ECONOMIC ENTOMOLOGY IN THE TROPICS pdf

1: JournalGuide - Journal of Economic Entomology

This short book is orientated towards the needs of developing countries in the humid tropics, and emphasis is given to the agricultural pests of the Oriental and Australian regions.

In New England, the fly uses the hips fruits of Japanese rose, Rosa rugosa and Rosa carolina, as alternative hosts. Rhagoletis pomonella has adapted to sour cherry, Prunus cerasus, in Utah, where it has not been reported from apple White and Elson-Harris While plum, pear and cherries also serve as hosts, usually the apple maggot is not a serious pest of these fruits. Crab apples are invariably infested by this pest. A closely related species, the blueberry maggot fly Rhagoletis mendax Curran , is important as a pest of cultivated blueberries. Damage Back to Top Injury to fruit is caused by maggots boring throughout the fruit, forming irregular, winding tunnels which turn brown, often causing premature dropping of fruit. When the fruit is slightly infested, there may be no external indication of the maggots, but when the fruit ripens, the burrows show as dark, winding trails beneath the skin. Minute egg punctures and distorted, pitted areas may show on the surface. Heavily infested early varieties of fruit will be reduced to a brown rotten masses filled with the fly larvae. Damage caused by the apple maggot fly, Rhagoletis pomonella Walsh. Management Back to Top Cultural: The systematic destruction of infested apples and the elimination of hawthorn and abandoned apple trees in the vicinity of orchards are considered valid control practices. Hymenopterous parasites recorded from Rhagoletis pomonella are a braconid wasp, Opius melleus Gahan, which attacks the larvae, and a tiny mymarid wasp, Patasson conotracheli Girault , which attacks the eggs. Because the apple maggot feeds within fruit, biological control agents have not been very effective Varela Consult local university or state recommendations. Emergence and dispersal of adult flies must be carefully monitored to effectively time treatments. Sticky traps, including yellow rectangles and red spheres, are used in other areas to monitor adults and time treatments. Unfortunately, only provisional economic thresholds are available for apple maggots, even in areas where it has long been a pest. You can detect the first emergence of adults by hanging yellow sticky traps in abandoned orchards or unsprayed apple trees in infested areas. To detect the beginning of egg laying, hang red sticky spheres in apple trees, then treat as soon as the first fly is found. In Oregon, where some orchards are treated regularly for apple maggots, the first maggot spray is applied seven to 10 days after the first fly has emerged. Later sprays follow at 10 to 14 day intervals as long as adults are active and are being caught in traps Varela Control of apple insects. Connecticut Agricultural Experiment Station Bulletin Apple maggot fly emergence in western New York. Agricultural Experiment Station Bulletin Further studies of lures attractive to the apple maggot. Journal of Economic Entomology Timing the seasonal cycles of insects: The emergence of Rhagoletis pomonella. Apple maggot Rhagoletis pomonella. Diagnostic Services at Michigan State University. Apple maggot fly Diptera: Tephritidae response to perforated red spheres. Fruit Flies of economic significance: Their identification and bionomics. Updated for this publication Photographs:

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2: Insecta Bibliographies/NCState-AgNIC

