

## CURRICULUM VITAE



### PERSONAL DATA

**Name:** Hamadttu Abdel Farag El-Shafie

**Title:** Assistant Professor (**PhD**)

**Nationality:** Sudanese

**Date and Place of Birth:** Jan. 1962, Gillas (Village in Northern Sudan).

**Marital Status:** Married, a father of five children (one boy and four girls).

**Religion:** Muslim

**Address:** Department of Crop Protection, Faculty of Agriculture, University of Khartoum, Shambat, P. Code 1334, Sudan

**Present Address:** Date Palm Research Center of Excellence, King Faisal University

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**Scopus ID:** 6507398286

**H-index:** 23

**I10-index:** 51

**Total Citation:** 1713

### EDUCATION BACKGROUND AND PROFESSIONAL PREPARATION

1969-1975: Primary School (Gillas).

1975-1978: Intermediate School (Um Boukol)

1978-1982: High School (Korti).

1982: Sudan High School Certificate.

1982: Admission at Faculty of Agriculture, University of Khartoum.

1988: B.Sc. (Agric.) Honors University of Khartoum.

1993: M.Sc. (Agric.) University of Khartoum (Entomology).

1997-1998: The German language course in Bremen (October-March).

1998: Ph.D. Candidate (DAAD Scholarship) University of Giessen.

2001: Ph.D. in Agriculture, University of Giessen (Germany).

### PRIZES AND SCHOLARSHIPS

1. Dr. Tothill prize for best all round students passing out of the faculty.
2. Sudan Agricultural Bank prize for best final year student in Crop Protection.
3. Abu El Gasim shield prize for best final year student in practical agriculture.

4. German academic exchange service (DAAD) scholarship for M.Sc. (1991-1993)
5. German academic exchange service (DAAD) scholarship for German language course in Bremen, Germany (October 1997- March 1998)
6. German academic exchange service (DAAD) scholarship for PhD in Germany (April 1998-November 2001)
7. German academic exchange service (DAAD) scholarship for short visit to attend the international Summer school on organic farming, University of Gottingen (31.8.2002-16.9.2002)
8. German academic exchange service (DAAD) scholarship for study and research visit, University of Giessen, Germany (1.4.2006-2.6.2006)

### **LANGUAGE (WRITTEN AND SPOKEN)**

- Arabic (mother tongue).
- English (Excellent in both written and spoken).
- German (good in both written and spoken).
- French (a little bit).

### **COMPUTER LITERACY**

MS Office: Words, Excel, Power Point...etc.

### **TEACHING EXPERIENCE**

#### **1- UNDERGRADUATE LEVEL COURSES TAUGHT**

<b>Course Title</b>	<b>University</b>	<b>Class</b>	<b>Duration</b>
General entomology (Lab)	Khartoum	1 <sup>st</sup> Year	1987-1997
Economic entomology (lab)	Khartoum	1 <sup>st</sup> Year	1987-1997
Agric. Zoology (Lab)	Khartoum	1 <sup>st</sup> Year	1987-1997
Forest entomology (Lab)	Khartoum	Final Year	1987-1997
General entomology (Lab)	Khartoum	Final Year	1990-1997
Plant pathology (Lab)	Omdurman Isla. Univ.	M.Sc.	1990/1991
General entomology (Theory)	Khartoum (B.Sc.)	2 <sup>nd</sup> Year	2001-Till
General biology (Theory)	Faculty of Animal Production (U of K)	2 <sup>nd</sup> Year	1995/1996
Agric. Zoology (Lab)	Faculty of Animal Production (U of K)	2 <sup>nd</sup> Year	1995/1996
Acarology (Theory)	Khartoum (Forestry)	2 <sup>nd</sup> Year	2001-2005
Insect morphology (Theory)	Khartoum	Final Year	2004-Till
Insect physiology	Khartoum	Final Year	2004-20081
Apiculture (Theory)	Khartoum	4 <sup>th</sup> Year	2001-2006
Insect ecology (Theory)	Khartoum (Diploma)	1 <sup>st</sup> Year	2002-2006
Insect physiology (Theory)	Khartoum (diploma)	1 <sup>st</sup> Year	2002-2006
Desert locust ecology (Theory)	Khartoum (Diploma)	1 <sup>st</sup> Year	2002-2006
Insect collection and preservation (Theory)	Khartoum (Diploma)	2 <sup>nd</sup> Year	2003 - 2006
Recent trends in pest control (Theory)	Khartoum (Diploma)	2 <sup>nd</sup> year	2003-2006

