Curriculum Vitae

Ghazi N. Al-Karaki, Ph.D.

Professor of Plant Physiology & Soilless culture

Personal information

Name: Ghazi Nazzal Othman Al-Karaki
Date of birth and nationality: February 10, 1959, Jordanian
Marital status: Married
Academic rank: Professor (Since February 2002)
Specialization: Plant Physiology and Soilless Culture

Address:
Faculty of agriculture, Jordan University of Science & Technology,
P.O. Box 3030, Irbid, JORDAN
Telephone: 00962-2-7201000 Ext.22243 (**Office**),
Mobile: 00962 (0)797877423
Fax: 00962-2-7201078
Email: alkarakig@yahoo.com; gkaraki@just.edu.jo

Education

- PhD in Crop Physiology (December 1991): Department of Agronomy and Horticulture, University of Nebraska, Lincoln/USA.
- MS in Plant Production (Feb 1987): University of Jordan, Amman, Jordan.
- BS in Plant Production and Protection (June 1981): University of Jordan, Amman, Jordan.
- Short training course in "Teaching Technology", 1997. Jordan Univ of Science & Tech
- Short training course in "Teaching Strategies", 1999. Jordan Univ of Science & Tech
- Short training course in "e-Learning", 2000. Jordan Univ of Science & Tech

Academic Experience

- **Feb. 2002 – Present**. Professor of Plant Physiology, Faculty of Agriculture, Jordan University of Science & Technology, Irbid-Jordan.
- **Sept 2017 – August 2018:** Visiting Scientist at College of Agriculture and Life Science, Virginia Tech. University, Blacksburg, VT, USA.
- **Sept 2005 – August 2008**: Professor of Plant Physiology and Soilless culture, Faculty of Graduate Studies, Arabian Gulf University, Bahrain.
- **Sept 2001 – August 2002:** Visiting Scientist at Department of Biological Sciences, Texas Tech. University, and United States Department of Agriculture, Lubbock, TX, USA.
- **Nov 1997 –** Feb **2002**: Associate Professor of Plant Physiology, Faculty of Agriculture, Jordan University of Science and Technology. Irbid, Jordan.
- **Feb 1992 –** Nov **1997:** Assistant Professor of Plant Physiology. Jordan University of Science and Technology.
- **Jan 1989 –** Dec **1991**: Dispatched from the university to obtain a PhD from University of Nebraska, USA.
- **April 1987** – Jan **1989**: Teaching/ Research Assistant, Jordan University of Science and Technology.
- **November 1986**-**March 1987**: Research Assistant, Yarmouk University.

Administrative Experience

- **October 2012 - Sept 2014**: Expert of Hydroponic Agriculture and agricultural development, Ministry of Environment and Water, Dubai, UAE
- **Sept 2011- October 2012**: Vice Dean, Faculty of Agriculture. Jordan University of Science and Technology, Irbid, Jordan.
- **November 2005 – August 2008**: Supervisor of Sultan Qaboos Center for Developed and Soilless Agriculture, Arabian Gulf University, Bahrain.
- **Sept 2003- August 2005:** Vice Dean, Faculty of Agriculture. Jordan University of Science and Technology, Irbid, Jordan.
- **2001 (March-August**): International Consultant, Food and Agriculture Organization (FAO) of UN, North Iraq (Oil for Food Program).
- **Sept 1996** – August **1998:** Chairman of Plant Production Department. Jordan University of Science and Technology, Irbid-Jordan.

Honors and awards

- Fulbright Visiting Scholar Research Award. 2017.
- Honored by the Ministry of Environment and Water in the United Arab Emirates (UAE) for the developing of a distinguished project for the development of Hydroponics agriculture in the UAE as Initiative called "**Intajuna** =our production". July 2013.
- Seniority promotion one year to Professorship due to distinguished scientific production. Promoted to professor on February 2002.
- Distinguished Scholar Award within the Arab Fund Fellowship for Economic and Social Development (Kuwait). December 2000.
- Shouman Foundation Award for Arab Young Researchers for the year 1998 (Agricultural Sciences) for Distinguished Research. October 1998.
- Award of LI-COR Biosciences Company (Nebraska/USA) for distinguished graduate research. October 1991.

Teaching Experience & Supervision graduate students

Courses taught:

Graduate level courses (JUST)

- Advanced Plant Physiology
- Postharvest Physiology
- Advanced Plant Nutrition
- Cereal and Legume crops
- Postharvest Physiology
- Graduate Seminar

Graduate level courses (Arabian Gulf University/Bahrain)

- Research Methodology
- Soilless Agriculture
- Plant Production under Desert Environments
- Experimental Design and Analysis
- Case Study
- Protected Agriculture

Undergraduate level courses (JUST)

- Introductory Plant Science

- Plant Physiology
- Plant and Soil Water Relations
- Field Crops
- Soilless agriculture
- Practical training (Horticulture)
- Undergraduate Seminar.

Supervision of graduate students:

- Major advisor or co-advisor for 18 graduate students (Masters and PhD) at JUST, Muta University, Arabian Gulf University, University of Jordan.
- Member of examining committees for 41 graduate students (Masters and PhD) at JUST, Muta University, Arabian Gulf University, University of Jordan and others.

Participation in conferences/ workshops

Attending with presentation of papers in more than 35 conference/workshop in many countries including: Jordan, China, Turkey, Germany, Italy, USA, Bangladesh, India, Egypt, Bahrain, Oman, Tunisia, Algeria, United Arab Emirates, Greece, Thailand, and Bosna.

Establishment and developing academic programs

- Effective contribution as an idea owner and chairman of the committee for establishing the first Graduate studies program 1996, in specialties "Field crops and Horticulture" Faculty of Agriculture, Jordan University of Science and Technology.
- Chairman of the Committee on the comprehensive review and the development of a graduate program "Master and Diploma" in the specialty of "Desert Farming Techniques and Soilless Agriculture" Arabian Gulf University/ Bahrain. 2005.
- Contribute effectively to the development of research programs for the Sultan Qaboos Centre for soilless agriculture in the Arabian Gulf University/ Bahrain. 2006.
- Contribute to the academic programs for undergraduate program in plant production update, Jordan University of Science and Technology.1997, 2003, 2009.
- Contribute in upgrading the undergraduate program in plant production, Muta University / Karak / Jordan. 1995.