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Economic entomology Save Economic entomology is a field of entomology , which involves the study of insects that benefit or harm humans, domestic animals , and crops. Insects that cause losses are termed as pests. Some species can cause indirect damage by spreading diseases and these are termed as vectors. Those that are beneficial include those reared for food such as honey , substances such as lac or pigments and for their role in pollinating crops and controlling pests. History In the 18th century many works were published on agriculture. Many contained accounts of pest insects. In France Claude Sionnest â€" was a notable figure. It was not until the last quarter of the 19th century that any real advance was made in the study of economic entomology. During the 19th century Italian entomologists made significant progress in controlling diseases of the silkworm moth, in the control of agricultural pests and in stored product entomology. American literature began as far back as , when a report on the Hessian fly was issued by Sir Joseph Banks ; in Thomas Say began his writings; while in Asa Fitch started his report on Noxious Insects of New York. It became a standard text worldwide. Department of Agriculture , extending from to his death, in which is embodied an enormous amount of valuable material. The chief writings of J. Lintner extend from to , in yearly parts, under the title of Reports on the Injurious Insects of the State of New York. Another significant contributor to the entomological literature of the United States was Charles W. In France Alfred Balachowsky was a key figure. In the last quarter of the 20th century new techniques were pioneered and new theories developed, for instance Integrated Pest Management by Ray F. Harmful insects Insects considered pests of some sort occur among all major living orders with the exception of Ephemeroptera mayflies , Odonata , Plecoptera stoneflies , Embioptera webspinners , Trichoptera caddisflies , Neuroptera in the broad sense , and Mecoptera also, the tiny groups Zoraptera , Grylloblattodea , and Mantophasmatodea. Conversely, of course, essentially all insect orders primarily have members which are beneficial, in some respects, with the exception of Phthiraptera lice , Siphonaptera fleas , and Strepsiptera , the three orders whose members are exclusively parasitic. Insects are considered as pests for a variety of reasons, including their direct damage by feeding on crop plants in the field or by infesting stored products indirect damage by spreading viral diseases of crop plants especially by sucking insects such as leafhoppers spreading disease among humans and livestock annoyance to humans.

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3: Economic entomology : Wikis (The Full Wiki)

James Kerrigan, University of Florida [Click thumbnail to enlarge. The eggs become brownish-red as they mature. The eggs are flattened, overlapping, and slightly oval in shape. Tropical sod webworm egg cluster laid on grass leaf sheath. Nastaran Tofangsazi, University of Florida [Click thumbnail to enlarge. There are six instars, and larval head capsules at their widest points measure 0. Average body length of each instar is 1. Tropical sod webworm larval instars, pre-pupae and pupa L to R. The pupae are normally buried in the upper thatch. Pupa found in cocoon in St. Steven Arthurs, University of Florida [Click thumbnail to enlarge. Populations decline over the winter and increase slightly beginning in the spring Marchâ€"May Cherry and Wilson In more northern regions of Florida Gainesville , the peak of flight activity was reported in October and November Kerr and Augustâ€"October John Capinera, unpublished observations. Indications are that this species does not survive the winter in the northern part of the state Kerr , and thus seems possible that some seasonal migration of this species may occur. Adults rest in sheltered and shrubby areas during the day and are active at dusk Cherry and Wilson Adult tropical sod webworms have been observed feeding on nectar sources Sourakov Females deposit eggs on grass blades in the evening, and eggs hatch in 3 to 4 days. Tropical sod webworms develop through six larval instars, pre-pupal and pupal stages over 21 to 47 days, depending on temperature. Multiple generations may occur during a year e. Hosts Tropical sod webworm is a pest of all warm season turf grasses, including centipedegrass Eremochloa ophiuroides [Munro. Augustinegrass Stenotaphrum secundatum [Walter] Kuntze. This species is also known to feed on cool season grasses including creeping bentgrass Agrostis stolonifera L. Economic Importance Turfgrass sod production is an important industry in the United States covering more than 25 million hectares, and Florida is one of the main sod producing states cultivating an estimated 37, ha and harvesting over 25, ha annually Haydu et al. Tropical sod webworm is an economically injurious pest of turfgrasses including St. Augustinegrass, the most common turfgrass planted in home lawns in Florida Trenholm and Unruh Several large outbreaks of this pest have been reported from Florida and Texas. Damage Larvae are the damaging stages. Neonates first instar larvae are small 1 mm long and their feeding activity is hardly noticeable. Fifth and sixth instars can severely damage grass by chewing entire sections off the leaf blade. Larval feeding occurs at night, and larvae hide in the thatch during the day. Caterpillars prefer dry and hot grass areas. Early damage is hard to notice and creates a ragged appearance, but as larvae grow, they consume considerable quantities of grass before pupating. Grass may recover if infestations are not too severe, but feeding damage causes yellowish and brown patches and often leads to the ingress of weeds. Window feeding on right caused by younger larval instars of tropical sod webworm. Several insecticides may be used to control this pest, but appropriate timing, risks of resistance, and non-target impacts need to be considered. Finding larvae with soap flushes, especially if moths were previously seen, and spot treatment of infested areas are recommended. The sex pheromone of this species, which would allow sex-based monitoring, has not been described. Chemical Control Current control recommendations for Herpetogramma phaeopteralis are mainly application of above-ground chemical insecticides against larval stages. Control should be against damaging larvae, not the flying moths. Small larvae are generally easier to control than larger larvae. At least 10 chemical compounds are currently registered for control of lawn caterpillars including sod webworms in North America Tofangsazi et al. Cultural Control Healthy turfgrass, proper fertilization, irrigation and proper mowing can decrease susceptibility of turfgrass against tropical sod webworm. Excessive fertilizing is a leading cause of caterpillar outbreaks in lawns. Healthy turfgrass can also better maintain an acceptable appearance under low to moderate insect infestation pressure. Furthermore, cultural practices such as tillage, thatch removal by vertical mowing or power raking can reduce pest populations. Because eggs are laid on grass blades, removal of grass clipping during this time might also reduce populations. Host Plant Resistance Plant resistance is a potential tool for managing tropical sod webworm. The following cultivars of St. Augustinegrass were susceptible to

