DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

22ème Réunion et Conférence de l'Association Africaine des Entomologistes
22nd Meeting and Conference of the African Association of Insect Scientists
الإجتماع والمؤتمر العلمي الثاني والعشرون للجمعية الأفريقية لعلماء الحشرات

Date: 23 – 26 October 2017
Venue: ARC, Wad Medani, Sudan

التاريخ: 23 - 26 أكتوبر 2017
المكان: هيئة البحوث الزراعية، ود مدني، السودان

"Towards securing human welfare through management of insect diversity in a changing world"
"Vers une amélioration du bien-être humain grâce à la gestion de la diversité des insectes dans un monde en mutation"
"نحو تأمين الرفاهية البشرية من خلال إدارة تنوع الحشرات في عالم متغير"

Livre des Résumés
Book of Abstracts
كتاب المستخلصات

بنك امدرمان الوطني
سيد شباب المصارف

icipe
African Insect Science for Food and Health

twas

CABI plantwise

biovision

THE ORTHOPTERISTS SOCIETY

(SAGA)

مجموعة سي تي سي
CTC GROUP

سي تي سي للكيماويات الزراعية
CTC AGROCHEMICALS

شركة نور أغرو سينس للكيماويات المحدودة
NOUR AGRO-SCIENCE FOR CHEMICAL CO. LTD.

Journal of Insects as Food and Feed

البنك الزراعي السوداني

Ethiopian
የኢትዮጵያ

"TOWARDS SECURING HUMAN WELFARE THROUGH MANAGEMENT OF INSECT DIVERSITY IN A CHANGING WORLD"

"VERS UNE AMÉLIORATION DU BIEN-ÊTRE HUMAIN GRÂCE À LA GESTION DE LA DIVERSITÉ DES INSECTES DANS UN MONDE EN MUTATION"

"نحو تأمين الرفاهية البشرية من خلال إدارة تنوع الحشرات في عالم متغير"

Edited by / Edité par :
Bonaventure OMONDI AMAN, Sévilor KEKEUNOU, Mauricette OUALI-N'GORAN, Faiza Elgaili Elhassan SALAH, Chrysantus TANGA MBI, Emana GETU, Elisabeth ZANOU and Pascal AYELO.
Design and layout by / Conception et mise en page par: Saliou Niassy

whellani in S.E Zimbabwe. Results showed that soil type (43%) and vegetation density (24%) are the most important factors determining the distribution of *H. whellanni* is S.E Zimbabwe. The hotspots for *H. whellani* were identified and closely followed specific soil and vegetation gradients. The model considered temperature (3%) and distance from rivers (1.4%) as the least important factors in *H. whellani* distribution. Spatial analysis showed that 83% of Zaka district (2448.42km^2) 69% of Bikita district (3594.21km^2), 47% of Gutu district (3384.12km^2) and 23% of Masvingo district (1596.89km^2) are suitable for *H. whellani*. The produced distributed maps can be used for planning efficient harvesting and conservation of this nutritious edible insect in S.E. Zimbabwe.

Key words: Edible ground cricket, habitats, modelling

ST-2.05. Spatial and Temporal Spread of Maize Stem Borer *Busseola fusca* (Fuller) (Lepidoptera: Noctuidae) Damage in Smallholder Farms

Ndjomatchoua T F

University of Yaoundé 1, Yaoundé, Cameroon

Corresponding author email: ftndjomatchoua@gmail.com

Abstract

The main purpose of this study was to investigate the spatio-temporal distribution of the maize stem borer Busseola fusca (Fuller) (Lepidoptera: Noctuidae) in smallholder maize farms. The analysis carried out allowed the establishment of complementary sampling scheme and analysis that can be applied to investigate the propagation of stem borer damages and extended to other insect pests. This approach requires consideration of all plants point locations, the knowledge on the level of damage and its characterization. Results showed that there was a two-week interval between occurrence of the peaks of leaf damage and male adult moth abundance. The prior role of leaf damage in the farm infestation by *B. fusca* is revealed, and an estimate of the mean transition time between different damage types is provided. Furthermore, damaged plants exhibited a local spatial autocorrelation within a range of dependence of 0-10 meters; and the spatio-temporal pattern of *B. fusca* damage spread evolves as a spiral around an initial patch of damaged plants. By assuming a neighbor configuration of distribution of damaged plants nearby non-damaged, we showed that the inner plants are likely to become damaged within a time period of a week; thus, *B. fusca* infests farms in a systematic fashion. Overall, these results have useful implications for improving and optimizing existing field sampling methods for insect pest damages. The approaches used in carrying out the analysis further provided an understanding useful to improve integrated pest management (IPM) strategies against stem borers. It offers IPM practitioners' the opportunity to design, develop, and implement optimum control methods against *B. fusca*, an important pest of maize in Africa.

Key words: sampling, integrated pest management, infestation pattern, distribution, maize

ST-2.06. Predicting the Impact of Temperature Increase on the Distribution of the Variegated Coffee Bug, *Antestiopsis thunbergii* Over an Elevation Gradient

Abdelmutalab G A [1,2], Azrag A[1, 2, 3], Pirk C[2], Yusuf A[2], Niassy S[1], Babin R[1,4]

[1]International Centre of Insect Physiology and Ecology, P.O. Box 30772-00100, Nairobi, Kenya.