Biological Lab techniques (Theory)	Khartoum (Diploma)	3 <sup>rd</sup> year	2003-2010
Field training	Khartoum (B.Sc.)	Final year	2003 - 2006

## 2- GRADUATE LEVEL COURSES TAUGHT

Course Title	University	Duration
Insect physiology and behavior 3(3+0)	Khartoum (M.Sc.)	2006-2010
Desert locust ecology 3(2+1)	Khartoum (Higher Diploma)	2007-2010

## SUPERVISION OF UNDERGRADUATE STUDENTS

Degree	Major	Academic year	No. of Students
Final Year Project	Entomology	2002/2003	4
Final Year Project	Entomology	2003/2004	2
Final Year Project	Entomology	2004/2005	2
Final Year Project	Entomology	2005/2006	3
Final Year Project	Entomology	2006/2007	2
Final Year Project	Entomology	2007/2008	2
Final Year Project	Entomology	2008-2009	3

## CONTRIBUTIONS TO POSTGRADUATE STUDENTS

### THESIS EXAMINATIONS

No of students	Degree	University
51	M.Sc.	University of Khartoum
1	Ph.D.	Omdurman Islamic University
2	M.Sc.	Sudan Academy for science and technology
1	Ph.D.	Sudan Academy for science and technology
4	M.Sc.	University of Kordofan
2	M. Sc.	Sudan University for science and technology
1	Ph.D	Al-Azhari University

## AWARDED M.Sc. THESIS

No	Name	Title	Year
1	Hiba Bushara Hamad	Effects of <i>Bacillus thuringiensis aizawai</i> , NeemAzal-T/S and Spinosad on potato tuber moth, <i>Phthorimea operculella</i> (Zeller) (Lepidoptera: Gelechiidae)	2007
2	Loai Mohammed Alamin	Effects of <i>Bacillus thuringiensis Var. aizawai</i> and NeemAzal-T/S against the immature stages of the African bollworm <i>Helicoverpa armigera</i> (Huebner) (Lepidoptera: Noctuidae)	2006
3	Mohammed Abdalla Suliman	Responses of <i>Aphis fabae</i> (Hom.: Aphididae) and its stenophagous predator, <i>Cheilomenes propingue</i> Mul. (Coleoptera: Coccinellidae) to neem <i>Azadirachta indica</i> seed water extract	2005
4	Munthir Towfeeg Himat	Effect of different products from the neem tree <i>A. indica</i> A. Juss on the hatchability of the eggs of the white fly <i>Bemisia tabaci</i> (Genn.) (Homoptera: Aleyrodidae)	2004
5	Montasir omer Mahgoub	Insecticidal effects of different neem formulations and <i>Bacillus thuringiensis Var. aizawai</i> on the immature stages of the	2005

