Kholoud M. Alananbeh Associate Professor Plant Pathology, Mycology Dept. of Plant Protection Jordan University Amman, Jordan Email: <u>k.alananbeh@ju.edu.jo</u> Tel. +962775321023

I am a dedicated and skilled researcher with expertise in molecular characterization and genetic diversity across fungi, bacteria, insects, and weeds. My research spans multiple areas, including plant fungal pathogens affecting forest and fruit trees, cereals, and vegetables, as well as soil health, microbiome studies, biological control, endophyte isolation, entomopathogenic fungi, nanotechnology, and crop-specific diseases. Additionally, I have a deep interest in biodiversity, particularly in plants and fungi, and I am proficient in classifying plants, fungi, and bacteria using molecular techniques.

I am eager to pursue collaborative and multidisciplinary research opportunities that promote sustainable solutions for disease management in various crops and trees. My work is driven by a commitment to biodiversity conservation and the enhancement of crop productivity. With a strong focus on innovative research, I attempt to address pressing challenges in agricultural and environmental sciences, contributing to sustainable practices that benefit the broader agricultural and ecological communities.

#### **RESEARCH INTERESTS**

- 1. Soil health: soil microbes and their role in soil and crop health.
- 2. Forest pathology and forest health.
- 3. Biodiversity of plants and microorganisms mainly fungi.
- 4. Endophytes isolation from plants and weeds, characterization, evaluation as plant growth promoters, biocontrol agents, phytoremediation, stress alleviation (salinity, drought, and heat), and biodegradation.
- 5. Molecular characterization and genetic diversity of fungi, bacteria, insects, plants and weeds. Examples studied: Rusts, *Verticillium dahliae*, *Fusarium* spp., *Colletotrichum* spp., *Phomopsis* spp., *Rhizoctonia* sp., *Macrophamina phaseolina*, and many others), bacteria, and weeds (*Prosopsis fracta*, *Prosopis juliflora*, *Avena* spp., *Rhamnus*).
- 6. Biological control of different plant pathogens, insects, and weeds using fungi and bacteria. Emphasis is on using *Trichoderma* spp. and *Bacillus* spp.
- 7. Wheat, barley, and oat fungal diseases mainly rust, crown rot, and blotches.
- 8. Entomopathogenic fungi and their use as biocontrol agents.
- 9. Pathogens control using photosensitizers and nanotechnology.
- 10. Mushroom identification, cultivation, improvement, and their use in mycoremediation.
- 11. Screening the response of wheat and barley landraces against major fungal pathogens.
- 12. Evaluation of fungicides against different fungal plant pathogens.
- 13. Date palm diseases: identification, characterization, and control.
- 14. Pesticides residue analysis.

#### EDUCATION

#### North Dakota State University, Fargo, ND 58105, USA

Ph.D, Plant Pathology, Jan 2006 – Jan 2010.

• My research was entitled by "Studies on the population biology of *Colletotrichum coccodes* using AFLP and SCAR markers". GPA = '3.83'.

I also had a Statistical Certificate for Non-majors in the NDSU (12 credits in Statistic Department, NDSU). This included:

- Advanced applied statistics
- Applied regression
- SAS programming
- Introduction to Experimental design
- Nonparametric Statistics

I would like to add that I took the following courses in Plant Science to enhance my knowledge and experience during my MSc and PhD:

- Advanced Plant Physiology
- Plant Tissue culture
- Professional Development
- Intermediate Genetics
- Field Design

#### Jordan University, Amman, Jordan

Master, Horticulture and Plant Protection, Sep 2000 - Feb 2003.

- Research entitled "Production of Oyster Mushroom *Pleurotus ostreatus* on Different Agricultural Wastes Available in Jordan". With GPA= "3.65".
- It has been conducted in Plant Pathology Department, Jordan University, Jordan. There are a lot of agricultural wastes available such as tomato tuff, banana leaves, pine needles, wheat straw and olive cake. Argo-waste was collected, chopped if needed, boiled, and then used for mushroom cultivation.
- I prepared mushroom spawn (spores on millet or wheat grains) for cultivation, and analyzed protein, fiber, fat, ash, moisture, and minerals in mushroom.
- I analyzed protein, fiber, fat, ash, moisture, and minerals in mushrooms.

#### Jordan University, Amman, Jordan

Bachelor, Plant protection, Sep 1995 - Jun 1999. GPA= "2.75"

#### Kufranjah Secondary School for Females, Ajloun, Jordan

High School, Scientific Stream, Oct 1994 - Jun 1995. GPA of 86%.

#### WORK EXPERIENCE

#### Sep. 2021- 25/09/2024. Head of Department of Plant Protection.

University of Jordan, Amman, Jordan

Sep 2015 – Present. Associate Professor University of Jordan, Amman, Jordan

### Responsibilities

### Teaching

- Taught the following courses for undergraduate students:
- 1. Plant Pathology (Bachelor)
- 2. General mycology (Bachelor)
- 3. Field Training in Plant Protection (Bachelor)
- 4. Beneficial fungi (Bachelor)
- 5. Seminar (Bachelor)
- 6. Principles of plant protection (Bachelor)
- 7. Soil Microbiology (Bachelor)
- 8. Fungal plant diseases (Master)
- 9. Seed Pathology (PhD)
- 10. Fungal Taxonomy (PhD)
- 11. Seminar in Plant Protection (PhD)
- 12. Biological control (PhD)