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Herpetogramma phaeopteralis: Biological Insecticides Entomopathogenic nematodes esp. Steinernema carpocapsae have been successfully tested against tropical sod webworms in Florida Tofangsazi et al. Beauveria bassiana , and the bacterial-based insecticides Bacillus thuringiensis var. Tropical sod webworm larvae killed by an entomopathogenic nematode, Steinernema feltiae A , and a healthy control larva B. Tropical sod webworm larvae killed by Beauveria bassiana. The fungus is sporulating on the dead larvae. Preserving natural enemies by using low-toxicity insecticides may help limit outbreaks of this pest. However, the impact of biological control agents on tropical sod webworm has not been documented. Flight activity of tropical sod webworms Lepidoptera: Economic impacts of the turfgrass and lawncare industry in the United States. Mating behavior and female-produced pheromone use in tropical sod webworm Lepidoptera: Resistance in zoysiagrass, Zoysia spp. International Turfgrass Society Research Journal 9: Resistance to tropical sod webworm Herpetogramma phaeopteralis Lepidoptera: International Turfgrass Society Research Journal Trophic interactions involving Herpetogramma phaeopteralis Lepidoptera: Pyralidae and Passiflora incarnata Passifloraceae. Thermal requirements and development of Herpetogramma phaeopteralis Lepidoptera: Journal of Economic Entomology Efficacy of commercial formulations of entomopathogenic nematodes against tropical sod webworm, Herpetogramma phaeopteralis Lepidoptera: Journal of Applied Entomology Concentrationâ€”response and residual activity of insecticides to control Herpetogramma phaeopteralis Lepidoptera: Original publication date October Visit the EDIS website at http: The Institute of Food and Agricultural Sciences IFAS is an Equal Opportunity Institution authorized to provide research, educational information and other services only to individuals and institutions that function with non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, marital status, national origin, political opinions or affiliations.

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4: Economic entomology | Revolvy

Economic entomology is a field of entomology, which involves the study of insects that benefit or harm humans, domestic animals, and www.enganchecubano.coms that cause losses are termed as pests.

