, the present experiments were conducted with the objectives to study the insecticide susceptibility status of *E. flavescens* and to study the role of Glutathione S-transferase activity. Three commonly used neonicotinoids and three synthetic pyrethroids *i.e.*, total six insecticides were tested against five populations of *E. flavescens*. Bioassay experiments were conducted with the field collected populations and Glutathione S-transferase activities were estimated. Resistance to the tested insecticides was very low (< 2.5-fold). It seems that resistance development against the tested insecticides was in initial stage. Thiamethoxam was found to be the least toxic insecticide and clothianidin was the most toxic insecticide. Higher activity of GST was found to be associated with the reduced susceptibility against the tested insecticides. As very low level of resistance against the

tested insecticides was detected, use of these insecticides may be continued for management of tea greenfly but chemicals having similar mode of action should not be used repeatedly. Clothianidin and deltamethrin were found to be the two potent molecules against tea greenfly.

来源：International Journal of Tropical Insect Science 期刊

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全文链接:http://agri.nais.net.cn/file1/M00/03/60/Csgk0YmGQ8CATQDDAA0gmgutH88924.pdf

4. The Detection of Wolbachia in Tea Green Leafhopper (*Empoasca onukii* Matsuda) and Its Influence on the Host（茶小贯小绿叶蝉沃尔巴克氏体的检测及其对宿主的影响）

简介：Tea green leafhopper (*Empoasca onukii* Matsuda) is a critical pest in tea production. Wolbachia has attracted much attention as a new direction of pest biological control for its ability of manipulating the hosts' reproductive biology. In this work, we focused on the detection of Wolbachia in tea green leafhopper and its effect on host reproduction and development. Polymerase chain reaction (PCR), real-time PCR, and fluorescence in situ hybridization (FISH) techniques were used to detect the distribution of Wolbachia in tea green leafhopper. Wolbachia infection levels were different in different organs of hosts in different insect stages. In addition, comparison between the infected populations and cured population (treated by tetracyclines) revealed that presence of Wolbachia apparently influenced the growth, life cycle, and other reproductive factors of tea green leafhopper, caused, for example, by cytoplasmic incompatibility (CI), thereby reducing number of offspring, shortening lifespan, and causing female-biased sex ratio. This research confirmed that the bacteria Wolbachia was of high incidence in tea leafhoppers and could significantly affect the hosts' reproductive development and evolution.

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科技图书

1. Plant Phenolics in Abiotic Stress Management（植物酚类物质在非生物胁迫管理中的应用）

简介：本书是关于植物酚类物质在植物胁迫管理中作用的综合信息集。主要焦点是解决在不同环境下植物酚类物质的非生物胁迫管理。植物代谢网络对植物代谢的可塑性起着重要的作用，这种可塑性是在不断变化的环境条件下提供陆地植物固着生活方式所必需的。在自然系统中，植物面临着大量的拮抗剂，因此拥有无数的防御能力，并进化出多种防御机制，通过这些机制来应对各种压力以适应环境。植物酚类物质普遍存在于植物的根、茎、叶、花、果和种子等各个部位，对植物适应各种环境起着重要作用。本书将为读者提供对这一动态领域的最新评论，并为未来的研究指明方向。

来源：SpringerLink 网站

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