### Supervising graduate students

- Master students:
- Prosopsis fracta in Jordan: characteristics, distribution, diversity, and associated endophytes.(Ongoing).
- Molecular characterization of fungi associated with dry rot of potato and evaluation of *Trichoderma* spp. against them. (Ongoing)
- Survey, characterization, and evaluation of some control methods of *Fusarium* species associated with wilt disease on cucumber in Jordan. (Ongoing)
- Screening entomopathogenic fungi associated with the red palm weevil, *Rhynchophorus ferrugineus* (Coleoptera: Curculionidae) in Jordan. (Ongoing)
- Comparing the productivity of the commercial and the wild Jordanian Agaricus, and the possibility of hybridization between them. (Ongoing)
- Entomopathogenic bacteria associated with fall armyworm Spodoptera frugiperda (Lepidoptera: Noctuidae) in Jordan. (Ongoing)
- Entomopathogenic fungi associated with fall armyworm Spodoptera frugiperda (Lepidoptera: Noctuidae) in Jordan. (Completed)
- Influence of *Trichoderma harzianum* on growth, yield, and quality of lettuce (*Lactuca sativa*) grown under hydroponic system. (Completed)
- Evaluation of endophytic bacteria from durum wheat on Fusarium root and crown rot disease (*Fusarium culmorum* (Wm.G. Sm.) Sacc.) under drought stress.
   (Completed)
- Pseudomonas fluorescens NK4 enhances alfalfa growth and acts as a biocontrol agent against Fusarium sp. on alfalfa. (Completed)
- Evaluation of Fusarium crown rot disease *Fusarium culmorum* resistance in Jordanian durum wheat landraces. (Completed)
- Estimating the impact of *Trichoderma* spp. fungi on turfgrass quality under different levels of salinity. (Completed)
- Biological control of pepper root rot by using arbuscular mycorrhizal fungi and olive cake. (Completed)
- Effect of three *Bacillus* spp. on tobacco whitefly *Bemisia tabaci* (Gennadius) (Hemiptera: Aleyrodidae). (Completed)

### • PhD students:

- Diversity of lake flies (Chironomidae: Diptera) in artificial lakes in Dubai, United Arab Emirates (Ongoing).
- Project entitled "Characterization of Endophytic Plant Growth Promoting Bacteria from Seeds of Jordanian Wheat Genotypes and their Potential Utilization in Improving Water Deficit Tolerance". (Completed).
- Project entitled "Pathogenicvariability of indigenousoatcrown rust *Pucciniacoronata* f. sp. *avenae* on different oat genotypes". (Completed)
- Project entitled "Effect of endophytic fungal isolates on wheat aphid *Rhopalosiphum padi* (L.) (Hemiptera: Aphididae) under favorable and unfavorable conditions". (Completed)

## • Research

### **Principal investigator:**

- Biological evaluation of *Chaetomium* species from Jordan: their genetic diversity and their use in agriculture, medicine, and industry. Funded by Scientific Research and Innovation Support Fund (SRF). 49300 JD.
- Survey and characterization of wheat stem rust (*Puccinia graminis*) in Jordan. Principal investigator. 12000 JD. Funded by The University of Jordan, Deanship of Scientific Research; and Abdul Hameed Shoman Foundation 15000 JD.
- Survey, Characterization, and Genetic Diversity Analysis of Net Form (*Pyrenophora teres f. teres*) and Spot Form (*Pyrenophora teres f. maculate*) Blotches and Screening for Resistance in Jordanian Barley Germplasm. Funded by Scientific Research and Innovation Support Fund (SRF). 63500 JD.
- Impact of Fusarium crown rot disease and identification of quantitative trait loci (QTL) for resistance in Jordanian durum wheat Germplasm. 20000 JD. Funded by The University of Jordan.

### **Co-investigator:**

- Studying leaf rust-induced genes in Jordanian durum wheat in relation to population genetic diversity of the causative fungus (*Puccinia triticina*) using cDNA-AFLP technique and microsatellite markers. 113000 JD. Funded by the Scientific Research Support Fund.
- The influence of indigenous arbuscular mycorrhizal fungi inoculation on growth and flower quality of Gerbera at different salinity levels. 15000 JD. Funded by The University of Jordan, Deanship of Scientific Research.
- Agronomic Evaluation and Registration of Advanced Durum Wheat (*Triticum turgidum* subsp. *durum*) Elite Lines from the University of Jordan Breeding Program.

### Side projects:

- *Trichoderma* spp. in Jordan: isolation, characterization, and use in agriculture and industry.
- Pathogenic microorganisms (fungi, bacteria, nematode) associated with Juniper trees in Dana bioreserve.
- Evaluation of different biocontrol methods against wilt disease (*Fusarium oxysporum*) on *Pinus pinea*.

- JordanHortiFuture: TOWARDS A MORE INCLUSIVE AND RESILIENT HORTICULTURE SECTOR FOR SMALLHOLDER FARMERS IN JORDAN. In collaboration with Advance Consulting. Started 25/02/2024.

### • Fungal disease diagnosis

This is done through Center of Consultations and Training, The University of Jordan. Fungal diseases are identified morphologically and molecularly for different crops (vegetables, fruit trees) and ornamental plants received from farmers, exporters, agricultural companies, nurseries, and the Ministry of Agriculture.