		greater wax moth <i>Galleria mellonella</i> L.(Lep.: Pyralidae)	
6	Elfatih Elnour Abdalla	Contact and systemic effects of different neem formulations ( <i>Azadirachta indica</i> A. Juss) on the ladybird beetle <i>Hippodamai variegata</i> Goeze (Coleoptera: Coccinellidae)	2003
7	Talib Salim Douka	Performance profile of <i>Metarhizium anisopliae</i> and neem oil against the 3 <sup>rd</sup> and 4 <sup>th</sup> nymphal instars of the desert locust <i>Schistocerca gregaria</i> Forskal (Orthoptera: Acrididae) under semi-field conditions	2005
8	Ebtisam Mohammed Bashir	Effect of neem oil and <i>Metarhizium anisopliae</i> against some immature stages of the desert locust <i>Schistocerca gregaria</i> Forskal (Orthoptera: Acrididae) under lab conditions	2005
9	Habeballa Hassab Elrasoul	Effects of topical application of different neem formulations on the nymphal stages of the desert locust <i>Schistocerca gregaria</i> Forskal (Orthoptera: Acrididae)	2005
10	Elzain Ali Elfaig	Abundance and biomass of epigeal predatory arthropods in an alfalfa ( <i>Medicago sativa</i> ) field in Shambat	2007
11	Amel Abdelrahman	Monitoring and habitat location of the weaver bird <i>Quelea quelea aethiopica</i> using remote sensing and geographic information system (GIS)	2008
12	Badreldin Abdalla	Efficacy of biopesticides for the management of key pests damaging tomato <i>Lycopersicon esculentum</i> L.	2008
13	Nadia Abdelwahab	Use of natural substances as alternatives to synthetic pesticides	2006
14	Afag Abdel mouty Mohammed	Effect of storage conditions and duration on the efficacy of neem seeds as an insecticide	2009
15	Muna Mohammed Ali	Insecticidal and antifeedant effects of rehan, <i>Ocimum basilicum</i> L. on adults of the aphid predator <i>Hippodamia variegata</i> Goeze (Coleoptera; Coccinellidae)	2009
16	Muna Alamin Ibrahim	Effect of food source on some growth and developmental parameters of the red flour beetle <i>Tribolium castaneum</i> Herbst (Coleoptera: Tenebrionidae)	2009
17	Mahgoub Mousa Mohammed	Use of Teflubenzuron alone and combined with <i>Metarhizium anisopliae</i> and Phenylacetonitrile (PAN) as control agent against the desert locust <i>Schistocerca gregaria</i> Forskal	2009

### PhD THESIS

1	Mahadi Abdelrahman Ahmed	Efficacy of four systemic insecticides against the green pit scale insect , <i>Palmopsis phoenicis</i> Ramachandra Rao (Homoptera: Asterolecaniidae) infesting date palm in Northern Sudan	Awarded 2008
2	Naiema Eltayeb Gorashi	Isolation and characterization of entomopathogenic strains of <i>Bacillus thuringiensis</i> from Sudan	Awarded 2010
3	Ebtisam Mohammed Bashir	Use of Jatrova oil ( <i>Jatrova curcas</i> ) for the control of the desert locust <i>Schistocerca gregaria</i> Forskal (Orthoptera: Acrididae)	Awarded 2012
4	Mohammed Osman	Bioefficacy of argel, <i>Solenostemma argel</i> (Del.) against selected stored product insects	Awarded 2014
5	Hassab Allah	Performance of locally isolated strains of B.t. against the	Writing

	Mohammed	sorghum bug <i>Agonosceles pubescens</i> (Thunberg) (Hemiptera : Pentatomidae)	up
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### **PROFESSIONAL APPOINTMENTS**

1988: Teaching assistant at the Dept. of Crop Protection (University of Khartoum).

1993: Promoted to the status of lecturer teaching general and applied entomology for the agricultural students, in addition to insect morphology.

2001: Promoted to the status of assistant professor of entomology. Teaching Acarology, Zoology and Entomology courses for the undergraduate students beside insect physiology and vertebrate of economic importance for the postgraduate students (M.Sc.)

### **SABBATICAL APPOINTMENT**

2010 up to the present: Senior Research Entomologist and head of sustainable management program in date palm, Date Palm Research Center of Excellence, King Faisal University, AL-Hassa, Kingdom of Saudi Arabia.

### **ADMINISTRATIVE ACTIVITIES IN THE UNIVERSITY OF KHARTOUM**

- Member of the board of crop protection department (since 1993 up to the present)
- Member of the Faculty board, Faculty of Agriculture (2007-2010)
- Representative of the Faculty of Agriculture in the council of agricultural and veterinary medicine studies, graduate college (2008-2010)
- Representative of the Faculty of agriculture in University examinations and prizes committee (2008-2010)
- Representative of the Faculty of Agriculture in the Admissions committee, University of Khartoum
- Secretary general of the Faculty of Agriculture research board (2008-2010)
- Member of the senate of the university of Khartoum (2007-2010)
- Director of the training farm of the Faculty of Agriculture (2004-2007)
- Coordinator of postgraduate Diploma in Desert Locust (2007-2008)
- Head, Department of Crop Protection (2006-2008)
- Member of heads of departments' board, Faculty of agriculture (2007-2010)
- Member of the Faculty of Agriculture academic reform committee (2007-2010)