Previous - Next Anon. On-farm maize drying and storage in the humid tropics. Manual of pest control for food security grain stocks. International code of conduct on the distribution and use of pesticides. Insect control in stacks of bagged milled rice using carbon dioxide treatment and an experimental PVC-membrane enclosure. Interaction of maize weevil and parasitoid Anisopteromalus calandrae Hymenoptera: Pteromalidae in a small bulk of stored corn. Journal of Economic Entomology, 83 6 , Space treatments of a warehouse using dichlorvos. Control of Acanthoscelides obtectus Say Coleoptera: Bruchidae in Phaseolus vulgaris L. Journal of Stored Products Research, 28 2 , and Controlled atmosphere storage of grain: Bell, C H The tolerance of developmental stages of four stored products moths to phosphine. Journal of Stored Products Research, 12, Bisbrown, A J K Natural Resources Institute Bulletin No. Bond, E J Manual of fumigation for insect control. Boxall, R A A critical review of the methodology for assessing farm-level grain losses after harvest. Effects of Xylocoris flavipes HemipteM: Anthocoridae releases on moth populations in experimental peanut storage. Journal of Entomological Science, 25 2 , Interaction of Bracon hebetor Hymenoptera: Braconidae and Trichogramma pretiosum Hymenoptera: Trichogrammatidae in suppressing stored product moth populations in small in-shell peanut storages. Journal of Economic Entomology, 83 3 , Wheat storage in a semidesert region. Tropical Science, 29, 9 l - 11 0. Report of the FAO global survey of pesticide susceptibility of stored grain pests. Champ, B R and Highley, E Pesticides and humid tropical grain systems. Proceedings of an international seminar, Manila, Philippines, May Bulk handling and storage of grain in the humid tropic. Proceedings of an international seminar, Kuala Lumpur, Malaysia, October Highley, E and Banks, H J Fumigation and controlled atmosphere storage of grain. Proceedings of an international conference, Singapore, February Christensen, C M Storage of cereal grains and their products. American Association of Cereal Chemists Inc. Daglish, G and Bengston, M Grain moisture and the activity of protectants. Controlling insect pests of stored products using insect growth regulators and insecticides of microbial origin. Natural Resources Institute Publication. Dermott, T and Evans, D E An evaluation of fluidized-bed heating as a means of disinfesting wheat. Journal of Stored Products Research, 14, Desmarchelier, J M Selective treatments, including combinations of pyrethroid and organophosphorus insecticides, for control of stored product Coleoptera at two temperatures. Journal of Stored Product Research, 13 3 , A review of insect infestation of maize in farm storage in Africa with special reference to the ecology and control of Prostephanus truncatus. Biological methods for integrated control of insects and mites in tropical stored products; ed. The use of resistant varieties. Tropical Stored Products Information, No. Laboratory selection of resistance by the red flour beetle Tribolium castaneum Herbst to an atmosphere of low oxygen concentration. Phytoparasitica, 18 2 , Dunkel, F V The stored grain ecosystem: Journal of Stored Products Research, 28 2 , Evans, D E a. Integrated Pest Management, ed. A J Burner et al. Evans, D E b. The influence of rate of heating on the mortality of Rhyzopertha dominica F. Journal of Stored Products Research, 23, Some factors influencing the infestation of corn in the field by the rice weevil. Journal of Economic Entomology, 51, Friendship, C A R. Halliday, D and Harris, A H Factors causing the development of resistance to phosphine by insect pests of stored produce. Friendship, C A R Choice of fumigation sheets for use in the tropics. Giles, P H Control of insects infesting stored sorghum in Northern Nigeria. Journal of Stored Products Research, 1, Giles, P H and Ashman, F A study of preharvest infestation of maize by Sitophilus zeamais Motsch. Curculionidae in the Kenya Highlands. Journal of Stored Products Research, 7, Improvements in maize storage for the small-holder farmer. Insect Science and its Application, 9 6 , Aeration of stored grains: Haines, C P The use of predators and parasites. Insects and arachnids of tropical stored products: Brown-rice bait bags for monitoring insect pest populations in bag stacks of milled rice as an aid to pest control decision-making. Postharvest Grain Loss Assessment Methods. Hayward, L A W Structural features of warehouses adapted for long term storage in dry tropical climates. Tropical Stored Products Information No. Hebblethwaite, M J The

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5: tropical sod webworm- Herpetogramma phaeopteralis

Journal of Economic Entomology, Volume 64, Issue 5, 15 Testing of Insecticides Against the Tropical Horse Tick in the Laboratory, Journal of Economic.