### Sep 2011 – August 2015.

### Assistant Professor

Taibah University, Al Madinah Al Munawwarah, Saudi Arabia Responsibilities:

- Taught the following courses for the seventh and eighth level:
  - 1. Bacterial Physiology
  - 2. Biostatistics and Field Design
  - 3. Food Microbiology
  - 4. Genetic Engineering
  - 5. Graduation Research Topic
  - 6. Mycology
  - 7. Petroleum Microbiology and Mineralization
  - 8. Plant Pathology
  - 9. Special Topics
- Supervised three graduate students:
  - 1. "Evaluation of film-coating legume seeds with the fungicide thiram on nodulation and plant establishment against soil-borne diseases".
  - 2. "Photodynamic inactivation of Dematiaceous phytopathogenic fungi with emphasis on *Alternaria spp.*, the causal agent of early blight of tomato".
  - 3. "Study on microbial contamination of wastewater and their treatment with nanoparticles in Saudi Arabia".
- Participated in King Abdulaziz and His Companions Foundation for Giftedness and Creativity (MAWHIBA) program for two years 2014-2015 (The path of scientific research).
- Responsible for organizing the department undergraduate courses for each semester, prepare and assign faculty and lecturers courses schedule, and enter the undergraduate courses online using the ORACLE registration system.
- Responsible for the graduation project committee in the department (assigning students to doctors, solving any possible difficulties, writing guidelines for research project's writing and presentation.
- Academic advisor for undergraduate students.
- Member in the student affairs and extension committee.

• Course specifications for the following courses:

Level	Course code	Course name	
		Molecular Genetics of Eukaryotes	
		Molecular Systematic	
Master		Genetic Engineering	
		Genomics and Bioinfromatics	
		Molecular diagnostic	
Bachelor	BIOL312	Molecular biology and genetic engineering	
(3rd Year)	BIOL 314	Biostatistics and Experimental Design	

### June 2012 – August 2012.

Visiting Scientist

North Dakota State University, Fargo, North Dakota, USA Responsibilities: Writing manuscripts for publication with two professors.

### Aug 2009 – Aug 2011.

### **Post Doc Research Fellow**

North Dakota State University, Fargo, ND, United States of America

Worked on Verticillium wilt disease on sunflower and potato caused by the fungus *Verticillium dahliae* and funded by the National Sunflower Association (NSA).

Responsibilities:

• Field surveys to collect infected samples of sunflower for further testing for *Verticillium*, *Phomopsis*, *Phoma*, *Fusarium*, Sclerotinia stem and stalk rot, insect damage, charcoal rot, downy mildew, and other diseases.

• Received, isolated, and identified *V. dahliae* and all the other fungi infecting Sunflower morphologically and molecularly using PCR amplification with specific primers and ITS region.

• Used Amplified Fragment Length polymorphism (AFLP) and Simple Sequence Repeats (SSR) to study the genetic diversity of *Verticillium dahliae* on different hosts including sunflower and potato and studied the global genetic diversity.

• Identified the vegetative compatibility groups (VCG's) of the fungus using the molecular techniques.

• Identified the most aggressive VCG on sunflower using different inoculation methods.

• **Had side projects** on identifying the different species of *Fusarium, Phomopsis, Phoma, Microphamina,* and *Colletotrichum* morphologically and molecularly using different primers, tested their pathogenicity on sunflower, and run different molecular markers such as AFLP and rep-PCR on those fungi, as well as reporting new fungi on sunflower.

• Laboratory skills in preparation (merchandise necessary equipments and materials), student supervising, and had different laboratory techniques skills.

### Jan 2006 – Jan-2010.

### **Research** assistant

North Dakota state University, Fargo, ND, United States of America

Worked on the fungus *Colletotrichum coccodes*, the causal agent of black dot disease on potato plant.

- I worked with laboratory and greenhouse techniques including potato planting in green houses and field and scoring disease severity in potato fields.
- Isolated, cultured, identified, and maintained different fungal cultures using different methods.
- Identified and counted germinated conidia of *Alternaria solani* on fungicidessupplemented media.
- Prepared different media types for fungal pathogens, and single sporing of *Colletotrichum coccodes* and other fungi.
- Conducted molecular work (DNA extraction, PCR-running, AFLP running and analysis by the traditional way and by using Li-COR, cloning, developing SCAR markers, designing primers), running different statistical softwares to analyze the binomial data such as PHYLIP, WINBOOT, POPGENE, MULTILOCUS, GENALEX, and STRUCTURE, BAPS, MEGA 5.1, AFLPsurv.
- Able to identify different fungal pathogens on potato plants visually, by culture, and molecularly.

## Jun 2007 - Sep 2007.

### Plant disease diagnostician

North Dakota state University, United States of America, Fargo, ND Worked in the Plant Diagnostic Laboratory.

- Visual identification of some plant disease depending on the symptoms, then confirming the identification by culturing the samples on different media types.
- I helped in preparing potato tubers and stems for future testing for different potato diseases.

## Apr 2003 - Jun 2005.

### Mushroom cultivation trainer

Extension Department, Ministry of Agriculture, and through the Agro-Biodiversity project in NCARTT, Jordan, Amman.

Trainer in the Extension Department, Ministry of Agriculture, and through the Agro-Biodiversity project in national center for agricultural research and technology transfer (NCARTT) on Oyster mushroom Production for home level.

- Conducted workshops on oyster mushroom cultivation using simple methods.
- Presented topics regarding mushroom and spawn production.

## Feb 2004 - Jan 2006.

## Pesticide analyzer and agricultural engineer

Ministry of Agriculture, Jordan, Amman.