- Member of the academic committee, Faculty of Agriculture (2008-2010)
- Head of the examination committee, Faculty of Agriculture (2008-2010)
- Deputy Dean for academic affairs, Faculty of Agriculture (2008-2010)

### **CURRENT RESEACH INTEREST**

- Control of insect pests by natural substances and synthetic insecticides acting systemically. Evaluation of traditional methods of using neem products in the management of vegetable pests. Developing economic thresholds adaptable to the farmers of some major field pests.
- Promotion of biological pest control and integrated pest management and organic farming. Elucidation of the negative impact of using chemical pesticides on the natural enemies of pests.
- Population ecology of epigeal predatory Arthropods, Carabids, Staphylinids and Spiders. Studying the species composition of these important groups of arthropods as well as their biodiversity and the factors responsible for regulating their population. Evaluation of the role of these epigeal predatory arthropods in regulating the population of crop pests.
- Sustainable Management of major date palm pests particularly the red palm weevil (RPW) *Rhynchophorus ferrugineus*. Pheromone mediating aggregation and semiochemical ecology of red palm weevil and exploitation of these behavioral responses in the integrated management of this notorious pest. Omics of RPW and chitin biosynthesis and Inhibition in RPW. Development of RNAi and RNAi-Based Control of RPW.
- Ecological and behavioral studies of major date palm pests using computerized flight mills and flight tunnels, as well as applying models for prediction of infestation and possible control methods.

### **FUNDED RESEARCH PROJECTS (PI & Co-PI)**

I have been involved in the execution of many research projects on red palm weevil and other date palm insect pests as well as field crop pests. The following are just examples of these projects.

1. Integrated management of Fruit flies damaging mango in Khartoum State (2010-2012, funded by the Ministry of Higher Education-Sudan
2. Developing Red Palm Weevil, *Rhynchophorus ferrugineus* (Olivier) IPM Technology in Date Palm Agro-ecosystems of Saudi Arabia (2010-2012) funded by Saudi Aramco company. The major tasks of the project include understanding semiochemical attraction, testing pheromone-trapping protocols, screening date palm cultivars resistant to red palm weevil, rearing of the Red palm weevil in the laboratory, and area-wide management of the weevil.

3. Assessment of repellent and insecticidal effects of certain chemical compounds against red palm weevil *Rhynchophorus ferrugineus* (Olivier) (2010-2012) funded by the Deanship of Scientific Research, King Faisal University, KSA
4. The abundance and diversity of epigeal arthropods in the date palm agro-ecosystem of Al-Hassa oasis. (2015) funded by the Date palm research center of excellence, King Faisal University .
5. Methyl bromide alternatives to control *Ephestia cautella* (Walker) in stored dates (Project No. PC-1 funded by Ministry of Higher Education, through the date palm research center of excellence, KSA.
6. Automatic assessment of biological control effectiveness of *Trichogramma* spp. Against *Ephestia cautella* under laboratory conditions using machine vision. Funded through the date palm research center of excellence.
7. Internal thermal and chemical characteristics of date palm infested by the red palm weevil *Rhynchophorus ferrugineus* Olivier. Funded through the Deanship of Scientific Research, King Faisal University, KSA.
8. Molecular cloning of a chitinase gene from the red palm weevil *Rhynchophorus ferrugineus* Olivier (Coleoptera: Curculionidae). Funded by the Date Palm Research Center of Excellence and Deanship of Scientific Research, King Faisal University.
9. Design of a novel solar powered insect trap for IPM program of major date palm Pests. Funded by the Date Palm Research Center of Excellence, King Faisal University.
10. Gene Silencing to Control the Red Palm Weevil in Date Palm (KACST)

In addition to the above, I have also links and collaborations with King Abdulaziz City for Science and Technology (KACST) on red palm weevil and we have sequenced the genome of the red palm weevil (data are deposited in the gene Bank) and published in the Journal of Scientific Reports. We also published the mitochondrial genome of the longhorn beetle, which is considered a serious pest of date palm in Gulf region. I have also worked with many companies in the field of red palm weevil including Syngenta, where we tested the bioefficacy of emamectin benzoate in the preventive and curative treatment of infestation by RPW, particularly the apical infestation.

