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Emergence Spring Emergence and Seasonal Infestation of the Alfalfa Seed Chalcid, Bruchophagus Roddi Gussakovskii, in Oklahoma Control and Spring Emergence of the Cotton Flea Hopper The Nature, Ecology, and Control of Canada Thistle Emergence and Premating Behavior Patterns of the Adult European Pine Shoot Moth in Western Washington Fruit Flies Insects and Hygiene Field Infestation by Insects that Injure Rice in Storage Emergence and Attack Behavior of the Mountain Pine Beetle in Lodgepole Pine Entomon Habits, Life History, and Control of the Mexican Bean Beetle in New Mexico Mountain Pine Beetle Infestations in Relation to Lodgepole Pine Diameters Wood Destroying Insects Infestation of Rhyzopertha Dominica First Instars on Different Classes of Wheat Corn Insect Pests The Boll Weevil Problem ARS-H. Ecological Aspects of Crabgrass Infestation in Cool-season Turf Emergence, Control, and Reemergence of Triatoma Infestans and Trypanosoma Cruzi Across the Urban-Rural Interface in Arequipa, Peru The Plant Disease Reporter Lindane in forestry The Plant Disease Bulletin The Infestation of Corn Ears by the European Corn Borer, and Cribbed Corn as an Auxiliary Source of Infestation Insect Pests of Rice Cooperative Economic Insect Report Cooperative Economic Insect Report Integrating New Technologies for Striga Control New Approaches to Gall Midge Resistance in Rice Mountain Pine Beetle Emergence in Relation to Depth of Lodgepole Pine Bark Parasiticide Screening A Review of Plant Materials Used for Controlling Insect Pests of Stored Products Methods for the Study of Pest Diabrotica The old house borer Ohio Report on Research and Development Bimonthly Bulletin Publications Monthly Bulletin Ohio Farm and Home Research Economic Entomology Ohio Report

It was gratifying to be invited to prepare a third edition of this book, which first appeared in 1951. Preliminary discussions with the publishers, however, revealed a considerable challenge in the present high costs of printing, so that changes and some improvements were clearly necessary to justify the venture. It was immediately apparent that the chapter on chemical control measures would have to be substantially re-written, because of the great changes in usage due to resistance and the regulations introduced to prevent environmental pollution. Also, I decided to expand the scope of the book by increased coverage of the pests of continental Europe and North America, including some new figures and keys in the Appendix. These two undertakings resulted in considerable expansion in length, with about 370 new references and 250 additional specific names in the Index. In order to avoid too alarming an increase in price, I decided to sacrifice three chapters from the earlier editions: those dealing with the structure and classification of insects, their anatomy and physiology, and their ecology. Readers who require basic biological information on insects should buy one of the various short introductions to entomology available. Crabgrass, Digitaria spp. is a seed propagated summer annual. Native to Europe, it is distributed throughout most tropical and temperate regions of the world; and is ranked as one of the three most serious weeds in those regions. In the aftermath of the pandemic, humanity is on the cusp of extinction as the mutant undead sweep throughout the world. The deadly virus has created a new predator that is far more intelligent and ruthless than anything mankind has ever faced. And the threat from the alphas is increasing as they evolve. Epidemiologist Selene Munroe comes up with a daring solution for gaining a foothold against the deadly virus, but will it be enough to save the human race before it's too late? On another front, CIA operative Will Reisner and his team need to join forces with an unlikely ally to prevent another cyber-attack that could thrust the entire country into the dark ages. Battling legions of parasite-ridden creatures to get to their objective, Reisner finds his resolve stretched to the limit. Loyalties are tested and he must come to grips with a shocking reality that could jeopardize his team's already uncertain future. The lesser grain borer, Rhyzopertha dominica (F.), females lay eggs loosely outside of wheat kernels. Larvae hatching from eggs enter wheat kernels to complete immature development. Four laboratory experiments were conducted to understand the wheat kernel infestation by first instars of R. dominica at 28°C and 65% r.h. The first experiment compared different kernel to first instar ratios on sound hard red winter (HRW) wheat class, probability of successful infestation, and subsequent adult development as affected by site of feeding on the kernels. Infested kernels were dissected 21 d after infestation to determine stage of development and larval weight. Development of larvae to adulthood was monitored for 50 d from time of infestation. Different kernel to first instar ratios did not affect probability of