

Volume 12 Number 5/6

December 1991

INSECT SCIENCE AND ITS APPLICATION

The International Journal of Tropical Insect Science

Editor-in-Chief

Thomas R Odhiambo

The International Centre of Insect Physiology and Ecology (ICIPE)

SPECIAL ISSUE

**ASPECTS OF PEST MANAGEMENT IN RELATION
TO AGRICULTURAL PRODUCTION AND
ENVIRONMENTAL CONSERVATION IN AFRICA**

Guest Editors: A. M. Alghali, N. K. Maniania, Mbaye Ndoye and
Z. M. Nyiira

ICIPE SCIENCE PRESS

Insect Science and Its Application

The International Journal of Tropical Insect Science

Sponsored by the International Centre of Insect Physiology and Ecology (ICIPE), and the African Association of Insect Scientists (AAIS)

Editor-in-Chief: Thomas R. Odhiambo

Associate Editor: K. N. Saxena

Scientific Editor: Serah W. Mwanycky

The International Centre of Insect Physiology and Ecology (ICIPE), P.O. Box 30772, Nairobi, Kenya

Editorial Advisory Board

F. T. Abushama, Kuwait, State of Kuwait

H. C. Agarwal, Delhi, India

J. Allen, Saskatoon, Canada

J. K. O. Ampofo, Arusha, Tanzania

A. Attygale, Ithaca, New York, USA

J. L. Auclair, Montreal, Canada

R. Galun, Jerusalem, Israel

I. Fagoonee, Reduit, Mauritius

K. M. Harris, London, UK

T. Hidaka, Kyoto, Japan

H. Hirumi, Nairobi, Kenya

A. G. Ibrahim, Serdang, Selangor, Malaysia

R. Kumar, Port Harcourt, Nigeria

V. M. Labeyrie, Paris, France

A. Mansingh, Kingston, Jamaica

F. G. Maxwell, College Station, Texas, USA

A. I. Mohyuddin, Rawalpindi, Pakistan

J. Mouchet, Paris, France

R. W. Mwangi, Nairobi, Kenya

L. M. Schoonhoven, Wageningen, The Netherlands

P. Singh, Auckland, New Zealand

K. Slama, Praha, Czechoslovakia

G. L. Teetes, College Station, Texas, USA

S. A. Toye, Ibadan, Nigeria

H. F. van Emden, Reading, UK

A. van Huis, Wageningen, The Netherlands

S. Yagi, Tsukuba, Ibaraki, Japan

PUBLISHED BIMONTHLY

Annual Subscription

For libraries, university departments, government laboratories, industrial and other multiple reader institutions (US\$ 180.00; 2-year rate (1990–1991) US\$ 360 (including postage and insurance), private individuals US\$ 75.00; 2-year rate US\$150.00. *Specially Reduced Rates for Individuals:* In the interest of maximizing the dissemination of the research results published in this important international journal we have established a two-tier price structure. Any individual whose institution takes out a library subscription may purchase a second or additional subscriptions for personal use at a much reduced rate of US\$ 65.00; 2-year rate US\$ 140.00. Members of the International Centre of Insect Physiology and Ecology (ICIPE) and the African Association of Insect Scientists (AAIS) may purchase a subscription at the special rate of US\$ 20.00.

Application forms for membership of the AAIS (subscription US\$ 20.00; 2-year rate US\$ 38.00) may be obtained from: Hon. Secretary, African Association of Insect Scientists, P.O. Box 59862, Nairobi, Kenya.

Prices are subject to amendment without notice

Copyright © 1990—ICIPE Science Press, The International Centre of Insect Physiology and Ecology

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organizations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical photocopying, recording or otherwise, without permission in writing from the copyright holder.

Photocopying Information for users in the USA

The Item-fee Code for this publication indicates that authorization to photocopy items for internal or personal use is granted by the copyright holder for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided the stated fee for copying beyond that permitted by Section 107 or 108 of the U.S. Copyright Law, is paid. The appropriate remittance of \$3.00 per copy per article is paid directly to the Copyright Clearance Center Inc., 27 Congress Street, Salem, MA 01970.

Permission for other use

The copyright owner's consent does not extend to copying for general distribution, for promotion for creating new works or for resale. Specific written permission must be obtained from the publisher of such copying.

The item-fee for this publication is 0191-9040/90 \$3.00+0.00

ICIPE SCIENCE PRESS

P. O. Box 72913, Nairobi, Kenya, East Africa

SPECIAL ISSUE

**ASPECTS OF PEST MANAGEMENT IN RELATION TO
AGRICULTURAL PRODUCTION AND ENVIRONMENTAL
CONSERVATION IN AFRICA**

Part I

**Proceedings of the African Association of Insect Scientists (AAIS)
Annual Scientific Conference, Dakar, Senegal**

7–10 December 1987

Part II

**Proceedings of the AAIS and the Entomological Society of Zambia
Annual General and Scientific Meetings, Lusaka, Zambia**