- Develop and implement training programs in the use of soilless cultivation techniques in the United Arab Emirates / Ministry of Environment and Water. 2013

Membership of societies, organizations and groups

- American Society of Plant Biologists.
- American Association for the Advancement of Science.
- International Society of Horticultural Sciences
- Crop Science Society of America.
- American Society of Agronomy.
- Jordanian Society of Scientific Research
- Member of PLANT STRESS Group (International Specialized group for researchers on environmental stresses on plants).
- Member of Halophyte plants Group (International Specialized group for researchers on halophytes plants).
- Global Grain Legumes Drought Research Network (GGLDRN).
- Arab Association of Environment.
- Arab Association of Agronomy.
- Badia and Desert Control Society (Jordan).

Journal Editorial Board Membership

- Journal of Environmental Studies (2009-present)
- Algerian Journal of Arid Environment (1999-2008)
- Jordanian Journal for Agricultural Sciences (2003-present)
- ISRN Agronomy (2011-present)
- Crop Research (1992-1996)
- International Journal for Agricultural Research (2001-2010)
- Arab Gulf Journal of Scientific Research (2005-2009).
- Journal of EcoBiotechnology (2006-2010)

Peer Review Contribution

Manuscripts have been reviewed for the following scientific journals

- Plant Ecology
- Brazilian J of Plant Physiology
- Jordanian Journal of Biological Sciences
- Canadian Journal of Plant Sciences
- Plant and Soil
- Mycorrhiza
- Crop Research
- Jordan Journal of Applied Science
- Algerian Journal of Aridic Areas
- Scientia Horticulturae
- Jordanian Journal of Agricultural Sciences
- Abhath Al-Yarmouk Journal.
- Mutah Journal for Research and Studies.
- Dirasat.
- Journal of Damascus University for Agriculture Studies
- ISRN Agronomy

Consultation / Training

Consultation:

Outcomes-based assessment consultations have been conducted for the following institutes /centers from 1995-present:
United States Dept of Agriculture, German Technical Cooperation (GTZ), Jordan Valley Authority, Shouman Foundation, National Center for Agricultural Research and Extension, Ministry of Municipalities Affairs and Agriculture (Bahrain), Mutah University, Ministry of Environment and Water (UAE), ICARDA, United Arab Emirates University, Sultan Qaboos University (Oman), Yarmouk university, Baghdad University, Mosel University, Sulaimania university, Amman private university, as well as many others.

Training:

Organizing and lecturing at many training courses**. (Examples):**

- Organizing and lecturing at the training workshop "Application of mycorrhizal technology" held at Ministry of Environment and water, Dubai, UAE on 13 March 2014.
- Lecturing at a training workshop "Nutrient solution in soilless agriculture" organized by the Ministry of Environment and Water (UAE) about Agricultural Development (July 2013).

- Lecturing at a training workshop "Soilless agriculture applications in dry areas" organized by the Ministry of Environment and Water (UAE) about Agricultural Development (April 2013).
- Lecturing at a training workshop organized by Jordan University of Science and Technology about Soilless agriculture (July 2012).
- Lecturing at a training workshop organized by the International Institute of Potash/ regional office in Jordan September 2010.
- Lecturing at a training workshop organized by the International Institute of Potash/ regional office in Jordan September 2009.
- Organizing and lecturing at the training workshop "Application of mycorrhizal fungi technology in arid lands". Arabian Gulf University, Bahrain 2007.
- Lecturing at a training workshop "Applications of soilless culture in Green fodder production" organized Ministry of Environment and water, Dubai, UAE.
- Lecturing at a training workshop "Applications of soilless culture in Green fodder production" organized in Arabian Gulf University / Bahrain – April 2008
- Lecturing at a training workshop "Soilless culture applications in agriculture and gardens" organized in Arabian Gulf University / Bahrain – April 2007
- Lecturing at a training workshop "Design and analysis of scientific experiments" organized in Arabian Gulf University / Bahrain – Nov 2007
- Lecturing at a training workshop "Soilless culture: modern technique to increase agricultural productivity under dry regions" organized in Arabian Gulf University / Bahrain – April 2006.
- Lecturer at the training workshop entitled “Efficiency of chemical fertilizers use and alternatives of Biofertelizers in agriculture” organized by the Arab Organization for Agricultural Development. Muscat-Oman, 2004.
- Lecturer at a training workshop about “Chickpea production” organized by FAO of UN in North Iraq. 2001
- Lecturer at the training course entitled “Use of Biofertelizers in agriculture” organized by the Arab Organization for Agricultural Development. Amman-Jordan, 1997
- Lecturer at a training workshop about “Wheat production” organized by FAO of UN in North Iraq. 2001.

Research interests

- Plant physiology and ecology
- Soilless and protected agriculture
- Water use efficiency in arid lands
- Mycorrhizae symbiosis applications in agriculture as biofertilizers

- Medicinal plants cultivation and secondary metabolites
- The effects of drought, salinity and temperature upon survival, growth and productivity of plants in arid and semiarid regions
- Plant nutrition and Biofertelizers
- Utilization of industry byproducts in agriculture to reduce their impact on environment; organic farming.
- Hydroponic green forage production

Research Projects Submitted and Funded

More than 30 research projects have been submitted during the last 20 years and the total fund obtained for these projects is estimated to be more than US$ 960,000.