[2]Social Insect Research Group, Department of Zoology and Entomology, University of Pretoria, Private Bag X20, Hatfield, Pretoria 0028, South Africa

[3]Department of Crop Protection, Faculty of Agricultural Sciences, University of Gezira, P.O. Box 20, Wad Medani, Sudan.

[4]CIRAD, UPR Bioagresseurs, F-34398 Montpellier, France.

Corresponding author email:

Abstract

The antestia bug *Antestiopsis thunbergii* (Gmelin 1790) is one of most damaging pests of Arabica coffee in eastern and southern Africa. It feeds on coffee vegetative parts and fruits, leading to yield and quality reduction. The present study aims to predict the impact of temperature increase on the distribution and abundance of *A. thunbergii* over an elevation gradient, ranging from 1000 to 1700 m asl, located on Mt. Kilimanjaro, Tanzania. Temperature-dependent phenology models were developed using a complete life table study at 7 constant temperatures. Three indices assessing infestation risk were computed

and mapped over the elevation gradient using the phenology models and temperature data for year 2013 and predictions for 2055 (AFRICLIM database): 1) the establishment risk index (ERI), which characterizes the suitability of a geographical area for the insect establishment, 2) the generation index (GI), which estimates the mean number of generations per year, and 3) the activity index (AI), which indicates the population growth rate. Under 2055 temperature predictions, the ERI will decrease by 0.13 at elevations between 1000 and 1100 m asl, and increase by 0.24 between 1500 and 1700 m asl, indicating that high elevations will be more suitable for antestia bug establishment in the future. The number of generations per year will remain constant at elevations between 1000-1100 m asl, but will increase by one generation between 1500-1700 m asl. By 2055, the AI will increase by 1.71 at high elevations leading to higher population growth as a result of temperature rising. These results globally indicate a risk of increasing antestia bug infestation in the highest coffee producing areas of East Africa highlands in the coming decades. These areas are renowned for the high quality of their coffee and mitigation strategies against climate change are therefore needed to minimize the antestia bug risk.

Key words: Climate change, stink bugs, risk mapping, *Antestiopsis orbitalis*

ST-2.07. Distribution Spatio-Temporelle des Sciomyzidae (Diptera) en Relation avec les Caracteristiques Environnementales dans Quatre Localités du Benin (Afrique de l'Ouest)

Agboho[1*]P A, Gbedjissi[1] G L, Zannou[2] E T, Ahogni[1] I, Jay-Robert[3] P, Akogbeto[1] M C, Vala[4] J C

[1]Département de Zoologie, Laboratoire Evolution, Biodiversité des Arthropodes et Assainissement ; FAST.BP 823 Cotonou ; UAC Bénin.

[2] Département de production végétale ; Laboratoire d'Entomologie Agricole ; FSA-UAC. 01 BP 526 Cotonou Bénin.

[3]Université d'Orléans, Laboratoire de biologie des Ligneux et des Grandes Cultures, UPRES EA 2107.BP 6759, 45067 Orléans Cedex 2, France

*Auteur correspondant : aprudencine@yahoo.com

Resumé

Cette étude établit la distribution spatio-temporelle des Sciomyzidae (Diptera) en relation avec certains facteurs environnementaux dans quatre localités au Bénin. Ces localités sont situées au sud (localités 1 et 2) et au centre (localités 3 et 4) du pays. L'échantillonnage des Sciomyzidae a été fait mensuellement pendant un cycle annuel d'août 2014 à juillet 2015. Le test de Shapiro-Wilk, de Kruskal Wallis, l'Analyse en Composante Principale (ACP) et l'Analyse Factorielle des Correspondances (AFC) ont été appliqués à l'ensemble des données obtenues. Au total huit espèces ont été identifiées avec une abondance 3656 individus dénombrées pendant toute la période d'étude. Les espèces *Sepedon* (*Parasepedon*) *ruficeps* et *Sepedon* (*Parasepedon*) *trichrooscelis* dominent tous les peuplements. La variation d'abondance, de température et de pluviométrie est hautement significative d'une localité à l'autre et d'une saison à l'autre (p< 0,001). Les typologies réalisées grâce aux ACP et AFC révèlent deux groupes opposés, GI et GII, caractérisés par une distribution équidistante des espèces. Cette étude a permis de connaître la dynamique des populations de Sciomyzidae et de déterminer l'influence des variables environnementales sur leur distribution et confirme la possibilité d'utiliser ces espèces en lutte biologique contre la bilharziose.

Mots clés: Diversité, population, dynamique, localités, région Afrotropicale.

ST-2.08. Enhancing Monitoring Efficiency and Management of Vectors of Maize Lethal Necrosis Disease Causing Viruses in Kenya

Namikoye E S[1, 2*], Kariuki G M[1], Kinyua Z M[2], Githendu M W[1] and Kasina M[2*]

[1]Department of Agricultural Science and Technology, Kenyatta University, P.O. Box 43844-00100, Nairobi.

[2]Kenya Agricultural and Livestock Research Organization, P.O. Box 14733-00800, Nairobi

[*]Correspondance: namikoye.samita@ku.ac.ke Muo.Kasina@kalro.org

Abstract

Maize production in Africa is threatened by maize lethal necrosis disease (MLND), which has caused extensive maize yield losses and complete crop loss in Eastern AfricaKenya, Uganda, Tanzania, Rwanda, Southern Sudan and Ethiopia. The disease