4–8 December 1989

Guest Editors: A. M. Alghali, N. K. Maniania, Mbaye Ndoye and Z. M. Nyiira

ICIPE SCIENCE PRESS

The International Journal of Tropical Insect Science

VOLUME 12 NUMBER 5/6

1991

CONTENTS

SPECIAL ISSUE

T. R. ODHIAMBO 501 Foreword

PART I

SYMPOSIUM ON INTEGRATED PEST MANAGEMENT AND ENVIRONMENTAL CONSERVATION

ECOLOGY, BIOLOGY AND BIONOMICS

- D. SECK 507 Etude de l'infestation initiale de *Sitotroga cerealella* Oliv. (Lepidoptera, Gelechiidae) en fonction de la localisation des champs de mil, *Pennisetum typhoides* (L.) Leeke
- M. J. N. OKWAKOL 511 Fauna associated with *Cubitermes testaceus* mounds (Isoptera: Termitidae)

INSECT PHYSIOLOGY

- J. KONGORO, T. R. ODHIAMBO and J. R. MAINOYA ✠ 517 An ultrastructural study of Malpighian tubules of the stable fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae): Cell types and structural zonation

PEST MANAGEMENT STRATEGIES AND PRACTICES

- M. O. ODINDO 529 Pest and vector management in Africa
- E. M. TUKAHIRWA 535 Integrated pest management: Options for Uganda
- OLE ZETHNER 541 Integrated pest and land management experiences and perspectives in The Gambia
- EL TIGANI M. EL AMIN and M. A. AHMED 547 Strategies for integrated cotton pest control in the Sudan. 1 — Cultural and legislative measures
- R. S. PATHAK 553 Plant genetics in pest management
- D. DAKOUO, S. NACRO et B. BACYE 565 Mise au point d'un systeme de lutte rationelle contre les insectes ravageurs sur les perimetres rizicoles irrigues au Burkina Faso
- R. J. LAVIGNE 571 Stored grain insects in underground storage pits in Somalia and their control

C. W. BALIDDAWA	579	Agricultural extension and pest control: A case study of Iganga District
M. I. EZUEH	585	Prospects for cultural and biological control of cowpea pests
B. S. KILONZO	593	The effects of permethrin on <i>Ctenocephalides felis</i> , the commonest flea pest of livestock in Tanzania
B. S. TOGUEBAYE	599	Effet du parasitisme par <i>Nosema manierae</i> (Protozoa, Microspora) sur la biologie d' <i>Heliothis armigera</i> (Lepidoptère, Noctuidae)
J. P. NENON et G. FABRES	605	Etude methodologique de l'efficacite parasitaire d'un Hymenoptera Encyrtidae neotropical <i>Epidinocarsis lopezi</i> introduit en Afrique pour lutter contre la cochenille du manioc <i>Phenacoccus manihoti</i> ; bilan des travaux franco-congolais: 1982-1988

PART II

SYMPOSIUM ON INSECT PESTS AND SUSTAINABLE FOOD PRODUCTION

K. F. NWANZE	615	<i>Plenary Lecture</i> Sustainable food production in Africa: The challenge to national agricultural research systems (NARS)
--------------	-----	---

ECOLOGY, BIOLOGY AND BIONOMICS

E. N. MWANGI, R. M. NEWSON and G. P. KAAAYA	629	Drop-off patterns for engorged adult females, nymphs and larvae of <i>Rhipicephalus appendiculatus</i>
K. J. MBATA	635	Food plant preferences and spatial dispersion patterns of the armoured ground cricket, <i>Acanthoplus speiseri</i> Brancsik (Orthoptera: Tettigoniidae)
S. B. SAGNIA, S. OUMAROU and A. HAROUNA	641	Preliminary results on the biology of the rice armyworm, <i>Mythimna loreyi</i> (Lepidoptera: Noctuidae)
J. P. R. OCHIENG'-ODERO, F. O. ONYANGO, J. T. KILORI, M. D. O. BUNGU and E. O. AMBOGA	645	Insect rearing management as a prerequisite in the development of IPM for sustainable food production
K. V. SESHU REDDY	653	Insect pests of sorghum in Africa

INSECT PHYSIOLOGY

E. D. KOKWARO, L. H. OTIENO and M. CHIMTAWI	661	Salivary glands of the tsetse <i>Glossina pallidipes</i> Austen infected with <i>Trypanosoma brucei</i> and virus particles: Ultrastructural study
---	-----	--

PEST MANAGEMENT, STRATEGIES AND PRACTICES

K. F. NWANZE	673	Components for the management of two insect pests of pearl millet in Sahelian West Africa
--------------	-----	---

J. ALLOTEY	679	Storage insect pests of cereal in small scale farming community and their control
J. KAYITARE et L. NTEZURUBANZA	695	Evaluation de la toxicite et de l'effet repulsif de certaines plantes du Rwanda contre les bruches du haricot: <i>Acanthoscelides obiectus</i> Say et <i>Zabrotes subfasciatus</i> Boheman
B. S. KILONZO	699	Larvicidal effects of neem, <i>Azadirachta indica</i> , on fleas in Tanzania
S. M. K. J. LUGURU	703	Field observations on the residual effect of deltamethrin against adult ticks, mainly <i>Rhipicephalus appendiculatus</i> , during a high infestation period in the Southern Province of Zambia
A. M. ALGHALI	707	The effect of plant spacings on cowpea, <i>Vigna unguiculata</i> Walps, insect pests and yields in two sites in Nigeria
A. DIAITE	713	La trypanosomiase animale Africaine au Senegal la lutte anti-vectorielle
M. O. ODINDO	717	Potential of microorganisms for locust and grasshopper control
Book Review	723	
<i>Instructions to Authors</i>	i	
<i>Author Checklist</i>	iv	