Area-wide Control of Insect Pests: From Research to Field Implementation

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BOOK REVIEWS

VREYSEN, M. J. B., A. S. ROBINSON, AND J. HENDRICHS, J. (Eds.) 2007. Area-wide Control of Insect Pests: From Research to Field Implementation. Springer, Dordrecht, The Netherlands. 789 pp. Hardback. ISBN 978-1-4020-6058-8. $209.

Most approaches to pest control, including integrated pest management (IPM), are location or field-specific. Indeed, a fundamental principle of IPM is that pest suppression should be targeted to locations that warrant treatment, and other areas spared. When pest suppression is being accomplished by broad-spectrum insecticides, perhaps this approach is justified. With mobile insects, however, suppression on a wider scale often has advantages because it reduces reinvasion. Combination of *widespread* pest suppression with *least toxic* pest suppression can prove especially useful and economic. This latter approach can be called area-wide pest control, or area-wide IPM, and is the subject of the recent publication edited by Vreysen, Robinson, and Hendrichs, who are with the Joint FAO/IAEA Programme of Nuclear Techniques in Food and Agriculture, in Vienna. This new volume provides an update of the publication edited by Tan (2000), which reflects conference proceedings from 1998.

Area-wide pest management is not a new or unfamiliar concept. Mosquito control, as practiced in many areas of the world, is probably the best-known example of area-wide control, though it may not be so labeled. Grasshopper control is often implemented on an even larger scale, often covering 10,000 acres or more. But perhaps the most intriguing example is screwworm eradication in North America, wherein sterile insect technology (SIT) was used not only to suppress the wild screwworm population, but to drive this insect to extinction. For many entomologists, area-wide suppression is limited to such examples, and is not considered much of an option for most pest situations. But perhaps it should be.

As discussed in this volume, area-wide management has several advantages, most notably effectiveness and economy. On the other hand, area-wide management requires a long-term commitment and higher level of organization, including a willingness of people to work together. Especially if sterile insect releases are part of the protocol, a high level of commitment and technological sophistication are needed. Perhaps the general lack of interest in area-wide management can be explained by these latter issues. Indeed, if the standard texts for pest control/pest management are consulted, it is apparent that not much emphasis has been placed on the area-wide concept. For example, pest management books commonly used as texts such as Dent (2000), Metcalf & Luckmann (1994), and van Emden & Service (2004) do not consider area-wide management. It is gratifying to see that Pedigo & Rice (2006) now include area-wide management as an IPM tactic, so perhaps other authors will follow their lead, as it would be useful to introduce future generations of students to this approach. This volume would serve as a good resource for anyone interested in the topic, particularly because it outlines the diverse applications possible.

Vreysen, Robinson, and Hendrichs include a large number of topics in their compilation. In addition to some general information on principles, practices, economics and environmental benefits, the editors include a large number of articles on the basic elements underlying SIT and area-wide IPM. More interesting, though, are the numerous feasibility studies, pilot programs, and operational programs targeting a diverse suite of insects from around the world. Collectively, they clearly demonstrate the applicability of area-wide IPM to many pest situations. Wisely, they also include some contributions on commercialization and regulation of area-wide IPM. The argument is presented that the commercial sector can carry this approach forward, but not if they have to compete with government-subsidized programs. Likely there are places for both. For example, the suppression of cactus moth or mountain pine beetle in the USA lacks the economic imperative provided by medfly or boll weevil, so the private sector might not be the most appropriate agent for the former situations. The volume closes with an interesting section on 'lessons learned' by practitioners of area-wide technology. Certainly this is a chapter that needs to be read by anyone interested in learning about the technology or teaching about it.

With over 60 separate articles, this volume has something of interest for everyone. Species treated in this volume include desert locust, mountain pine beetle, tsetse flies, cactus moth, false codling moth, *Anopheles arabiensis*, rice stem borers, cotton pests, New World screwworm, red palm weevil, fire ant, tarnished plant bug, *Aedes albopictus*, oriental fruit fly, Mediterranean fruit fly, boll weevil, cotton bollworm, pink bollworm, codling moth, painted apple moth, and Formosan subterranean termite. The articles are not unduly long, most averaging about 10 pages, but containing critical elements and allowing the reader to feel that he/she has a grasp of the subject without being burdened by unnecessary detail. A number of useful references are included with each article. The authors represent dozens of countries and languages, so some problems might

be expected with consistent language usage, but the editors did a wonderful job in editing, and each article reads crisply and concisely. This volume is highly recommended as a valuable reference for anyone interested in pest management.

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