Fossil insects from Antarctica. Entomological field research in Antarctica. Antarctic Research Series Entomology of the Aucklands and other islands south of New Zealand. Pacific Insects Monograph Insect habitats on Antarctica. Polar Record 10 Advances in Antarctic and far southern Entomology. Entomology of the Aucklands and other islands south of New Zealand: Biogeographic aspects of the Subantarctic Islands. Adaptations to alpine and polar environments and insects and other arthropods. Insects at Low Temperatures. Department of Biology, University of Oslo, Norway. I57] Usher, M. The selection of conservation areas in Antarctica: Environmental Conservation 13 2: Zoogeography of some terrestrial micro arthropoda in Antarctica. Biological Review 48 2: The Insects of Australia. A Textbook for Students and Research Workers. Melbourne University Press, Carlton, Australia. I5] Ferro, D. Standard names for common insects of New Zealand. Bulletin, Entomological Society of New Zealand 4: Bibliography of New Guinea entomology. Pacific Insects Monograph Bernice P. Melbourne University Press, Carlton, Victoria. Australian Insects--an Introductory Handbook. Bibliography of New Zealand entomology 1[7]75 to with annotations. N4 N4] Miller, D. Reed, Sydney and Auckland. English and Maori names] Naumann, I. Common and scientific names of New Zealand mites. Duke University] Ramsay, G. Bibliography of New Zealand terrestrial invertebrates , and guide to the associated information retrieval database BUGS. Bulletin Entomological Society of New Zealand R36] Ramsay, G. Guide to New Zealand Entomology. Entomological Society of New Zealand, Auckland. New Zealand Insects and Their Story. A catalogue of New Zealand insects and their host plants. The Insects of Australia and New Zealand. Guide to the aquatic insects of New Zealand. Bulletin of the Entomological Society of New Zealand 9: Bulletin of the Auckland Institute and Museum Deitz] Zoological Catalogue of Australia. K] Acta Zootaxonomia Sinica. A Review of Research Division of Entomology Agricultural Information Service, Dacca, Pakistan. P3 E2] Alam, M. Insect and other pests of agricultural importance in India. Plant Protection Bulletin, India 22 4 R5 L57] Barraud, P. Taylor and Francis, London. I4 D56] Bibliography of Indian Zoology. Zoological Survey of India, Calcutta, India. Fascinating Insects of Southeast Asia. Diptera Nematocera Excluding Culicidae and Chironomidae. Agricultural Entomology in the Tropics. Bibliography of Entomology in Taiwan T3 C5] Chung, C. Rhynchota Heteroptera and Homoptera. Special Collections Folio QL I4 D6] Donovan, E. Natural History of the Insects of China. C5 D65] Donovan, E. Natural History of the Insects of India. Insect Names in Latin, English and Chinese. Chinese Academy of Sciences, Beijing, China. O2 F69] Guan, Z-H. Agricultural Publishing House, Beijing, China. H23, 1st reprint ed. P13 H39] Hill, D. Insects of Hong Kong. Hong Kong Press, Hong Kong. H85 H55] Hill, D. Cambridge University Press, London. I63] Indian Journal of Entomology. I4] Journal of Entomological Research. De Plagen van de Cultuurgewassen in Indonesie. I5 K34] Kalyanam, N. Common Insects of India. Asia Publishing House, Bombay. I4 K3] Kapoor, V. Perspectives in Insect Systematics. Inter-India Publications, New Delhi. Insect Life in the Tropics. Longmans, Green, and Co. Status of insect taxonomy in China, with notes on biological control of pests. In Biological Control of Pests in China. Academic Press, San Diego, California. Economic Entomology in the Tropics. Academic Press, New York. T7 L35] Le Pelley, R. C6 L38] Ma, S-J. An English-Chinese Glossary of Agro-entomology. Thacker and Spink, Calcutta. I5 M38] Maxwell-Lefroy, H. I4 M38] McNutt, D.