infestation, entry site preferences, larval development and weight, and days to adult emergence. In the second experiment one first instar was placed with a kernel on each of seven different wheat classes. Wheat kernels were artificially-damaged with a microdrill at the germ, endosperm, and brush end, and the sound kernels served as the controls. At 21 d, 82-90% of artificially-damaged HRW wheat kernels were infested by larvae versus 12% for sound kernels. Five times fewer hard white (HW) wheat sound kernels were infested by larvae compared with infestation in soft white (SW) wheat kernels. Sound kernels of durum, soft red winter (SRW), hard red spring (HRS), and hard white spring (HWS) wheat classes were more resistant to larval infestation than artificially-damaged kernels. Majority of first instars preferred germ as the entry site on HRW, HWW, SRW, and HWS wheat classes. Germ entry promoted faster larval development, leading to heavier larvae, and higher kernel weight losses. Adult emergence was earlier by 3-7 d compared with other sites across all 6 wheat classes, except for SWW class, where adult emergence was nil at 50 d. In the third experiment, speed of larval development on artificially-drilled HRW wheat kernels on different kernel sites. Three-hundred kernels each were drilled near the germ, endosperm, and brush end, and one first instar was placed per kernel in a glass vial. Kernels from glass vials were dissected every 3 d for 30 d and larval head capsule was measured. Larval development was fastest on the germ, followed by endosperm, and brush end. In the fourth experiment short-term feeding by R. dominica adults on infestation by first instars on sound wheat kernels was determined. Two laboratory tests were conducted with single and grouped (10) kernels using either two adults or two first instars per kernel. Signs of feeding were monitored for 21 d in single kernels and 7 d in grouped kernels. There was a significant association between adult feeding and larval infestation responses in single and group kernel tests. In conclusion, understanding factors that contribute to first instar establishment in wheat kernels will have impacts in breeding varieties that could be resistant and designing grain-handling equipment to minimize grain damage to mitigate R. dominica infestation of wheat. This book provides architects, engineers, builders, foresters, members of the pest control and timber industries, and the general public with a ready source of reference to the more important wood borers and termites encountered in Australia. Many species of timber can be attacked by wood-destroying insects such as wood borers and termites.With some species of wood borer or termite, an infestation can result in serious economic damage necessitating treatment and repair or replacement of the affected timber. With other species, remedial action is unnecessary. In many situations, preventive measures can significantly reduce the damage caused by these wood-destroying insects. In recent decades, transmission of Trypanosoma cruzi, the causative agent of Chagas disease, by Triatoma infestans and other vector insects has expanded from historically rural areas to urban centers across Latin America. The urbanization of the T. cruzi transmission cycle necessitates new understanding of Chagas disease ecology and epidemiology, as well as new approaches to the surveillance, control, and prevention of vector infestation and parasite transmission. In rural La Joya, Peru, analyses highlight how the complexities of human migration and intermittent intervention influence the prevalence and incidence of Chagas disease. Substantial prevalence of T. cruzi infection was found in the adult population as a result of relatively higher incidence of infection among long-term inhabitants and relatively lower incidence of infection among short-term in-migrants. While an insecticide intervention in 1995 effectively eliminated incidence of infection among children, T. infestans and T. cruzi were rapidly reemerging in the absence of continuing vector control. In Arequipa, Peru, T. infestans had extensively and intensively infested an urban and peri-urban landscape prior to vector control. Environmental and social factors, which may directly or indirectly influence insect biology and behavior, were associated with infestation. Large clusters of infestation and spatial dependence among infested households at short and long distances suggest that T. infestans can disperse by crawling or flying in an urban environment, which may challenge ongoing vector surveillance and control. Reemergence of vector insects, including T. infestans, complicates continuing control of Chagas disease. While relatively rare, reemergence of T. infestans is a present and possibly persistent problem in urban and peri-urban Arequipa. The probability of a reemergence event varied spatially. Events were both clustered and non-clustered, and were spatially dependent at distances up to 1,600 meters. Event-to-event