Worked on a project with Ministry of Agriculture and the National Center for Agricultural Research and Technology Transfer (Jordan) (NCARTT) in laboratories of pesticide and residue analysis called "Safety Use of Pesticide and Residue Analysis".

In this project, I worked with a hard-working team in planting open field and green house for different vegetables (cucumber, tomato, squash, pepper, strawberry, eggplant, cabbage, lettuce, and other vegetables). Some of job duties were:

- Checked the plots for any possible diseases and pests and applied the necessary pesticides to control those diseases and pests.
- Supervised the application of the pesticides studied in that project in the right amount and method.
- Received and prepared samples for pesticide residue analysis,
- Analyzed pesticides residue using different chemicals.
- Calculated the residue amounts in the samples, worked on Gas Chromatograph. High Performance Liquid Chromatograph, and Mass spectrophotometer for finding the active ingredient concentration for different pesticides received at the Ministry of Agriculture
- Prepared pesticides stocks for different pesticides used in the study.

# Feb 2002 - Feb 2004.

## **Teaching Assistant**

Jordan University, Jordan, Amman.

- Taught the practical part of the following courses during and after my M. Sc degree:
  - Plant Nematology in 2004
  - Fungal Plant Diseases in 2002/2003.
- I got good experience in preparing the laboratory section for undergraduate students, good interaction with the students through helping them to diagnose and recognize different fungal diseases through symptoms and causal agents.
- I experienced collecting, picking, and saving nematodes through different collecting techniques, and finally helped the students in differentiating the different nematode species through the microscope.

# 2001 - 2002.

## **Research assistant**

University of Jordan.

Worked on collecting diseased plants for *Eutypa* species affecting grape vines, scoring the disease, and data entry.

• Prepared and corrected the exams for the undergraduate students.

## Oct 2000 - Feb 2002.

## Part -time job in the insect museum

Jordan University, Jordan

- I had good ability in collecting, preserving, and identifying different types of insects.
- I helped some graduate students in collecting the insects for their research through surveys around Jordan.

## PUBLICATIONS

- Abu El Samen, F. M., Alsawalha, I., Alananbeh, K. M., Al-Karablieh, N., & Al-Abdallat, A. M. (2024). Evaluation of Endophytic Bacteria from Durum Wheat on Fusarium Root and Crown Rot Disease (*Fusarium culmorum*) Under Drought Stress. *Agronomy*, 14(12), 2912. <u>https://doi.org/10.3390/agronomy14122912</u>
- 2. Kholoud M. Alananbeh, Pablo D. Olivera, Ayed M. Al-Abdallat, Monther M. Tahat,

Douglas G. Luster, Yue Jin, and Les J. Szabo. 2024. Virulence and genotypic of the wheat stem rust pathogen (*Puccinia graminis* f. sp. *tritici*) detected in Jordan. Plant Pathology, Under review.

- 3. Firas M Abu El-Samen, Imran A. Alsawalha, Kholoud M. Alananbeh, Nehaya Al-Karablieh, Ayed M Al-Abdallat. (2024). Evaluation of endophytic bacteria from durum wheat on Fusarium root and crown rot disease (*Fusarium culmorum* (Wm.G. Sm.) Sacc.) under drought stress. Agronomy, Under review.
- 4. Alananbeh, K.M., Alkarablieh, N., Salem, N., Albanna, L. (2024). Diseases of Broad Bean. In: Elmer, W.H., McGrath, M., McGovern, R.J. (eds) Handbook of Vegetable and Herb Diseases. Handbook of Plant Disease Management. Springer, Cham. https://doi.org/10.1007/978-3-030-35512-8\_17-1.
- Al-Hawamdeh, F., Ayad, J. Y., Alananbeh, K. M., & Akash, M. W. (2024). Bacterial Endophytes and Their Contributions to Alleviating Drought and Salinity Stresses in Wheat: A Systematic Review of Physiological Mechanisms. Agriculture, 14(5), 769.
- 6. Othman, Yahia A., Kholoud M. Alananbeh, and Monther M. Tahat. "Can Arbuscular Mycorrhizal Fungi Enhance Crop Productivity and Quality in Hydroponics? A Meta-Analysis." Sustainability 16, no. 9 (2024): 3662.
- 7. Mohammad Asad Ibrahim, Kholoud M. **Alananbeh**, Yahia Othman, Muhannad Massadeh. 2024. Oat Crown Rust in Jordan: A Comprehensive Survey and Analysis. Jordan Journal of Biological Sciences, 17(3): 561-573.
- 8. Kholoud M. Alananbeh, Viviana Rivera, Ivette Acuña Bravo, Gary Secor, and Neil C. Gudmestad. 2024. Genetic and vegetative compatibility group's diversity of *Colletotrichum coccodes* isolates from Chile using amplified fragment length polymorphism markers. Journal of Fungi, 10(3): 200. https://doi.org/10.3390/jof10030200.
- 9. Kholoud M. Alananbeh, A y e d A l -Abdallat a n d Huda Al-Hiary. First r e p o r t of *Fusarium culmorum* (W.G. Sm.) Sacc causing crown rot on wheat in Jordan. Plant Disease, 0:1, 2024; published online as https://doi.org/10.1094/PDIS-08-23-1714-PDN.
- 10. K. Nazari, E. Kurtulus, H. Kavaz, R. El Amil, T. Thach, H. Hekiman, G. Basbagci, E.B. Turgay, D.R. El Naggar, W. El Orabey, R.I. Omara, K.M. Alananbeh, A. Al Abdallat, M.M Tahat, K. Heimoun, G. Mhairy, S.A. Ghorrah. 2024. First report of expansion of virulence in *Puccinia striiformis* f. sp. *tritici* to wheat resistance genes Yr10 and Yr24 (PstS17) in the Middle East. Plant Disease, https://doi.org/10.1094/PDIS-11-23-2494-PDN.
- 11. KM Alananbeh, R Alkfoof, R Muhaidat, M Massadeh. 2024. Production of xylanase by *Trichoderma* species growing on olive mill pomace and barley bran in a packed-bed bioreactor. Journal of Fungi 10 (1), 49.
- 8. Firas Abu El Samen, Marwa Nasrallah, Mahmoud A Alfaqih, Kholoud M **Alananbeh**. 2023. Prevalence and pathogenicity of fungi associated with grapevine trunk diseases in Jordan. Phytopathologia Mediterranea, 62(2).
- Alananbeh, K.M.; Othman, Y.A.; Tahat, M.M.; Al-Dakil, H.; Yahya, A.A.; Ayasrah, B.; Al-Share, T.; Alkhatatbeh, S.; Al-Zoubi, R.; Alnaanah, M.; Malkawy, S.; Alananbeh, M.B. Forest Health Assessment in Four Jordanian Reserves Located in Semi-Arid Environments. *Forests* 2023, 14, 918. https://doi.org/10.3390/f14050918
- Abu-Shanab, N.S.; Alananbeh, K.M.; Othman, Y.A.; Al-Ajlouni, M.G. Effect of Using *Trichoderma* spp. on Turfgrass Quality under Different Levels of Salinity. *Water* 2022, 14, 3943. https://doi.org/10.3390/w14233943.
- 11. Monther M. Tahat, Hussen Aldakil, Kholoud Alananbeh, and Nidà Mohammed Salem.