Examples on these:

- Soil versus Soilless culture and the Effect of Plant Density on the Growth and Chemical composition of sweet basil. 2016. Jordan University of Sci & Technology.
- Evaluation of a hydroponic system as a disposal method of treated sewage water for production of green barley forage. 2016. Jordan University of Sci & Technology.
- A comparison of morphological characters, phenolic content and antioxidant properties of soilless cultivated and wild collected chamomile. 2015. Jordan University of Sci & Technology.
- Application of mycorrhizal fungi and organic fertilization in sustainable date palm cultivation in United Arab Emirates (**UAE**). 2013
- Application of organic fertilizer in cucumber production under soilless conditions (**UAE**) 2013
- Hydroponic green fodder production: alternative approach for water saving in Jordan. 2011. Jordan University of Sci & Technology.
- Application of treated wastewater in green fodder production under hydroponic conditions in Jordan. 2010. Jordan University of Sci & Technology.
- Soilless cultivation of some medicinal and aromatic herb plants alternate technique to increase production and quality. 2009
- مقارنة محصولين من الخضر في توفير المياه والإنتاجية تحت ظروف الزراعة بدون تربة والزراعة التقليدية 2010
- تأثير أوساط النمو المختلفة على النمو والمحتوى الغذائي في الخس المزروع في نظام زراعة بدون تربة تحت ظروف البيت المحمي .
- Interactions between soil microorganisms (mycorrhizal fungi), plant and environment in Jordan Badia region.

- Effects of mycorrhizal fungi inoculation on landscape turf establishment under dry conditions (**Bahrain**).
- Response of soilless grown sweet pepper cultivars to salinity.(**Bahrain**)
- Effect of different substrates on fruit yield and quality of cherry tomato grown in a recirculating Soilless System (**Bahrain**).
- Evaluation of some forage crops for green fodder production and water use under hydroponic conditions (**Bahrain**).
- Soilless cultivation of some medicinal and aromatic herb plants under the conditions of Arabian Gulf region (**Bahrain**).
- Nursery inoculation of tomato with arbuscular mycorrhizal fungi and subsequent performance under irrigation with saline water.
- Salt response of durum wheat cultivars Inoculated with mycorrhizal fungi.
- Improved fruit yield and mineral content of tomato cultivars in saline soils by arbuscular mycorrhizal fungi.
- Field response of wheat to arbuscular mycorrhizal fungi and drought stress
- Phosphorus fertilization and arbuscular mycorrhizal on field-grown garlic.
- Wheat response to phosphogypsum and arbuscular mycorrhiza in alkaline soil .
- Response of tomato to mycorrhizal fungi under salt stress conditions.
- Mycorrhizal inoculation and seed quality of durum wheat grown with varied phosphorus .
- Mycorrhizal inoculation on growth and mineral acquisition by barley grown with water stress.
- Water stress and mycorrhizal isolate effects on growth, nutrient acquisition of wheat.
- Soilless cultivation of some medicinal and aromatic herb plants: alternate technique to increase production and quality.
- Seed germination and early root growth of three barley cultivars as affected by temperature and water stress.
- Response of Jordanian barley cultivars to salinity stress
- Evaluation of the medicinal plant Sumac.
- Evaluation faba bean genotypes under rainfed and irrigation conditions
- Evaluation of wheat cultivars for salt tolerance
- Studies on wild legume (*Tetragonolobus Palaestinus* Bioss) populations .
- Germination, sodium and potassium concentrations of barley seeds as influenced by salinity .
- Yield and chemical composition of improved chickpea cultivars grown under semiarid Mediterranean conditions .
- Variability in yield and quality of wheat cultivars grown under arid and semiarid Mediterranean conditions .
- Growth of mycorrhizal tomato and mineral acquisition under salt stress .
- Germination of tomato cultivars as influenced by salinity .

- Rhizobium and phosphorus influence on lentil protein and lipid.
- Yield and chemical composition in dry pea in semiarid Mediterranean conditions
- Response of wheat and barley during germination to seed osmopriming at different water potential.
- Quantitative analysis of fructose fate in a plant fermentation system.
- Seed size and water potential effects on water uptake, germination and growth of lentil.
- Barley response to salt stress at varied phosphorus
- Effect of phosphorus, rhizobium and Sitona weevil control on seed growth,

Academic & Technical committees

Committees outside Jordan

- Coordinator of team for review and development of National Agricultural strategy in UAE (Ministry of Environment and Water). 2014.
- Chairman of committee for preparation and developing an initiative Intajuna 2014-2016 for developing Soilless agriculture sector in UAE. 2013.
- Chairman of committee for preparation and developing an initiative for the Office of the Crown Prince of Abu Dhabi / United Arab Emirates in the field of hydroponic green fodder production in the emirate of Ajman. 2013.
- Chairman of the research team on the development of palm cultivation in the United Arab Emirates using bio-fertilizers (Mycorrhiza inoculums). 2014.
- Coordinator of Workshop on the use of mycorrhiza technology in agriculture, which was held at the Ministry of Environment and Water / United Arab Emirates in 2014
- Member of the Scientific promotions in the Graduate School / Arabian Gulf University/ Bahrain 2006-2008
- Member of the Committee on rehabilitation and development of the Sultan Qaboos Centre for soilless agriculture / Arabian Gulf University / Bahrain 2006-2008.
- Member of the Committee Tree Award, International Garden Show, Bahrain -, 2006.

National level (inside Jordan)

- Member of the Technical Committee (Agricultural and Veterinary Sciences), Scientific Research Fund, the Ministry of Higher Education and Scientific Research (2009/2010)
- Member, Accreditation Committee for Ministry of Higher Education (to approve Plant Production program/ Jerash University) - 1999.
- Member, Accreditation Committee for Ministry of Higher Education (to approve Community colleges/ Balqa University) - 2001.
- Conducting field days organized by National Center for Agricultural Research and Technology Transfer.

- Member of the delegate of Jordanian universities / Ministry of Higher Education and Scientific Research to Germany for cooperation with German universities in the field of higher agricultural education. 2010.
- Member of the organizing Committee for the Second agricultural scientific Conference of Jordan, which was held at the Jordan University of Science & Technology. 1997.
- Member of the organizing Committee for the Fifth agricultural scientific Conference of Jordan, which was held at the Applied Balqa University. 2005.
- Representative of Jordan University of Science and Technology in the committee of development of the higher agricultural Education / Ministry of Higher Education and Scientific research / 2011.
- Chairman of the Organizing Committee of the International Conference on Agriculture and held at Jordan University of Science and Technology in 2012 with the participation of researchers from 15 countries presenting 115 scientific papers.
- Chairman of the Scientific Committee of the International Conference on Agriculture and held at Jordan University of Science and Technology in 2012.