## **INTERNATIONAL RESEARCH LINKS, COLLABORATORS AND OTHER AFFILIATIONS**

1. Dr. Mark Hoddle, Center for invasive species, University of California- Riverside, USA. Collaboration on studies of flight activity and dispersal characteristics of the red palm weevil, weevil *Rhynchophorus ferrugineus* (Olivier) in Al-Ahsa, kingdom of Saudi Arabia (2011-2012).
2. Prof. Dr. Jose Romeno Faleiro, Mariella, Arlem-Raia, Salcette, Goa-403 720, India, collaboration on the management of the red palm weevil in date palm plantations, since 2010 up to the present.

3. Dr. Agenor Mafra-Neto, ISCA Technology, California, Riverside, USA. Collaboration in the field-testing of specialized pheromone, lure application technology (SPLAT) or Attract, and kill technology (A&K) against the red palm weevil in date palm plantation in Saudi Arabia.
4. Dr. Cam Oehlschlager from Chem Tica International, Costa Rica. The collaboration with DPRC is on the development of repellents for the red palm weevil.
5. Prof. Esmat Hegazi, biological control specialist, Alexandria University, Egypt. Collaboration on the use of two species of *Trichogramma* (egg parasitoids) and one species of the braconid larval parasitoid to control *Ephestia cautella* infesting stored dates.
6. Prof. Naiquin Zhang, Kansas State University, USA (specialist in sensors and Controls). Collaboration on using machine vision for automatic assessment of biological control effectiveness of *Trichogramma bourarachae* against *Cadra cautella* Using Machine Vision
7. Prof. Dr. Joseph A. Jacas, University of Jaume I, Spain, characterization of date palm dust mites and their natural enemies in Al-Ahsa region.
8. Prof. Dr. Thomas Perring, Dept. of Entomology, University of California, Riverside, California, USA. Co-authoring an invited book chapter on major lepidopteran pests of date palm.
9. Prof. Dr. Jorge Pena, Dept. of Entomology and Nematology, Tropical Research and Education Centre, University of Florida, Homestead, Florida, USA. Co-authoring an invited book chapter on major hemipteran pests of date palm.

### **BOARDS, COUNCILS, SOCIETIES AND COMMITTEES MEMBERSHIPS**

I was member in more than 60 councils, entomological societies and committees, the following are preminent:

1. Member of the Sudanese Agricultural council
2. Member of the Sudanese crop protection society
3. Member of Sudanese beekeeping society
4. Member of Sudanese environmental conservation society
5. Member of Arab Society of Plant Protection
6. Member of the German society of plant protection and plant health (DPG)
7. Member of the African Association of Insect Scientists (AAIS)
8. Member of the international society for horticultural science (ISHS)
9. Member of the National Committee for organic farming and organic products. The main task is to formulate a national policy for organic farming in the Sudan including product quality standards and certification.
10. Member of the Entomological Society of America (ESA)
11. Member of research and post-graduates committee of date palm research center of excellence, King Faisal University
12. Member of secretariat committee of the fifth symposium on date palm in Saudi Arabia, November 2013.



## **CONTRIBUTION TO COMMUNITY SERVICES**

1. Providing crop protection extension services to vegetable growers, owners of warehouses and fruit growers in different states of Sudan
2. I have been involved in a farmers' participatory approach to assess farmers' knowledge, attitude and practices relating to the management of vegetable pests in different parts of Sudan
3. I have had successful experience in development of beekeeping in Sudan through essays written particularly for beekeepers and young researchers (Magazine for young researchers)
4. Participation in DAL company weekly symposium on organic farming (lectures on crop protection in organic farming system)
5. Organized and participated many farmers' field days on management of red palm during the last 14 year.
6. Organized and participated in training workshops for agric. Engineers on the management and performance analysis of RPW-IPM program in Al-Ahsa, Saudi Arabia.