2022. First Report of *Fusarium verticillioides* causing Fusarium ear rot of corn in Jordan. Plant Disease, https://doi.org/10.1094/PDIS-08-22-1807-PDN.

- 12. Monther M. Tahat, Hussen Aldakil, Kholoud **Alananbeh**, Yahia Othman, and Nihad Alsmairat. 2022. First Report of Strawberry Wilt Caused by *Fusarium oxysporum* Schltdl. in Jordan. https://doi.org/10.1094/PDIS-10-21-2339-PDN.
- Othman, Y.A.; Tahat, M.; Alananbeh, K.M.; Al-Ajlouni, M. 2022. Arbuscular Mycorrhizal Fungi Inoculation Improves Flower Yield and Postharvest Quality Component of Gerbera Grown under Different Salinity Levels. Agriculture, 12, 978. https://doi.org/10.3390/agriculture12070978.
- 14. Kholoud M. Alananbeh, Yahia Othman, Monther Tahat, Anas Abu Yahya, Bilal Ayasrah, Thabit Al-Share, Sameh Alkhatatbeh, Rafat Al-Zoubi, Malik Alnaanah, Sufian Malkawy, Muslim Alananbeh. 2021. Status of forest health ecosystem at natural reserves in Jordan. RSCN, Nature Conservation Monitoring Center.
- 15. Kholoud M. Alananbeh, Monther M. Tahat, Haitham Al-Taweel. 2021. First report of *Fusarium proliferatum* on date palm (*Phoenix dactylifera* L.) in Jordan. Plant Disease Note, https://doi.org/10.1094/PDIS-06-20-1219-PDN.
- 16. Monther M. Tahat, Hussen Al Dakil, Kholoud M. Alananbeh. 2021. First report of damping off disease caused by *Fusarium oxysporum* on *Pinus pinea* in Jordan. Plant Disease Note, https://doi.org/10.1094/PDIS-10-20-2135-PDN.
- 17. Monther Mohumad Tahat, Khalifa Abo-Farag, Kholoud **Alananbeh**, Ahmad Mohamad Al-Momany. 2020. The efficacy of *Glomus mosseae* and olive cake to control a chili pepper (*Capsicum annuum*) damping off disease. Fresenius Environmental Bulletin, 29 (11/2020): 9863-9871.
- 18. Monther M Tahat, Kholoud M Alananbeh, Yahia A Othman, Daniel I Leskovar. 2020. Soil health and sustainable agriculture. Sustainability 2020, 12, 4859; doi:10.3390/su12124859.
- 19. Mashhour M Al-Khawaldeh, Salah-Eddin Araj, Kholoud M Alananbeh, Tawfiq M Al Antary. 2020. Wheat cultivable fungal endophytes in Jordan. Fresenius Environmental Bulletin 29, 1229-1240.
- Kholoud Alananbeh, Mohammad Al Qasim, Aladin Gharaibeh, Huda Al-Hiary. 2020. First report of shoot blight caused by *Neoscytalidium dimidiatum* on citrus in Jordan. Plant Disease. Published Online: 15 Oct 2019https://doi.org/10.1094/PDIS-04-19-0860-PDN.
- 21. Randa N. Albdaiwi, Hala Khyami-Horani, Jamal Y. Ayad, Kholoud M. Alananbeh and Rabea Al-Sayaydeh. 2019. Isolation and characterization of halotolerant plant growth promoting rhizobacteria from durum wheat (*Triticum turgidum* subsp. *durum*) cultivated in saline areas of the Dead Sea region. Frontiers in Microbiology, doi: 10.3389/fmicb.2019.01639.
- 22. Kholoud M. Alananbeh, Salah-Eddin Araj & Haitham M. Al Taweel. 2019. First record of *Raoiella indica* Hirst (Acari: Tenuipalpidae) in Jordan. International Journal of Acarology, https://doi.org/10.1080/01647954.2019.1602165.
- 23. Monther Mohumad Tahat, Kamaruzaman Sijam, Kholoud Alananbeh. 2018. Exploring the use of legumes as host plant species in *Glomus mosseae* sporulation. Legume Research, (Online Published: 29-10-2018).
- 24. Lara R. Jaber, Kholoud M. Alananbeh. 2018. Fungal entomopathogens as endophytes reduce several species of *Fusarium* causing crown and root rot in sweet pepper (*Capsicum annuum* L.). Biological Control 126 (2018) 117–126.
- 25. Asma M Shaderma, Maher B Al-Dabbas, Tawfiq M Al-Antary, Kholoud M Alananbeh. 2018. Evaluation of ozonation treatment effect on tomato fruits and lettuce colour.