Committees at Jordan University of Science & Technology

❖ University level:

- Member, the committee of upgrading the employs system in the university. Jordan University of Science and Technology. 1993/1994.
- Chairman, the executive committee of the University farm in Jordan Valley. Jordan University of Science and Technology. 1994/1995.
- Member, Board of Agricultural Center for Research and Production, Jordan University of Science and Technology. 1996-1998.
- Member, Library committee. Jordan University of Science and Technology. 2003-2005.
- Member of the Graduate council of Graduate studies. 2 years.
- Member of the disciplinary committee of faculty members at the university. Jordan University of Science and Technology. 2003/2004
- Chairman, Rehabilitation committee of the University farm in Jordan Valley. Jordan University of Science and Technology. 2009/2010.
- Member, University council. Jordan University of Science and Technology. 1993-1994, 2008-2009.
- Chairman, the organizing committee of the 7th Scientific Agricultural Conference held at Jordan University of Science and Technology during the period October 8-10, 2012.
- Chairman, the scientific committee of the 7th Scientific Agricultural Conference held at Jordan University of Science and Technology during the period October 8-10, 2012.

❖ **College level:**

- Member, Scientific Research Committee. 5 years
- Chairman, Scientific Research Committee. 4 years
- Member, Promotion of Faculty member's committee. 3 years.
- Chairman, Promotion of Faculty member's committee. 5 years.
- Member,
- Member, Promotion Committee. Faculty of Graduate Studies, Arabian Gulf University, Bahrain. 2006-2008.
- Member, Graduate committee. 4 years.
- Member, Faculty of agriculture Council. 5 years.

❖ **Department level:**

- Member, Scientific Research Committee. 5 years.
- Chairman, Scientific Research Committee. 3 years.
- Member, Promotion of Faculty member's committee. 10 years.
- Chairman, Promotion of Faculty member's committee. 5 years.
- Member, Graduate committee. 5 years.
- Chairman, Graduate committee. 4 years.

Community service

- Major participation and coordination in preparing the UAE National Strategy for Agriculture for years 2014-2030 (2014).
- Development and preparation of an initiative plan for development of hydroponic agriculture in UAE (2013).
- Preparation the document for establishing the center of training and development at MOEW, UAE (2014).
- Evaluation of some research projects submitted for funding for different universities, centers, establishments … etc.
- Part- time trainer, Arab Organization for Agricultural Development in plant production.
- Conducting three training courses for the agricultural engineers and technicians in the administrative regions (central, northern, Eastern) belonging to Ministry of Environment and Water, UAE.
- Member, Accreditation Committee for Ministry of Higher Education (to approve Plant Production program/ Jerash University) - 1999.

- Member, Accreditation Committee for Ministry of Higher Education (to approve Community colleges/ Balqa University) - 2001.
- Chairman, Rehabilitation committee of the University farm in Jordan Valley. Jordan University of Science and Technology. 2009/2010.
- Member, University council. Jordan University of Science and Technology. Years 1993-1994, 2008-2009.
- Chairman of the establishing
- Chairman of the organizing committee of The 7th International Scientific Agricultural Conference held at Jordan University of Science and Technology during the period October 8-10, 2012.
- Chairman of the organizing committee of Faculty of Agriculture scientific days (first to third and sixth)
- Chairman of committee for establishing of first graduate program (Masters in Agronomy and Horticulture) at Faculty of Agriculture, Jordan University of Science and Technology/ Jordan. September 1996.
- Chairman of committee for extensive revision and upgrading of the graduate program "MSc and Diploma" called "Techniques in Desert Farming and Soilless agriculture" Arabian Gulf University/ Bahrain. 2005.
- **C**ontributed in updating curriculum for BSc program in Plant Production, Jordan University of Science & Technology/Jordan. 1997, 2003, 2009.
- Contributed in updating curriculum for BSc program in Plant Production, Mutah University/ Karak/ Jordan. 1995.
- Giving several lectures and training courses on soilless agriculture to the employees at MOEW/ UAE. •
- TV interviews (Jordan, France agency, Reuters, Egypt, Bahrain) about different scientific activities and research findings and technical issues.
- Invited lecturer at the training course entitled “Use of Biofertelizers in agriculture” organized by the Arab Organization for Agricultural Development which was held in Amman in 1997.
- Invited lecturer at International Center for Biosaline Agriculture Center, Dubai, UAE. (2007.(
- Invited lecturer at workshop organized by Department of Gardens and Environment, Abu Dhabi Municipality. 2008.
- Member, Accreditation Committee for Ministry of Higher Education (to approve Plant Production program/ Jerash University) - 1999.
- Member, Accreditation Committee for Ministry of Higher Education (to approve Community colleges/ Balqa University) - 2001 .
- Member, Tree prize committee, International Gardens Exhibition, Bahrain – 2006.

- Conducting field days organized by National Center for Agricultural Research and Technology Transfer.

Publications

Papers in Refereed Journals (76 paper)