spatial proximity occurred at shorter distances in higher risk areas and longer distances in lower risk areas. Identifiable predictors and patterns of risk offer opportunities for more effective and efficient strategies for vector surveillance and control. Fruit flies are enormously important economic pests, as California has learned over the past few years (remember the Mediterranean Fruit Fly?). The problem is expected to get worse, and issues of both basic research and control measures are very important for this pest. This book is the edited, camera-ready proceedings of a recent international symposium on fruit flies of economic importance. It covers current knowledge of fruit fly physiology, genetics, morphology and behavior. It discusses action programs for controlling and using fruit flies in agronomy, as well as the problem of fruit flies in the fruit growing industry. Tree losses resulting from infestation by the mountain pine beetle (Dendroctonus ponderosae Hopkins) were measured in two stands of lodgepole pine (Pinus contorta Dougl.) where the beetle population had previously been epidemic. Measurement data showed that larger diameter trees were infested and killed first. Tree losses ranged from 1 percent of trees 4 inches (d.b.h.) to 87 percent of those 16 inches and greater d.b.h. Numbers of adult beetle emergence holes averaged 1.3 per square foot of bark area in trees 7 inches d.b.h. and 62 in trees 28 inches and greater d.b.h. The observations indicate that large infestations of mountain pine beetle depend on the presence of large diameter trees within a stand of lodgepole pine, thus implying that beetle population growth is food-limited. Witchweeds (Striga species) decimate agriculture in much of Africa and parts of Asia, attacking the major cereal grains and legumes, and halving the already very low yields of subsistence farmers. Several years of research have provided promising technologies, based on the fundamental biology of the parasite?host associations, for dealing with this scourge. However, there is an apparent realization that these technologies will fail because highly successful weeds such as Striga evolve resistance to all types of controls unless proven methods are integrated with each other for a more sustainable solution.Integration is often an anathema to basic scientists who typically deal with single variables and solutions. However, key leaders in the development of the new knowledge-based control strategies, already in the field and under development, recently joined forces to develop strategies and projects in order to integrate the technologies in a symposium in Ethiopia in November 2006. The encouraging results are described in this peer-reviewed book, authored by leaders in the field who have been supplying the basic biology, genetics, biochemistry, and molecular information that have offered insights and generated technologies in how to deal with Striga. With contributions by: J.F. Andersen ; M.K. Bergman ; T.F. Branson ; J.R. Coats ; J.R. Fisher ; J.P. Fulton ; R.C. Gergerich ; J.J. Jackson ; J.L. Krysan ; ZB Mayo, Jr. ; W.G. Ruesink ; J.M. Schalk ; H.A. Scott ; G.R. Sutter ; J.J. Tollefson ; and P.J. Wilkin. With a Foreword by R.L. Metcalf. With 68 Figures. A diagnostic key for the accurate and timely identification of corn insect pests, based not on insect taxonomy but on diagnosis of insect injury to corn. Diagnostic aids include damage symptoms expressed at 4 progressive growth stages of the corn plant: from planting to full emergence, from emergence to knee-high, from knee-high to tasseling, and from tasseling to maturity. Also includes condensed insect "profiles," drawing upon photos and descriptions. Further, it describes which fields are most likely to sustain injury and discusses field distribution of pests, economic thresholds (if established), and management options. Over 100 color photos. Parasiticide Discovery: In Vitro and In Vivo Tests with Relevant Parasite Rearing and Host Infection/Infestation Methods, Volume One presents valuable screening methods that have led to the discovery of the majority of parasiticides commercialized in the animal health industry. As much of the knowledge of parasiticide discovery methods is being lost in the animal health industry as seasoned parasitologists retire, this book serves to preserve valuable methods that have led to the discovery of the majority of parasiticides commercialized in animal health, also giving insights into the in vitro and in vivo methods used to identify the parasiticide activity of compounds. Addresses current

issues of resistance, along with combination uses for resistant parasites Presents useful, authoritative information (chemical, pharmaceutical, clinical, etc.) for the pyrantel family of compounds Includes a discussion on screening methods in combination therapies Provides cutting-edge material for an evolving area of scientific discussion Includes in vitro and in vivo screens and parasite maintenance and culture methods