Fresenius Environmental Bulletin, 27 (7): 5137-5141.

- 26. Kholoud M. Alananbeh, Nahla BoQuellah, Mashael Rabih Al-Harbi, and Salama A. Ouf. 2018. Effect of Photosensitizer on Mycelium Growth, Mycotoxin and Enzyme Activity of *Alternaria* sp. Jordan Journal of Biological Sciences, 11 (5): 499-510.
- Osama W Al Arabiat, Salah-Edden A Araj, Kholoud M Alananbeh, Twafiq M Al-Antary. 2018. Efficacy of three *Bacillus* spp. on development of tobacco whitefly *Bemisia tabaci* (Gennadius) (Homoptera: Aleyrodidae). Fresenius Environmental Bulletin, 27 (7): 4965-4972.
- 28. Osama W Al Arabiat, Salah-Edden A Araj, Kholoud M. **Alananbeh**, Tawfiq M. Al-Antary. 2018. Effect of three *Bacillus* spp. on tobacco whitefly *Bemisia tabaci* (Gennadius) (Homoptera: Aleyrodidae). Fresenius Environmental Bulletin, 27 (5a): 3706-3712.
- 29. Osama W Al Arabiat, Salah-Edden A Araj, Kholoud M. Alananbeh, Tawfiq M. Al-Antary. 2018. Influence of three *Bacillus* spp. on different parameters of cauliflower plant growth when tested on tobacco whitefly *Bemisia tabaci* (gennadius) (Homoptera: Aleyrodidae). Fresenius Environmental Bulletin, 27 (5a): 3746-3751.
- 30. Firas Hayajneh and Kholoud **Alananbeh**. 2018. Awareness of the presence of antimicrobial drugs in food among consumers in Jordan. Journal of Food Agriculture and Environment, 16 (2):56-59; DOI: 10.1234/4.2018.5497.
- 31. Kholoud **Alananbeh**, Firas Hayajneh. 2018. Pesticide residue awareness among students and employees in the University of Jordan, Jordan. Journal of Agricultural & Food Information. DOI:10.1080/10496505.2018.1429929.
- 32. K.M. Alananbeh, W. J. Al-Refaee, Z. A. Qodah. 2017. Antifungal Effect of Silver Nanoparticles on Selected Fungi Isolated from Raw and Wastewater. Indian Journal of Pharmaceutical Sciences, 79(4): 559-567.
- 33. Kholoud M. Alananbeh, Zakaria Al-Qudah, Amira El-Adly, Wadha J. Al Refaee. 2017. Impact of Silver Nanoparticles on Bacteria Isolated From Raw and Treated Wastewater in Madinah, KSA. Arabian Journal for Science and Engineering. 42:85-93.
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- **49.** Alananbeh, K. M., Johnson, K., and Gudmestad, N. C. Phylogenetic study of *Colletotrichum coccodes*-different VCGs from different geographic origins using different gene sequences. (**In process**).
- **50.** Alananbeh, K., Mathew, F., Cohli, S., Gudmestad, N., Gulya, Y., and Markell, S. Determination of presumptive vegetative compatibility groups of *Verticillium dahliae* occurring on sunflower using molecular markers. (**In process**).
- **51.** Alananbeh, K., Mathew, F., Gudmestad, N., Gulya, Y., and Markell, S. Genetic diversity study of two asexual fungi infecting sunflower and potato in the United States using rep-PCR. (**In process**).
- **52.** Mathew, F., Alananbeh, K., Meyer, S., Jordahl, J., Bertero de Romano, A., Paoloni, P., Clemente, G., and Gudmestad, N. Identity and pathogenicity of *Fusarium* spp. isolated from sunflower. (In process).
- **53.** Alananbeh, K., Mathew, F., Taylor, C., Gudmestad, N., Gulya, Y., and Markell, S. Genetic diversity study of *Macrophamina phaseolina* infecting sunflower in the United States using

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- 57. Kholoud **Alananbeh**, Febina Mathew, Chris Taylor, Thomas Gulya, Neil Gudmestad, and Samuel Markell. Phenotypic and fingerprinting characterizations of charcoal rot on sunflower in North and South America. (**In Process**).
- 58. Kholoud M. Alannabeh, Nadia S. Al Kaff, Nahla Boquellah. Effect of date-palm bacterial endophytes on wheat seeds under salt stress. (In process).
- **59.** Kholoud **Alananbeh**, Nahla Boquellah, Waad Al-Raddadi, Dalal Al-Sahli. Antifungal potential of plant extracts against selected fungi and bacteria (**In process**).