1. **Al-Karaki, G.N**. and Y. Othman. 2023. Effect of foliar application of amino acids biostimulants on growth, macronutrient, total phenols contents and antioxidant activity of soilless grown lettuce cultivars. South African Journal of Botany. 154:225-231.
2. **Al-Karaki, G.N.** and Ozlem Altuntas. 2021. Growth, mineral content and antioxidant activity of romaine lettuce in relation to development stage in soilless system. International Journal of Agricultural Sciences and Technology. 1 (3): 1-11.
3. **Al-Karaki, G.N**. and Mark Williams. 2021. Mycorrhizal mixtures effect the growth, nutrition, and physiological responses of soybean to water deficit. Acta Physiologiae Plantarum 43 (5): 1-9.
4. Muhammad H Alu'datt, Taha Rababah, Mohammad N Alhamad, Abdelrazzaq Al-Tawaha,
5. Abdel Rahman Al-Tawaha, Sana Gammoh, Khalil I Ereifej, **Ghazi Al-Karaki**, Hassan R Hamasha, Carole C Tranchant, Stan Kubow. 2019. Herbal yield, nutritive composition, phenolic contents and antioxidant activity of purslane (Portulaca oleracea L.) grown in different soilless media in a closed system. Industrial Crops and Products. 141, 111746.
6. Muhammad H Alu'datt, Taha Rababah, Mohammad N Alhamad, Sana Gammoh, Khalil Ereifej, **Ghazi Al-Karaki**, Carole C Tranchant, Mohammed Al-Duais, Kawther A Ghozlan. 2019. Contents, profiles and bioactive properties of free and bound phenolics extracted from selected fruits of the Oleaceae and Solanaceae families. LWT, 109, 367-377). 2019
7. Abdel Razzaq Al-Tawaha, **Ghazi Al-Karaki**, Abdel Rahman Al Tawaha, Sitti Nurani Sirajuddin, Ibrahim Makhadmeh, Puteri Edaroyati Megat Wahab, Refat A Youssef, Wael Al Sultan, Adnan Massadeh. 2018. Effect of water flow rate on quantity and quality of lettuce (Lactuca sativa L.) in nutrient film technique (NFT) under hydroponics conditions. Bulgarian Journal of Agricultural Science. 24: 791-798.
8. Muhammad H Alu'datt, Taha Rababah, Mohammad N Alhamad, Majdi A Al-Mahasneh, Khalil Ereifej, **Ghazi Al-Karaki**, Mohammed Al-Duais, Juan E Andrade, Carole C Tranchant, Stan Kubow, Kawther A Ghozlan. 2017. Profiles of free and bound phenolics extracted from Citrus fruits and their roles in biological systems: content, and antioxidant, anti-diabetic and anti-hypertensive properties. Food & Function 8, 9: 3187-3197)
9. Muhammad H Alu'datt, Taha Rababah, Mohammad N Alhamad, Ayman Johargy, Sana Gammoh, Khalil Ereifej, Ali Almajoul, **Ghazi Al-Karaki**, Stan Kubow, Kawther A Ghozlan. 2017. Phenolic contents, in vitro antioxidant activities and biological properties, and HPLC profiles of free and conjugated phenolics extracted from onion, pomegranate. International Journal of Food Properties. 20:1823-1837.

10. Ibrahim M Makhadmeh, Abdelrazzaq Al-Tawaha, Puteri Edaroyati, **Ghazi Al-Karaki**, Abdel Rahman Al Tawaha, Siti Aishah Hassan. 2017. Effects of different growth media and planting densities on growth of lettuce grown in a closed soilless system. Research on Crops 18: 294-298.
11. **Al-Karaki, GN**. 2017. Effects of Mycorrhizal Fungi Inoculation on Green Pepper Yield and Mineral Uptake under Irrigation with Saline Water. Advances in Plants & Agriculture Research 6, 5, 00231.
12. Al-Tawaha, A.R., **G. Al-Karaki** and A. Massadeh. 2016. Effects of planting density and cutting height on herbage and water use efficiency of thyme (*Origanum syriacum* L.) grown under protected soilless and open field conditions. Res. on Crops 17 (1): 118-128.
13. **Al-Karaki, G.N**. 2015. Hydroponic system as alternative disposal method of treated wastewater for production of green barley forage. Emir. J. Food & Agric. (submitted).
14. **Al-Karaki, GN.** 2015**.** Interactions between soil microorganisms (mycorrhizal fungi), Plant and Environment in Jordan Badia Region. Plant Ecology (submitted)
15. Maaitah,S.A, A. Y. Mahadeen and **G.N. Al-Karaki.** 2014. Response of Potted-Grown Tomato (Lycopersicon esculentum Mill var. Lorely F1) to AMF Inoculation with Organic and Inorganic Fertilizer. American-Eurasian J. Agric. & Environ. Sci., 14 (3): 255-262
16. Al-Tawaha A., **Al-Karaki, G**., A. Massadeh. 2014. Variation of Chemical composition, antioxidant and total phenols of essential from thyme (Origanum syriacum L.) grown under open field conditions and protected soilless condition. American-Eurasian Journal of Sustainable Agriculture 8(12): 20-26.
17. **Al- Karaki, G. N**. 2013. Application of mycorrhizae in sustainable date palm cultivation. Emirates J. Food and Agriculture. 25 (11): 854-862.
18. **Al- Karaki, G. N**. 2013. The effect of arbuscular mycorrhizal fungi on the establishment of sour orange (*Citrus aurantium*) under different levels of phosphorus. Acta Horticulturae 984: 103-108.
19. Al-Tawaha, A., **Al-Karaki, G.N**. and A. Massadeh. 2013. Comparative response of essential oil composition, antioxidant activity and phenolic contents spearmint (Mentha spicata L.) under protected soilless vs. open field conditions. Advances in Environmental Biology 7(5): 902-910.
20. Al-Tawaha, A., **Al-Karaki, G.N**. and A. Massadeh. 2013. Antioxidant activity, total phenols and variation of chemical composition from essential oil in sage (*Salvia officinalis* L.) grown under protected soilless condition and open field conditions. Advances in Environmental Biology, 7(5): 894-901.
21. **Al-Karaki, G.N**. and M. Al-Hashimi. 2012. Green fodder production and water use efficiency of some forage crops under hydroponic conditions. ISRN Agronomy Volume 2012 (2012), Article ID 924672, 5 pagesdoi:10.5402/2012/924672
22. **Al-Karaki, G.N.** 2012. Phonological development-yield relationships in durum wheat cultivars under terminal high temperature stress in semiarid environment. ISRN Agronomy Volume 2012 (2012), Article ID 456856, 7 pagesdoi:10.5402/2012/456856.
23. **Al-Karaki, G.N**. 2011. Utilization of treated sewage wastewater for green forage production in a hydroponic system. Emir. J. Food Agric 23 (1): 80-94
24. **Al-Karaki, G.N**. and N. Al-Momani. 2011. Evaluation of some barley cultivars for green fodder production and water use efficiency under hydroponic conditions. Jordan Journal of Agricultural Sciences, 7(3): 448-457.
25. **Al-Karaki, G.N**. and Y. Othman. 2009. Soilless cultivation of some medicinal and aromatic herb plants under the conditions of Arabian Gulf region. Emir. J. Food Agric. 2009. 21 (2): 64-70.
26. **Al-Karaki, G.N**., A. Al-Ajmi and Y. Othman. 2009. Response of soilless grown sweet pepper cultivars to salinity. Acta Horticulturae 807: 227-232.