6: Grain storage techniques - Insect control - References

From Wikipedia, the free encyclopedia. Economic entomology is a field of entomology, which involves the study of insects that are of benefit or those that cause harm to humans, domestic animals, and crops.

Crambidae Introduction Back to Top Tropical sod webworm larvae are destructive pests of warm season turfgrasses in the southeastern U. Larval feeding damage reduces turfgrass aesthetics, vigor, photosynthesis and density. The first sign of damage is often caused by differences in grass height in areas where larvae are feeding. Augustinegrass residential lawn damaged by tropical sod webworm foreground. Photograph by Steven Arthurs , University of Florida. Description Back to Top Adults: At rest, wings are held in a triangular shape. Adult males usually have six abdominal segments whereas females have five. The terminal segment in males has a slim extension, while the anal segment of the female has a large fusiform opening. Adult tropical sod webworm. Photograph by James Kerrigan , University of Florida. Adult tropical sod webworm resting in grass. Adult females deposit clusters of 10 to 35 creamy-white eggs on the upper surface of grass blades. The eggs become brownish-red as they mature. The eggs are flattened, overlapping and slightly oval in shape. Tropical sod webworm egg cluster laid on grass leaf sheath. Photograph by Nastaran Tofangsazi , University of Florida. Caterpillars are cream-colored with brown spots on each segment and a dark, yellowish brown head. There are six instars and larval head capsules at their widest points measure 0. Average body length of each instar is 1. Tropical sod webworm larval instars, pre-pupae and pupa L to R. The reddish brown pupae are about 8. The pupae are normally buried in the upper thatch. Pupa found in cocoon in St. Seasonal Biology Back to Top In southern FL, tropical sod webworm adults are present year round, with significantly higher numbers in the fall September- November. Populations decline over the winter and increase slightly beginning in the spring March-May Cherry and Wilson In more northern regions of Florida Gainesville , the peak of flight activity was reported in October and November Kerr and August- October John Capinera, unpublished observations. Indications are that this species does not survive the winter in the northern part of the state Kerr and thus seems possible that some seasonal migration of this species may occur. Adults rest in sheltered and shrubby areas during the day and are active at dusk Cherry and Wilson Adult tropical sod webworms have been observed feeding on nectar sources Sourakov Females deposit eggs on grass blades in the evening, and eggs hatch in 3 to 4 days. Tropical sod webworms develop through six larval instars, pre-pupal and pupal stages over 21 to 47 days, depending on temperature. Multiple generations may occur during a year e. Hosts Back to Top Tropical sod webworm is a pest of all warm season turf grasses, including centipedegrass Eremochloa ophiuroides [Munro. Augustinegrass Stenotaphrum secundatum [Walter] Kuntze. This species is also known to feed on cool season grasses including creeping bentgrass Agrostis stolonifera L. Economic Importance Back to Top Turfgrass sod production is an important industry in the United States covering more than 25 million hectares, and Florida is one of the main sod producing states cultivating an estimated 37, ha and harvesting over 25, ha annually Haydu et al. Tropical sod webworm is an economically injurious pest of turfgrasses including St. Augustinegrass, the most common turfgrass planted in home lawns in Florida Trenholm and Unruh Several large outbreaks of this pest have been reported from Florida and Texas. Damage Back to Top Larvae are the damaging stages. Neonates first instar larvae are small 1 mm long and their feeding activity is hardly noticeable. Fifth and sixth instars can severely damage grass by chewing entire sections off the leaf blade. Larval feeding occurs at night, and larvae hide in the thatch during the day. Caterpillars prefer dry and hot grass areas. Early damage is hard to notice and creates a ragged appearance, but as larvae grow, they consume considerable quantities of grass before pupating. Grass may recover if infestations are not too severe, but feeding damage causes yellowish and brown patches and often leads to the ingress of weeds. Window feeding on right caused by younger larval instars of tropical sod webworm. Tropical sod webworm damage to St. Close-up of tropical sod webworm feeding damage. Mature tropical sod webworm larvae feeding in thatch. Management Back to Top Despite the economic importance of Herpetogramma phaeopteralis, little information on integrated pest management programs of this pest has been reported. Several insecticides may be used to control this pest, but appropriate timing, risks of resistance