## **CONSULTANCY WORKS**

I have been working with the University of Khartoum Consultancy Cooperation for 5 years on many projects including environmental and feasibility studies. I have also worked with the Institute of Studies and Consultations of the King Faisal University, for 6 years, on evaluation of efficacy of pesticides used to combat pests of agricultural importance including RPW and other major date palm pests. I collaborated with FAO in execution of optimizing fumigation and management of apical infestation of RPW on date palm. The Ministry of Environment, Water, and Agriculture, Saudi Arabia have consulted me on projects and programs concerning RPW management in the field. I participated in a training workshop on IPM of RPW and date palm borers using conventional and modern technologies organized by ICARDA in collaboration with the Ministry of Environment, Water, and Agriculture of Saudi Arabia. The workshop was held during 05-09/2022 in Medina and was attended by agricultural engineers from the GCC countries.

## **SYNERGISTIC ACTIVITIES**

- I. have been involved in reviewing research articles for more than 25 international journals including ones with high impact factors such as:
2. International journal of tropical insect science (Springer)
  3. Archives of phytopathology and plant protection (Tayler & Francis)
  4. Journal of Applied Entomology (Wiley)
  5. Bulletin of Entomological Research (Cambridge University Press)
  6. Journal of Stored Products Research (ElSevier)
  7. Bulletin of Insectology (Bologna University, Italy)
  8. Journal of Pest Management Science (Wiley)

9. Ecotoxicology and Environmental Safety (Elsevier)
10. Journal of Consumer Protection and Food Safety (ISI, Springer)
11. Journal of Pest Science (ISI, Springer)
12. International Journal of Pest Management (ISI, Taylor & Francis)
13. Journal of ecology & evolution (ISI-Springer)

I am also member of the editorial board of the Indian Journal of Plant Protection and Insect Environment.

### **FIELD EXPERIENCE IN RED PALM WEEVIL MANAGEMENT**

I have been working on the management of red palm weevil for about 14 years conducting many laboratory as well as field experiments. I have tested Attract and kill (A & K) technology against RPW, for the first time, in the world in Al-Ahsa oasis, and discovered repellent materials for RPW in collaboration with ChemTica International Company. I modified a procedure for mass rearing of RPW on artificial diet as well as a pupation technique, which facilitate the production of high quality insects for bioassay experiments.

### **CONFERENCES, WORKSHOPS AND PUBLICATIONS**

Participated and attended more than 40 workshops and conferences in the period from 1998 to 2024 in the field of crop protection, mostly date palm pests and red palm weevil. I published 90 papers in peer reviewed international and local journals mostly on date palm pests (72 papers) including major insect such as the red palm weevil (35 papers) and mite pests as well as 3 books and 21 book chapters (See included list).

### **LIST OF PUBLICATIONS**

#### **THESES**

1. El Shafie, H. A. F., 1992. Studies on some factors affecting pollen gathering activity of honeybees *Apis mellifera* L. (Hymenoptera: Apidae) under Shambat conditions, M. Sc. (Agric.), University of Khartoum, Sudan
2. EL-Shafie, H. A. F. (2001). The use of neem products for sustainable management of homopterous key pests on potato and eggplant in the Sudan. Ph.D. (Agric.) University of Giessen, Germany: <http://geb.uni-giessen.de/geb/volltexte/2001/516/pdf/d010119.pdf>

#### **PAPERS IN REFREED JOURNALS**

1. El-Shafie, H. A. F. and Abdel-Banat, B. M. A. 2024. A derelomine weevil severely damaging the inflorescence and young fruits of date palm. *Outlooks on Pest Management*, 35(4): 159-163. Doi: 10.1564/v35\_aug\_04
2. Kavallieratos, N. G., Wakil, W., Eleftheriadou, N., Ghazanfar, M. U., **El-Shafie, H.**, et al. 2024. Integrated management system of the whitefly *Bemisia tabaci*: a review. *Entomologia Generalis* (in press).
3. Rezk A.A., Naqqash M.N., Sattar M.N., Mehmood K., **El-Shafie H.** and Al-Khayri J.M. (2024). Sublethal effect of emamectin benzoate on age-stage, two-sex life table and population projection of red palm weevil, *Rhynchophorus*