27. Al-Ajmi, A. , **Al-Karaki, G.N** and Y. Othman. 2009. Effect of different substrates on fruit Yield and quality of cherry tomato grown in a recirculating Soilless System. Acta Horticulturae 807: 491-494.
28. Makhadmeh, E. Taye, R.A. Shibli and **G.N. Al-Karaki**. 2008. Nodulation and morphological responses of faba bean (Vicia faba) to water stress. American-Eurasian J. of Agri. & Environ. Sci 4:646-654.
29. Al-Karaki, GNO; Othman, Y; Al-Ajmi, A. 2007. Effects of mycorrhizal fungi inoculation on landscape turf establishment under Arabian Gulf region conditions. Arab Gulf J. Sci. Res. 25(3):147-152.
30. **Al-Karaki, G.N**., N. Abu-Qubah, and Y. Othman. 2006. Influence of mycorrhizal fungi and water stress on growth and yield of two onion cultivars. Arab Gulf Journal of Scientific Research 24:206-214.
31. **Al-Karaki, G.N**., A. Al-Ajmi and Y. Othman. 2006. Seed germination and early root growth of three barley cultivars as affected by temperature and water stress. American-Eurasian Journal of Agricultural & Environmental Sci 2:112-117.
32. Othman, Y., **G.N. Al-Karaki**, A. Al-Tawaha and A. Al-Horani. 2006. Variation in germination and ion uptake in barley genotypes under salinity conditions. World Journal of Agricultural Sciences 2:11-15.
33. **Al-Karaki, G.N**. 2006. Nursery inoculation of tomato with arbuscular mycorrhizal fungi and subsequent performance under irrigation with saline water. Scientia Horticulturae 109: 1-7.
34. **Al-Karaki GN**, McMichael B, Zak J. 2004. Field response of wheat to arbuscular mycorrhizal fungi and drought stress. Mycorrhiza 14:263-269.
35. Musallam, I.W. **Al-Karaki, G.N**.; Ereifei, K.I.; and A. Tawaha. 2004. Yield and yield components of faba bean genotypes under rainfed and irrigation conditions. Asian Journal of Plant Science, 3(4): 439-448
36. Musallam, I.W. **Al-Karaki, G.N**.; Ereifei, K.I.; and A. Tawaha. 2004. Chemical composition of faba bean genotypes under rainfed and irrigation conditions. International Journal of Agriculture and Biology 6(2)359-362.
37. Al-Momani, A.M., N.I. Haddad, M.J. Mohammad and **G.N. Al-Karaki**. 2003. Effect of moisture stress on shoot and root characters in early growth stages of some forage legume species. Dirasat. 30(3):311-318.
38. **Al-Karaki, G.N**. 2002. Benefit, cost, and phosphorus use efficiency of arbuscular mycorrhizal field-grown garlic at different soil phosphorus levels. Journal of Plant Nutrition 25: 324-344.
39. **Al-Karaki, G.N**. and M. Omoush. 2002. Wheat response to phosphogypsum and arbuscular mycorrhiza in alkaline soil. Journal of Plant Nutrition 25: 873-884.
40. **Al-Karaki, G.N**. 2002. Field response of garlic inoculated with arbuscular mycorrhizal fungi to phosphorus fertilization. Journal of Plant Nutrition 25: 747-756.
41. **Al-Karaki, G.N**. 2001. Salt response of salt sensitive and tolerant durum wheat cultivars Inoculated with mycorrhizal fungi. Acta Agronomica 49:25-34.
42. **Al-Karaki, G.N**. and R. Hammad. 2001. Mycorrhizal influence on fruit yield and mineral contents of tomato grown under salt stress. Journal of Plant Nutrition 24:1311-1323.
43. **Al-Karaki, G.N**., R. Hammad, M. Rusan. 2001. Response of salt sensitive and tolerant tomato cultivars inoculated with mycorrhizal fungi to salt stress. Mycorrhiza 11: 43-47.
44. **Al-Karaki, G.N**. 2001. Germination, sodium and potassium concentrations of barley seeds as Influenced by salinity. Journal of Plant Nutrition 24:511-522.
45. Ereifej, K.I., **G.N. Al-Karaki** and M.K. Hammouri. 2001. Seed chemical composition of improved chickpea cultivars grown under semiarid Mediterranean conditions. International Journal of Food Properties. 4: 239-246.
46. Hammouri, M. K., Ereifej, K.I., M.M. Ajlouni, R.A. Shibli and **G.N. Karaki**. 2001. A Potential chemical indicator from pheasant's eye (*Adonis aestivalis* L) plant. International Journal of Chemistry. 10: 151-156.

