2019年第2期 总155期

茶学研究专题

本期导读

学术文献

1. 冈叶蝉（半翅目：蝉科）成虫基质振动的传感研究
2. 昆虫振动传播的公共世界
3. 植物基质的变异及其对昆虫振动传播的影响
4. 农业重要昆虫的声学陷阱

相关专利

1. 用于操纵昆虫行为的系统和方法

统计数据

1. 2017年度世界各个国家/地区茶叶种植面积（FAOSTAT）

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学术文献

1. Sensing of Substrate Vibrations in the Adult Cicada *Okanagana rimosa* (Hemiptera: Cicadidae)（冈叶蝉（半翅目：蝉科）成虫基质振动的传感研究）

简介：Detection of substrate vibrations is an evolutionarily old sensory modality and is important for predator detection as well as for intraspecific communication. In insects, substrate vibrations are detected mainly by scolopidial (chordotonal) sense organs found at different sites in the legs. Among these sense organs, the tibial subgenual organ (SGO) is one of the most sensitive sensors. The neuroanatomy and physiology of vibratory sense organs of cicadas is not well known. Here, we investigated the leg nerve by neuronal tracing and summed nerve recordings. Tracing with Neurobiotin revealed that the cicada *Okanagana rimosa* (Say) (Hemiptera: Cicadidae) has a femoral chordotonal organ with about 20 sensory cells and a tibial SGO with two sensory cells. Recordings from the leg nerve show that the vibrational response is broadly tuned with a threshold of about 1 m/s^2 and a minimum latency of about 6 ms. The vibratory sense of cicadas might be used in predator avoidance and intraspecific communication, although no tuning to the peak frequency of the calling song (9 kHz) could be found.

来源：Journal of Insect Science 期刊

发布日期:2018-05-20

全文链:http://agri.ckcest.cn/file1/M00/06/5A/Csgk0FwjLDmABVwAAAgF47mkRNA492.pdf

2. The public world of insect vibrational communication（昆虫振动传播的公共世界）

简介：Food webs involving plants, herbivorous insects and their predators account for 75% of terrestrial biodiversity (Price 2002). Within the abundant arthropod community on plants, myriad ecological and social interactions depend on the perception and production of plant-borne mechanical vibrations (Hill 2008). Study of ecological relationships has shown, for example, that termites monitor the vibrations produced by competing colonies in the same tree trunk (Evans *et al*. 2009), that stink bugs and spiders attend to the incidental vibrations produced by insects feeding or walking on plants (Pfannenstiel *et al*. 1995, Barth 1998) and that caterpillars can distinguish among the foraging-related vibrations produced by their invertebrate predators (Castellanos & Barbosa 2006). Study of social interactions has revealed that many insects and spiders have evolved the ability to generate intricate patterns of substrate vibration, allowing them to communicate with potential mates or members of their social group (Cokl & Virant-Doberlet 2003; Hill 2008). Surprisingly, research on the role of substrate vibrations in social and ecological interactions has for the most part proceeded independently, in spite of evidence from other communication modalities acoustic, visual, chemical and electrical that predators attend to the signals of their prey (Zuk & Kolluru 1998; Stoddard 1999). The study by Virant-Doberlet *et al*. (2011) in this issue of *Molecular Ecology* now helps bring these two areas of vibration research together, showing that the foraging behaviour of a spider is influenced by the vibrational mating signals of its leafhopper prey.

来源：Molecular Ecology 期刊

发布日期:2011-05-20
全文链接:http://agri.ckcest.cn/file1/M00/06/5A/Csgk0FwjL0qADGhiAALLu9rGPq4026.pdf

3. Variation in Plant Substrates and its Consequences for Insect Vibrational Communication（植物基质的变异及其对昆虫振动传播的影响）

简介：Many insects and other arthropods communicate using plant-borne vibrational signals. Vibration transmission along plant stems imposes a frequency filter on signals, and may cause signal degradation from reflected waves. Furthermore, different plant species and plant parts can differ in their transmission properties. This variability in the communication channel may constrain the reliability of signals, with important consequences for the evolution of vibrational communication systems, as well as for researchers studying signal variation at an individual, population, or species level. In this study we estimate the magnitude of substrate-related variation in the mate advertisement signals of a treehopper (Hemiptera: Membracidae: *Umbonia crassicornis*). We used laser vibrometry to record the signals produced by 25 adult males on two different plant species, one host and one non-host. We recorded male signals on two plants per species; within each plant, signals were recorded simultaneously at two distances. We measured three spectral characteristics (dominant frequency, relative amplitude of the signals' high and low frequency components, frequency at the end of the signal) and two temporal characteristics (signal duration and click repetition rate). Spectral characteristics were influenced by the distance at which the signal was recorded, and this influence varied among plant species and individuals. Temporal characteristics were less influenced, although signal length was influenced by distance, an effect that varied among individual plants. Overall, the magnitude of the effects was small. Furthermore, there was significant within-individual repeatability of almost all signal traits across different plant substrates. Signal characteristics were thus reliably associated with individuals, even when they signaled on different plants.