- ferrugineus*. Scientific Reports, (2024) 14: 22565. <https://doi.org/10-1038/s41598-024-70042-0>
4. Sattar M.N., Naqqash M.N., Rezk A.A., Mehmood K., Bakhsh A., **El-Shafie H.** and Al-Khayri J.M. (2024). Sprayable RNAi for silencing of important genes to manage red palm weevil, *Rhynchophorus ferrugineus* (Coleoptera: Curculionidae). PloS One (In Press).
  5. Hoddle, M. S., Antony, B., **El-Shafie, H. A. F.**, Chamorro, M. L., Milosavljević, I., Loehr, B., and Faleiro, J. R. 2024. Taxonomy, Biology, Symbionts, Omics, and Management of *Rhynchophorus* Palm Weevils (Coleoptera: Curculionidae: Dryophthorinae). Annual Review of Entomology, 69: 455-479.
  6. El-Shafie, H. A. F., Hajjar, M. J., Alhudaib, K. A., Alsaqoufi, A. and Yassen, T. 2024. Chemical control of RPW apical infestation in date palm. The Blessed Tree, 16(2): 41-49.
  7. El-Shafie, H. A. F., Hajjar, M. J., Alhudaib, K. A., Alsaqoufi, A. and Yassen, T. 2024. Optimizing of the fumigation technique currently adopted against RPW in Saudi Arabia. The Blessed Tree, 16(2): 58-69.
  8. Hajjar, M. J., **El-Shafie, H. A. F.**, Alhudaib, K. A., Alsaqoufi, A. and Yassen, T. 2024. Developing quarantine protocol for fumigation of date palm offshoots using Eco2Fume gas and selected insecticides. The Blessed Tree, 16(2): 50-57.
  9. El-Shafie, H. A. F. and Faleiro, J. R. 2023. A protocol for mass rearing of red palm weevil, *Rhynchophorus ferrugineus* (Olivier) on pineapple *Ananas comosus* L. Insect Environment 26(2): 122-128.
  10. El-Shafie, H. A. F., Mohammed, M. E. and Sallam, A. A. 2023. Biology, ecology, and management of the longhorn date palm borer *Jebusaea hamerschmidtii* (Coleoptera: Cerambycidae). VII International Date Palm Conference. ISHS Acta Horticulturae 1371. Doi: 10.17660/ActaHortic.2023.1371.33
  11. Abdel-Banat, B. M. A. and **El-Shafie, H. A. F.** and Boukhwa, I. A. 2023. Screening date cultivars for resistance against the saw-toothed grain beetle, *Oryzaephilus surinamensis* L. (Coleoptera: Silvanidae). Journal of Stored Products Research 102, 102120. <https://doi.org/10.1016/j.jspr.2023.102120>
  12. Manee, M. M., Alqahtani, F. H., Al-Shomrani, B. M., **El-Shafie, H. A. F.**, and Dias, G. B. 2023. Omics in the red palm weevil *Rhynchophorus ferrugineus* (Olivier) (Coleoptera: Curculionidae): A bridge to the pest. Insects 2023, 14, 255. <https://doi.org/10.3390/insects14030255>
  13. Mohammed, M., **El-Shafie, H.** and Munir, M. 2023. Development and validation of innovative machine learning models for predicting date palm mite infestation on fruits. Agronomy 2023, 13(2), 494: <https://doi.org/10.3390/agronomy13020494>
  14. El-Shafie, H. A. F. 2022. The Old World date palm mite *Oligonychus afrasiaticus* (McGregor 1939) (Acari: Tetranychidae), a major fruit pest: biology, ecology, and management. CAB Reviews. Doi: 10.1079/cabreviews202217020
  15. Manee, M. M., Al-Shomrani, B. M., Altammami, M. A., **El-Shafie, H. A. F.**, Alsayah, A. A., Alhoshani, F. M and Alqahtani, F. H. 2022. Microsatellite variation in the most devastating beetle pests (Coleoptera: Curculionidae) of Agricultural and forest crops. International Journal of Molecular Sciences. <https://doi.org/10.3390/ijms23179847>
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## PATENT

**Title of invention:** A repellent against the red palm weevil, *Rhynchophorus ferrugineus*. The patent is in collaboration with Chem Tica International Company and Date Palm Research Center of Excellence, King Faisal University, (filed) GC2014-27894, filing date, 8.9.2014.

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