47. Ereifej, K.I., **G.N. Al-Karaki** and M.K. Hammouri. 2001. Variability of some physico-chemical characterstics of wheat cultivars grown under arid and semiarid Mediterranean conditions. International Journal of Food Properties. 4: 91-101.
48. **Al-Karaki, G.N**. 2000. Morphological and agronomic traits of wild legume (*Tetragonolobus Palaestinus* Bioss) populations. J. Agronomy Crop Sci 184:267-270.
49. **Al-Karaki, G.N**. 2000. Pod yield and chemical composition of wild legume (Tetragonolobus palaestinus) populations. Res. on Crops 1 (1) : 45-49.
50. **Al-Karaki, G.N**. 2000. Growth of mycorrhizal tomato and mineral acquisition under salt stress. Mycorrhiza 10:51-54.
51. **Al-Karaki, G.N**., K. Ereifej, and M. Hammouri. 1999. Relationships between seed yield and seed chemical composition in Kabuli chickpea under semiarid Mediterranean conditions. Acta Agronomica 47:435-439.
52. **Al-Karaki, G.N**. 2000. Growth, sodium and potassium uptake and translocation in salt stressed tomato. Journal of Plant Nutrition 23:369-379.
53. **Al-Karaki, G.N**. 2000. Growth, water use efficiency, and mineral acquisition by tomato cultivars grown under salt stress. Journal of Plant Nutrition 23:1-8.
54. **Al-Karaki, G.N**. 1999. Germination of tomato cultivars as influenced by salinity. Crop Research 19:225-229.
55. **Al-Karaki, G.N**. and R.B. Clark. 1999. Mycorrhizal influence on protein and lipid of durum wheat grown with varied phosphorus. Mycorrhiza 9:97-101.
56. **Al-Karaki, G.N**. and R.B. Clark. 1999. Varied rates of mycorrhizal inoculum on growth and mineral acquisition by barley grown with water stress. Journal of Plant Nutrition 22:1775-1784.
57. **Al-Karaki, G.N**. and A. Abu-Ein. 1999. Callus induction and plant regeneration in durum wheat cultivars. Crop Research 17:80-84.
58. **Al-Karaki, G.N**. 1999. Rhizobium and phosphorus influence on lentil protein and lipid. Journal of Plant Nutrition 22:251-358.
59. **Al-Karaki, G.N**. 1999. Phenological development-yield relationships in dry pea in semiarid Mediterranean conditions. J. Agronomy Crop Sci 182:73-78.
60. **Al-Karaki, G.N**. 1998. Benefit/cost analysis and water use efficiency of arbuscular mycorrhizal association with wheat under drought stress. Mycorrhiza 8:41-45.
61. **Al-Karaki, G.N**. and R.B. Clark. 1998. Growth, mineral acquisition, and water use by mycorrhizal wheat under water stress. Journal of Plant Nutrition 21(2):263- 276.
62. **Al-Karaki, G.N**., A. Al-Raddad and R.B. Clark. 1998. Water stress and mycorrhizal isolate effects on growth, nutrient acquisition of wheat. Journal of Plant Nutrition 21(5): 891-902.
63. Hammouri, K.I., K.I. Ereifej, R.A. Shibli, and **G.N. Al-Karaki**. 1998. Quantitative analysis of fructose fate in a plant fermentation system. Journal of Agricultural and Food Chemistry 46:1426-1432.
64. **Al-Karaki, G.N.** 1998. Response of wheat and barley during germination to seed osmopriming at different water potential. Agronomy J. and Crop Sci. 181:229-235.
65. **Al-Karaki, G.N**. 1998. Seed size and water potential effects on water uptake, germination and growth of lentil. Journal of Agronomy and Crop Science 181:237-242.
66. **Al-Karaki, G.N**. and A. Al-Raddad. 1997. Effects of arbuscular mycorrhizal fungi and drought stress on growth and nutrient uptake of two wheat genotypes differing in drought resistance. Mycorrhiza 7:83-88.

67. Eriefej, K.I., **G.N. Al-Karaki**, R.A. Shibli, and M. El-Shatnawi. 1997. Variation in Physico-chemical characteristics of peas (*Pisum sativum*) grown under rainfed conditions. Indian J. Agr. Sci. 67: 10-12.
68. **Al-Karaki, G.N**. and K.I. Ereifij. 1997. Chemical composition of pea seeds as related to seed yield under arid and semiarid Mediterranean environments. Journal of Agronomy and Crop Science 78:97-102.
69. **Al-Karaki, G.N**. 1997. Barley response to salt stress at varied phosphorus. Journal of Plant Nutrition 20:1635-1643.
70. Ereifej, K.I. and **G.N. Al-Karaki**. 1997. Physico-chemical and cooking characteristics of pea genotypes grown under rainfed conditions. Legume Research 19:143-150.
71. **Al-Karaki, G.N**. 1997. Rate and duration of seed filling in field pea genotypes. Crop Research 13:185-193.
72. Ereifij, K.I., M.K. Hammouri, **G.N. Al-Karaki**, and N. Asilzada. 1997. Physico- chemical characteristics and fatty acid composition of oil from *Pistacia eurycarpa* yalt., *Pistacia palastina* boiss. and Acacia cyanophylla L. seeds from Jordan. International Journal of Chemistry 7:71-77.
73. **Al-Karaki, G.N**., R.B. Clark and C.Y. Sullivan. 1996. Phosphorus nutrition and water stress effects on proline in bean and sorghum. Journal of Plant Physiology 148:745-751.
74. **Al-Karaki, G.N**. 1996. Response of three tomato cultivars to increased salinity levels. Mu'tah J. of Res. and Studies 11:23-38.
75. **Al-Karaki, G.N**. 1996. Effect of phosphorus, rhizobium and Sitona weevil control on seed growth, nodulation and yield in lentil under Mediterranean environments. Legume Research 19:201-210.
76. **Al-Karaki, G.N**. and R.B. Clark. 1995. Effect of phosphorus and water stress levels on growth and phosphorus uptake of bean and sorghum cultivars. Journal of Plant Nutrition 18:563-572.

Books and Manuals (4)

77. **Al-Karaki, G.N.** 2015. Handbook of Plant Science. Jordan University of Science & Technology.
78. **Al-Karaki, G.N**. 2012. Soilless Agriculture Handbook. Jordan University of Science & Technology
79. **Al-Karaki, G.N. 2010**. Experiments in Plant Physiology. Laboratory Manual. Jordan University of Science & Technology.
80. **Al-Karaki, G.N. 2003**. Plant Science Laboratory Manual. Jordan University of Science & Technology.

Notable non-refereed papers (8 papers)

81. **Al-Karaki, GN**. 2009. Arbuscular mycorrhizae: can it contribute to reduce the impact of environmental climate change? Landscape 19:70-72.
82. **Al-Karaki, GN**. 2008. In organic farms: successful usage of mycorrhizae in arid environments. Landscape 11:54-56.
83. **Al-Karaki, GN**. 2008. In nursery: how to improve seedling quality and out planting performance. Landscape 4:32-34

84. **Al-Karaki, GN**. 2008. The 400 year survival of Bahrain's tree of life. Landscape 7:4-6.
85. Fardous, A., M. Zubi, K. Ereifej, **G.N. Al-Karaki**, H. Soub and A. Masri. 2001. Scientific Research and adoption of technology under changing global economics. Agri. Eng. 69:205-224.
86. **Al-Karaki, G.N**. 1999. Agricultural Scientific Research in Jordan. AlRai newspaper.
87. **Al-Karaki, G.N**. 1999. Global heating and greenhouse effect. Agric. Eng. Journal.
88. Ajlouni, M., **G. N. Al-Karaki**, R. Shibli, A. A. Jaradat. 1995. Collaborations are key of Jordanian conservation efforts. Diversity 11:75-77.