and non-target impacts need to be considered. Finding larvae with soap flushes, especially if moths were previously seen, and spot treatment of infested areas are recommended. The sex pheromone of this species, which would allow sex-based monitoring, has not been described. Current control recommendations for Herpetogramma phaeopteralis are mainly application of above-ground chemical insecticides against larval stages. Control should be against damaging larvae, not the flying moths. Small larvae are generally easier to control than larger larvae. At least 10 chemical compounds are currently registered for control of lawn caterpillars including sod webworms in North America Tofangsazi et al. Healthy turfgrass, proper fertilization, irrigation and proper mowing can decrease susceptibility of turfgrass against tropical sod webworm. Excessive fertilizing is a leading cause of caterpillar outbreaks in lawns. Healthy turfgrass can also better maintain an acceptable appearance under low to moderate insect infestation pressure. Furthermore, cultural practices such as tillage, thatch removal by vertical mowing or power raking can reduce pest populations. Because eggs are laid on grass blades, removal of grass clipping during this time might also reduce populations. Plant resistance is a potential tool for managing tropical sod webworm. The following cultivars of St. Augustinegrass were susceptible to Herpetogramma phaeopteralis: Steinernema carpocapsae , have been successfully tested against tropical sod webworms in Florida Tofangsazi et al. Beauveria bassiana , and the bacterial-based insecticides Bacillus thuringiensis var. Tropical sod webworm larvae killed by an entomopathogenic nematode, Steinernema feltiae A , and a healthy control larva B. Tropical sod webworm larvae killed by Beauveria bassiana. The fungus is sporulating on the dead larvae. Beneficial arthropods observed attacking tropical sod webworm include several generalist predators, i. Preserving natural enemies by using low-toxicity insecticides may help limit outbreaks of this pest. However, the impact of biological control agents on tropical sod webworm has not been documented. Flight activity of tropical sod webworms Lepidoptera: Economic impacts of the turfgrass and lawncare industry in the United States. Mating behavior and female-produced pheromone use in tropical sod webworm Lepidoptera: Resistance in zoysiagrass, Zoysia spp. International Turfgrass Society Research Journal 9: Resistance to tropical sod webworm Herpetogramma phaeopteralis Lepidoptera: International Turfgrass Society Research Journal Trophic interactions involving Herpetogramma phaeopteralis Lepidoptera: Pyralidae and Passiflora incarnata Passifloraceae. Thermal requirements and development of Herpetogramma phaeopteralis Lepidoptera: Journal of Economic Entomology, in press. Efficacy of commercial formulations of entomopathogenic nematodes against tropical sod webworm, Herpetogramma phaeopteralis Lepidoptera: Journal of Applied Entomology Concentration-response and residual activity of insecticides to control Herpetogramma phaeopteralis Lepidoptera: Journal of Economic Entomology

7: Economic entomology in the tropics.

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8: White-Ant-Proof Wood for the Tropics | Journal of Economic Entomology | Oxford Academic

ABSTRACT Studies were conducted in tropical greenhouses to elucidate the role of UV light (UV) for the orientation and flight behavior of the thrips Ceratothripoides claratris (Shumsher) (Thysanoptera: Thripidae), an important pest on tomato (Lycopersicum spp.), in the hot and humid tropics of South-East Asia.

9: List of entomology journals - Wikipedia

Insects are the most diverse group of animals on earth, filling niches in ecosystems from the tropics to the Arctic. Their variety and sheer numbers make them significant factors in human economy and society, whether they are helpful or harmful.

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