BOOK REVIEWS

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EFFECTS OF AGRICULTURAL DEVELOPMENT ON VECTOR-BORNE DISEASES. Food and Agriculture Organization of the United Nations. 1987. FAO, Rome. 144 pp.

This book contains 20 papers presented at the 7th Annual Meeting of the Joint WHO/FAO/UNEP Panel of Experts on Environmental Management for Vector Control. The very obvious close links between vector ecology and agricultural water development and management must receive careful analysis inasmuch as food production is going to increase simultaneously with the future increase in human population. Inevitably irrigation will play a most important part in making possible the production of more food. This has been illustrated dramatically in India during the past quarter century. The green revolution in India was not the cause of malaria resurgence. On the other hand, in Turkey and in several parts of Africa, human health has been adversely affected by intensification of development of water resources for agricultural purposes.

Among the subjects discussed are slash and burn agriculture in Thailand and agricultural practices related to vector control in the Eastern Mediterranean Region, the Americas, and the Western Pacific. Additional topics dealt with are designs of irrigation systems, the effect on vector populations of the use of agricultural pesticides (enhancement of resistance), integrated pest control strategies, effect of mechanization (e.g., use of tractors) on vector populations, the possibility of using food fish for controlling mosquitoes and the necessity of keeping irrigation systems tidy.

A good many of the recommendations are rather idealistic, and it is depressing to think that implementation of the recommendations will proceed very slowly; but for these deficiencies the panel cannot be faulted.

VECTOR-BORNE DISEASE CONTROL IN HUMANS THROUGH RICE AGROECOSYSTEM MANAGEMENT. International Rice Research Institute. 1988. 237 + xviii pp. I.R.R.I., P.O. Box 933, Manila, Philippines. U.S. $15.30 airmail; $13.30 surface mail; for applicants from developing countries, U.S. $6.70 airmail; $4.70 surface mail.

This book is the result of collaboration between the International Rice Research Institute and the WHO/FAO/UNEP Panel of Experts on Environmental Management for Vector Control. It represents Proceedings of the Workshop on Research and Training Needs in the Field of Integrated Vector-borne Disease Control in Riceland Agroecosystems of Developing Countries held in March 1987 at Los Banos, Philippines. It was edited by W. H. Smith. In brief, the theme of the workshop was how to conduct water-manipulation strategies to meet the twin goals of vector control and high rice yields.

Following the foreward, 13 recommendations are listed. Conclusions concerning research needs are briefly discussed, and conclusions relative to training needs are presented. These pages will be seen first by anyone who picks up the book. Possibly the placement of this important material at the beginning of the volume may have a good effect on administrators who would not read the 22 scientific papers which follow. Additional introductory remarks precede the workshop presentations.

Rice is the staple food of 60% of humankind; and as the population increases, rice cultivation increases. In new ricelands planning may proceed so that mosquito production is minimized, e.g., through channeling of irrigation water. In established ricefields manipulation of water often cannot be carried out to prevent mosquito development without causing depletion of the crop yield. Cultural methods vary considerably throughout the world, especially with regard to the extent of flooding. In addition to malaria and Japanese encephalitis (and other arbovirus diseases), schistosomiasis is often a serious problem associated with rice cultivation. Rodents also affect public health.

The 28 authors whose papers are included have provided excellent coverage. Repetition is virtually absent. There are 4 divisions: overview; impact of engineering; agronomy and water management practices on disease vectors; strategies for vector-borne disease control; and integrated vector control strategies. The enumeration of research needs is rather formidable, but researchers often ask for more than they expect to get. The point is made that there should be determination of reasons why cartain environmental management measures have not been applied to water resource management. This is an important book dealing with an important subject.

GUIDELINES FOR THE ECOLOGICAL CONTROL OF MOSQUITOES IN NONTIDAL WETLANDS OF THE SAN FRANCISCO BAY AREA. J. H. Collins and V. H. Resh. 1989. California Mosquito and

Vector Control Association and University of California Mosquito Research Program. 93 pp. Order from California Mosquito Control Association, 197 Otto Circle, Sacramento, CA 95822. Price $15.

To compensate for loss of salt marshes and other wetlands, developers in California are required to create alternative wetlands. Many of these are nontidal and provide ideal conditions for mosquito production. This book is concerned with ecological control of mosquito populations with emphasis on artificially watered areas. Ecological control is defined as the exploitation of ecological relationships to reduce the population size or production rate of a disease vector or pest organism.

The first section of the publication is entitled Historical Factors. A brief review of changes in wetlands during the past 200 years leads logically into a list of 6 guidelines involving mapping, sedimentation, salinity of water, excavations, expected and potential perturbations.