### **MEETINGS (ABSTRACTS and POSTERS)**

- Kholoud M. Alananbeh, Pablo D. Olivera, Ayed M. Al-Abdallat, Monther M. Tahat, Yue Jin, Les J. Szabo. Race-Typing and Genotyping of Wheat Stem Rust (*Puccinia graminis* f.sp. *tritici*) in Jordan. Plant Health 2023, Denver Colorado, USA.12/0/8/2023-16/08/2023. (Poster)
- Huda A. Al-Hyari, Ayed M. Al-Abdallat, Kholoud M. Alananbeh. Evaluation of Fusarium crown rot disease *Fusarium culmorum* resistance in Jordanain durum wheat land races. The 8th International Cereal Nematodes Symposium, Abant, Turkey, September 26 29, 2022. (Accepted, Oral presentation).
- "Evaluation of endophytic bacteria isolated from durum wheat on root crown rot disease under drought stress", Imran Al-Sawalhah, Firas Abu-El Samen, Nehayah Al Karablieh, Yahya Othman, Jamal Ayad, Ayed M. Al-Abdallat & Kholoud M. Alananbeh has been accepted as poster presentation at the 13th Arab Congress of Plant Protection (ACPP-2022), 16-21 October, 2022, Hammamet-Tunisia. (Accepted, poster).
- Global Resilience: Science, Pandemics, and the Future of Wheat. 2021 BGRI Technical Workshop (virtual): 06-08/10/2021. (Web ID: 92598810055, Host: Christopher Knight, Participant ID: 3668497).
- Pathogen Surveillance Virtual Meeting. BGRI Virtual Workshop. September 25, 2020.
- 1st Virtual Safe Use Ambassador Conference. 08th September 2020. BAYER.
- Kholoud M. Alananbeh, Ayed Al-Abdallat, Monther M. Tahat. 2018. Survey of wheat stem rust *Puccinia graminis* f. sp. *tritici* in Jordan. The 2018 BGRI Technical Workshop, 13-17-4-2018, Marrakech, Morocco.
- Kholoud M. Alananbeh, Nahla A. Boquellah, Dalal S. Al-Sahle. *Acremonium strictum* as antifungal and antibacterial agent in vitro. 12th Arab Congress for Plant Protection,

Hurghada, Egypt, 4-10/11/2017.

- Salama A. Ouf, Kholoud M. Alananbeh, Mashael R. Al-Harbi. Photodynamic inactivation of dematiaceous phytopathogenic fungi with emphasis on *Alternaria spp., the causal agent* of early blight of tomato. The 29 Meeting of Saudi Biolgical Society, 25-27 February 2014, Dammam, KSA (**Oral presentation**).
- Mathew, F., Alananbeh, K., Jordahl, J., Meyer, S., Gudmestad, N., Gulya, T., and Markell, S. 2014. *Fusarium* sp. associated with stem diseases on sunflowers. National Sunflower Association. (Oral presentation). Available online at http://www.sunflowernsa.com/uploads/resources/698/fusarium\_mathew\_2014.pdf.
- Mathew, F., Alananbeh, K., Balbyshev, N., Heitkamp, E., Castelbury, L., Gulya, T., and Markell, S. 2012. Reevaluation of *Phomopsis* species affecting sunflowers in the United States. 18<sup>th</sup> International Sunflower Conference, Mar Del Plata and Balcarce. Argentina February 27<sup>th</sup> -March 1<sup>st</sup>, 2012. Poster.
- Mathew, F., Alananbeh, K., Meyer, S., Jordahl, J., Bertero de Romano, A., Paoloni, P., Clemente, G., and Gudmestad, N. Identity and pathogenicity of *Fusarium* spp. isolated from sunflower. Poster. National Plant Diagnostic Network, Third National Meeting, Berkeley, California, November 6-9, 2011. **Poster**.
- Alananbeh, K., Gudmestad, N., Gulya, Y., and Markell, S. 2011. Determination of presumptive vegetative compatibility groups of *Verticillium dahliae* occurring on sunflower using molecular markers. **Oral presentation**, APS 2011 meeting, Hawaii, USA. Aug 5-10, 2011.
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- Alananbeh, K., Gudmestad, N., Gulya, Y., and Markell, S. 2011. Preliminary Studies on the Vegetative Compatibility Groups of *Verticillium* on Sunflower. Oral presentation, National Sunflower Association board spring meeting, Ramada Plaza Hotel, Fargo, ND. January 12-13, 2011.
- Alananbeh, K., Tsror (Lahkim), L., and Gudmestad, N. C. 2010. Genetic diversity of global population of *Colletotrichum coccodes* using amplified fragment length polymorphism.
   Poster, APS North Central Division 2010 Meeting, Rapid City, SD, USA. June 06-08.
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- Alananbeh, K., Markell, S., Gulya, T., and Gudmestad, N. C. 2010. Determination of vegetative compatibility groups using molecular markers, and their aggressiveness of *Verticillium dahliae* occurring on sunflower: Research Plan. 32nd National Sunflower Association Research Forum, Ramada Plaza Suites & Convention Center, January 13-14, 2010. Oral presentation.
- Alananbeh, K and Gudmestad, N.C. 2009. Genetic Diversity of *Colletotrichum coccodes* Vegetative Compatibility Groups Using Fluorescent Amplified Fragment Length Polymorphism Markers. APS North Central Division Meeting. June 21-23, 2009, Iowa State University, Reiman Gardens, Ames, Iowa, USA. **Oral presentation.**
- Al-Momany, A. and Ananbeh, K. 2007. Conversion of agricultural wastes into value added product with high protein content by growing *Pleurotus ostreatus*. Proc. of International Conference on Environment: Survival and Sustainability. Nicosia-Northern Cyprus. 19 -24 Feb. 2007.
- Ananbeh, K. M., and Almomany, A. R. 2005. Production of Oyster mushroom *Pleurotus* ostreatus on olive cake agro waste. The 5th Agriculture Scientific Conference. 9-12 /5/2005, Albalqa' Faculty of Agricultural Technology, Applied University, Jordan.
- Almomany, A. R. and Ananbeh, K. M. 2004. Production of Oyster mushroom *Pleurotus ostreatus* on olive cake agro waste. The 44th Annual Science Week Conference on Environmental Sustainable Development, 22-25 November 2004, Al Baath University, Syria.