来源：Ethology 期刊
发布日期:2006-08-10
全文链接:http://agri.ckcest.cn/file1/M00/06/5A/Csgk0FwjMnqAFmvKAAOpx6Qux-M557.pdf

4. Acoustic Traps for Agriculturally Important Insects（农业重要昆虫的声学陷阱）

简介：Development of sound-baited traps for insects has lagged behind that of light- and chemical-baited traps. The principal successes for acoustic traps have been with mole crickets (Gryllotalpidae), field crickets (Gryllidae), and ormiine flies (Tachinidae). The crickets are attracted to the conspecific calling song and the flies to the calling songs of their hosts. Electronic sound synthesizers facilitate routine operation of acoustic traps, and increasing the intensity of the sound far above the levels of the natural call greatly increases the numbers trapped. Acoustic traps are most likely to be useful for species that exhibit long-range phonotaxis under natural conditions. Acoustic traps are unlikely to be cost-effective for control but have proved valuable in studying behavior and ecology, collecting specimens, and monitoring populations.

来源：Florida Entomologist 期刊

发布日期:1988-12-20
全文链接:http://agri.ckcest.cn/file1/M00/06/5A/Csgk0FwjKSSAeXVaABNDsK9mCmY741.pdf

相关专利

1. System and method for manipulating insect behavior（用于操纵昆虫行为的系统和方法）

简介：A method and system for detecting the presence of subterranean termites, involving use of a thermal imaging camera to scan the structure before installation of an acoustic sensor in order to quickly locate potential areas of subterranean termite infestation, and an acoustic sensor in the form of an accelerometer or the disclosed innovative acoustic sensors having a bandwidth of at least 100 Hz to 15 kHz to detect noises made by the subterranean termites. Information collected by the acoustic sensor may be transmitted to a portable mini-computer (pocket PC) for confirmation and to a central operations center for inclusion in a comprehensive database of termite data and information. A method and system for detecting the presence of dry-wood termites concealed in a structure, involving use of a heat source to warm up the wooden structure of interest and then using a thermal imaging camera to scan the structure for suspicious dry-wood infestation, followed by the use of an acoustic sensor and pattern recognition software to more precisely and accurately locate potential area of dry-wood termite infestation. Additionally, structural damage can be evaluated by the methods discussed herein, including live trees. Additionally, the method can be used to manipulate termite infestation behavior.
来源：美国专利
发布日期:2008-08-14
全文链接:http://agri.ckcest.cn/file1/M00/06/5A/Csgk0Fwl7gKADsSUAA44hVkZB-E434.pdf

统计数据

1. Tea Area Harvested from all over World Countries/Regions in 2017（FAOSTAT）(2017年度世界各个国家/地区茶叶种植面积（FAOSTAT）)

简介：根据FAOSTAT，最新统计了2017年度世界50个国家/地区茶叶种植面积，具体数据见Tea Area Harvested from all over World Countries/Regions in 2017（FAOSTAT）。

Area	Area Harvested (ha)	Note
Argentina	39600	Official data
Azerbaijan	642	Official data
Bangladesh	53856	Official data
Bolivia (Plurinational State of)	272	Official data
Brazil	185	Official data
Burundi	13836	FAO data based on imputation methodology

Cameroon	2075	FAO data based on imputation methodology
China	2224261	Aggregate, may include official, semi-official, estimated or calculated data
China, mainland	2212750	FAO data based on imputation methodology
China, Taiwan Province of	11511	FAO data based on imputation methodology
Colombia	60	FAO data based on imputation methodology
Democratic Republic of the Congo	12000	FAO estimate
Ecuador	566	FAO data based on imputation methodology
El Salvador	337	FAO data based on imputation methodology
Ethiopia	9782	FAO data based on imputation methodology
Georgia	2302	FAO data based on imputation methodology
Guatemala	1238	FAO data based on imputation methodology
India	621610	Official data
Indonesia	113692	Official data
Iran (Islamic Republic of)	15848	Official data
Japan	43245	FAO data based on imputation methodology
Kenya	218538	Official data
Lao People's Democratic Republic	3990	Official data
Madagascar	1206	FAO data based on imputation methodology
Malawi	17849	FAO data based on imputation methodology
Malaysia	1845	Official data
Mali	93	FAO data based on imputation methodology
Mauritius	622	Official data
Montenegro	124	FAO data based on imputation methodology
Mozambique	31190	FAO data based on imputation methodology
Myanmar	88806	Official data
Nepal	28522	Official data
Panama		Data not available
Papua New Guinea	3952	FAO data based on imputation methodology
Peru	1578	Official data
Portugal	14	FAO data based on imputation methodology
Republic of Korea	2256	FAO data based on imputation methodology

Réunion	587	FAO data based on imputation methodology
Russian Federation	470	Official data
Rwanda	16889	FAO data based on imputation methodology
Seychelles	28	FAO data based on imputation methodology
South Africa	773	FAO data based on imputation methodology
Sri Lanka	233909	FAO data based on imputation methodology
Thailand	8819	FAO data based on imputation methodology
Turkey	82108	Official data
Uganda	29929	FAO data based on imputation methodology
United Republic of Tanzania	15548	FAO data based on imputation methodology
Viet Nam	123188	Official data
Zambia	659	FAO data based on imputation methodology
Zimbabwe	7201	FAO data based on imputation methodology
World	4076102	Aggregate, may include official, semi-official, estimated or calculated data

来源： FAO 网站
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