Section II is entitled Hydrological Factors. The principal topics are water quality and water control.

In Section III, Biological Factors, are discussions of vegetation, physical control, herbivory and predation. There is a rather lengthy evaluation of crayfish as agents for consumption of vegetation and reduction in mosquito numbers. Dabbling waterfowl also receive attention. Exotic plants and animals should be introduced with great caution. The value of predators of adult mosquitoes is mentioned. These include dragonflies, spiders and swallows.

Section IV, Field Research Methods and Materials, is concerned with the description and monitoring of relationships among abiotic and biotic factors that strongly influence the distribution and abundance of mosquitoes. Information is provided on sources of maps and climatolgical data with detailed explanations of water balances, estimations of stream flow, tidal measurements, water quality assessment, enumeration of wildlife, enumeration of mosquitoes and assessment of mosquito microhabitat. Guidelines for implementation of field research are provided. It is stated that "the conceptual and practical framework for the research is established by the historical and existing natural and anthropogenic processes of creation and maintenance of the control site."

There are 51 references and 4 appendices giving information on viruses, plants and animals with emphasis on organisms that are enemies of mosquitoes.

A unique feature of the book is a paragraph concerning the guild of spiders that spin webs and are useful mosquito control agents. Ecologists think of everything! The creation of the wetlands and their maintenance require large sums of money. The principle of drawing down and pumping back is an example of an expensive procedure. The document is replete with esoteric information which will have limited applicability outside the San Francisco Bay Area.

MOSQUITO CONTROL RESEARCH ANNUAL REPORT 1988. University of California, Division of Agriculture and Natural Resources. Lowell H. Lewis and Bruce F. Eldridge. Jim Coats, Editor. University of California Division of Agriculture and Natural Resources, 300 Lakeside Drive, Oakland, CA 94612-3560. 83 pp.

The university-wide Mosquito Research Program which began in 1972 continues to provide valuable information for control practitioners within California and elsewhere. Research results in this book are placed in 5 categories: Mosquitoes and Public Health, Biological Control, Biology and Ecology, Chemical Control and Student Mini-grants. There are 42 reports; some are less than 1 page in length. The following statements represent samples of various subjects treated; the subjects are not necessarily the most significant. A mark-release study of *Culex stigmatosoma*, a vector of SLE, indicated that females were extremely dispersive, some flying 1 km from the release site. To gain an understanding of the possible role of *Anopheles punctipennis* in the transmission of malaria, it is necessary to establish laboratory colonies of populations from various localities. Progress in establishing colonies has been slow. Several articles describe studies of predator-prey relationships. Emphasis was placed on studies of the practicability of using *Lagenidium giganteum* as a control agent. *Lambornella clarki,* 3 species of *Bacillus*, and *Gambusia affinis* were studied. The potential for *Aedes albopictus* in California tree holes is being investigated in the laboratory. A report is given of practical tests for rapid detection of insecticide resistance in mosquitoes.

California public officials and administrators are to be commended for their support of this research, and researchers deserve praise for their productivity.

MOSQUITO CONTROL IN ILLINOIS: RECOMMENDATIONS FOR PREVENTION AND CONTROL. Illinois Department of Public Health. 1989. Springfield, IL 62761. 30 pp.

This publication provides basic information about mosquitoes in Illinois, their biology, the diseases they transmit, and methods for their control or abatement. Guidelines are set forth defining procedures and methods that are generally accepted for organized mosquito control. Interested laymen will find this document of

value in gaining an understanding of environmentally sound measures. The appendix which furnishes data on insecticides should be especially useful.

ETUDE DES CIRCUITS DE VECTION D'ARBOVIRUS, A MADAGASCAR. Didier Fontenille. 1989. Archives L'Institut Pasteur de Madagascar Vol. LV, Fasc. I: 1–315. Antananarivo, B. P. 1274. (Abstract in English.)

The research reported constituted most of a doctoral thesis presented to the faculty of the Montpellier School of Higher Studies. Entomological, serological and virological surveys were conducted throughout a 5-year period. Nine arboviruses were isolated; over 150,000 hematophagous arthropods representing 107 species (99 Culicidae) were collected. West Nile was the most common virus. Samples for HI tests came from 563 animals and 626 men. Transmission cycles of 8 viruses were studied, and the risk of potential introduction and amplification of 5 was evaluated. The risk for dengue is very high but very low for yellow fever. Approximately 300 references are included. The baseline information in this book will be of great value to specialists concerned with transmission of arboviruses in the Democratic Republic of Madagascar.