## SCHOLARSHIPS, HONORS and AWARDS

- **Erasmus** + **International Credit Mobility Scholarship.** Josip Juraj Strossmayer University of Osijek- Croatia. 2<sup>nd</sup>-8<sup>th</sup> July, 2023.
- FULBRIGHT Fellowship Scholar, 1/10/2018 1/7/2019. USDA-CDL, University of Minnesota, Minneapolis, MN, USA. Supervisor: Dr. Les Szabo, Pablo Olivera, Yue Jin.
   Proposal entitled" Genetic diversity of wheat stem rust (*Puccinia graminis*) in Jordan".
- Jordanian Agricultural Engineers Association, 9/9/2017 Nominated as an expert in the University Agricultural Education within Plant Protection Field starting from 10/10/2016.

### Study achievements, Sep 2009

- Research assistants from (2007 until 2009) in Department of Plant Pathology, NDSU.
- Activity secretary and treasurer of Plant Pathology Student Organization, in Department of Plant Pathology at North Dakota State University, Fargo 58105, North Dakota USA, from 2007-2008.
- Graduate Teaching Assistantship during the following Academic Semesters, Department of Plant Protection, University of Jordan, Amman, Jordan.
- Mango Research Assistant, Department of Plant Protection, University of Jordan, Amman. Jordan.

#### Travel Award, Jun 2009

• From the North Central American Phytopathological Society (NA-APS).

### TRAINING COURSES GIVEN

Course name	Location	Date	Attendance as
Preparation of funded research projects	Deanship of Academic Development - Taibah University	5-8/11/2013	Trainer
MINITAB	Deanship of Academic Development - Taibah University	13/11/2013	Trainer
How to design scientific experiments	Deanship of Academic Development - Taibah University	12/9/2014	Trainer
National Olympiad for Science Innovation - The path of scientific research- School districts	King Abdul Aziz and his Companion Foundation for Giftedness and Creativity / Department of Education	2012-2013 2013-2014	Judge

#### MEMBERSHIP

- Member of Arab Plant Protection Congress since 2017-Now.
- Member of Saudi Biological Sciences in Saudi Arabia since 2013.
- Member of American Phytopathological Society (APS) in United States since November 2007, and member of APS North Central Division, United States (2009. -2010)
- Plant Pathology Organization, North Dakota State University since 2006-now.
- National Sunflower Association, United States. Since 2010.
- Agricultural Engineers Association in Jordan since 1999 till now.

### ADDITTIONAL SKILLS

- Reviewer in the following Journals:
- 1. Plant Disease
- 2. African Journal of Biotechnology
- 3. Chiang Mai Journal of Science
- Microsoft Office (Word, Excel, Access), Microsoft Windows XP, Microsoft Internet Explorer, Microsoft Outlook Express (Email), Internet, SAS Programming, and MINITAB analysis program with interpreting their output.
- Work both independently and within a team.
- Create appropriate plans to test experimental hypotheses by identifying and organizing resources, including experimental materials, inoculums production, space, and time to biological experiments.
- Design and conduct plant disease control assays, including compound preparation and application methods, inoculation methods, and assessment methods.

- Collect, analyze statistically, and summarize data and deliver results, conclusions, and recommendations as oral and written reports
- Keep experimental records in Laboratory Notebooks.
- Develop new test protocols and align methods with project objectives.
- Support the plant pathogen culture collection of bacteria, fungi both in pure culture (nonobligate pathogens) and on plants (obligate pathogens) including cryogenic storage.
- Practical whole organism agricultural and plant pathological research experience.
- Knowledge of life histories and disease cycles of various bacterial, fungal, and plant pathogens.
- Knowledge of greenhouse plant production.
- Effective communication skills, both oral and written, with the ability to prepare concise, timely, and accurate research summaries.
- Ability to use PCR, AFLP machine (LiCOR), microscopes, balances, pH meters, lyophilizes, autoclaves, laminar hoods, and many other laboratory and greenhouse/field equipments.
- Bacterial identification using PHOENIX 100 system.
- Thorough understanding of laboratory and greenhouse safety practices.

### Language skills

- Fluent in speaking, reading, and writing Arabic
- Fluent in speaking, reading, and writing English

### SUMMARY

- Solid understanding of plant pathology concepts and host-pathogen interaction.
- Proficiency in a wide range of genetic statistical softwares such as PHYLIP, WINBOOT, TASSEL, POPGENE, MULTILOCUS, GENALEX, and STRUCTURE, BAPS, MEGA 5.1, AFLPsurv.
- Good in using statistical softwares such as SAS, SPSS, and MINITAB and interpreting their output.

### REFERENCES

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