Chapters in Books (4)

89. **Al-Karaki, G.N**. 2013. The role of mycorrhiza in the reclamation of degraded lands in arid environments. P. 823-836. In: Shabbir A.S., F.K.Taha,and M.A. Abdelfattah (eds.) Developments in Soil Classification, Land Use Planning and Policy Implications. Springer Netherlands.
90. **Al-Karaki**, **G.N.** 2011. Mycorrhizal fungi role in reducing the impact of environmental climate change in arid regions. P. 304-313. In: M. Solh and M.C. Saxena (eds.) Food Security and Climate Change in Dry Areas. ICARDA, Aleppo, Syria.
91. **Al-Karaki,** G.N. and R. Hammad. 2002. Response of tomato to mycorrhizal fungi and salt stress. P. 335-339. In: J. Rayan (ed.) Desert and Dry land Development: Challenges and Potential in the New Millennium. ICARDA, Aleppo, Syria.
92. **Al-Karaki**, G.N. and K.I. Ereifej. 1998. Seed chemical composition as related to seed yield of durum wheat under arid and semiarid Mediterranean environments. p. 439-444. In A.A. Jaradat (ed.) Triticeae III. Oxford and IBH Publ. Co., London.

Papers in conference proceedings (39 paper)

93. **Al-Karaki, G.N**. 2012. The application of soilless culture in environmental management and sustainable development: herbal/medicinal plants utilization. The 7th Agricultural Scientific Conference October 2012, Irbid , Jordan.
94. **Al-Karaki, N. 2011.** Hydroponic system as alternative disposal method of treated wastewater for production of green barley fodder. The 2011 International Conference on Water, Energy and Environment November 14-17, 2011 – Sharjah, United Arab Emirates
95. **Al-Karaki, G.N. 2**010. Mycorrhizal inoculation effects on water use efficiency and landscape turf establishment under arid conditions. Proceedings: 3rd Annual International Symposium on Agricultural Research 15-18 July 2010, Athens, Greece
96. **. Al-Karaki, G.N.** 2010**.** The Application of Mycorrihzal Technology in Reclamation of Degraded Lands in Arid and Semiarid Environments. Proceedings: Conference on Scientific Research and Its Role in Combating Desertification and Stabilizing Sand Dunes. Tripoli, Libya 21-23 June 2010.
97. Al-Karaki, G.N. 2010. Mycorrhizal Technology Role in More Sustainable Date Palm (Phoenix dactylifera) Cultivation. Proceedings: Fourth International Date Palm Conference Abu Dhabi, United Arab Emirates 15-17 March, 2010.

98. **Al-Karaki, G.N. 201**0. The role of mycorrhiza in reclamation of degraded lands in arid environments. Proceedings: International Conference on Soil Classification and Reclamation of Degraded Lands in Arid Environments. 17-19 May, 2010 Abu Dhabi, United Arab Emirates.
99. **Al-Karaki, G.N**. 2010. Mycorrhizal fungi role in reducing the impacts of environmental climate change in arid regions. Proceedings: International Conference on: Food Security and Climate Change in Dry Areas. 1-4 February 2010, Amman, Jordan.
100. **Al-Karaki, N**. 2009. Hydroponic green fodder production: alternative approach for water saving in dry areas. Paper for "Second Agricultural Meeting for Agricultural Sustainable Development" Oman October 2009.
101. **Al-Karaki, G.N**. 2009. The use of mycorrhizal biotechnology for revegetation of salt-affected soils. Proceedings "International Conference on Management of Soil and Groundwater Salinization in Arid Regions" Sultan Qaboos University Muscat, Oman.
102. **Al-Karaki, G.**N. 2009. The use of mycorrhizal biotechnology for revegetation of salt-affected soils. Proceedings of International Conference on Management of Soil and Groundwater Salinization in Arid Regions to be held at Sultan Qaboos University, Muscat, January 11-14, 2010
103. **Al-Karaki, G.N**. 2009. Green fodder production by hydroponic agriculture: alternative method for water saving in dry regions. Second agricultural meeting "Sustainable agricultural Production and water saving" Sultanate of Oman.
104. **Al-Karaki, G.N**. 2009. Soilless agriculture for water saving in Jordan. General seminar at Jordan University of Science and Technology, April 2009.
105. **Al-Karaki, G.N**. 2009. Potential applications of arbuscular mycorrhiza in alleviation of salt stress. Proceedings of International Conference on Plants & Environmental Pollution 6-11 / July / 2009, Erciyes University, Kayseri /TURKEY.
106. **Al-Karaki, G.N.** and Y. Othman. 2008. Soilless cultivation of medicinal and aromatic herb plants: alternate technique to increase production and quality. Proceedings of "The 1st International Symposium on Medicinal Plants, Their Cultivation and Aspects of Uses". Al-Balqa' Applied University, Ashoubak, Jordan 15 – 16 October 2008.
107. **Al-Karaki, G.N**. 2008. The role of mycorrhizal technology in organic agriculture. Proceedings of Seminar about "Organic Farming in Jordan", Dec 2008, Balqa University, AlSalt- Jordan.
108. **Al-Karaki, G.N**. 2008. The use of mycorrhizal technology in improving green landscapes in cities of arid and semiarid regions. Proceedings Horticultural city works, Abu Dubai UAE Nov 2008.
109. **Al-Karaki, G.N**. 2006. Improved fruit yield and mineral content of tomato cultivars in saline soils by arbuscular mycorrhizal fungi. Proceedings of the international Conference on Biosaline Agriculture & High Salinity Tolerance, Tunisia Nov 2006.
110. A**l-Karaki, G.N**. 2005. Response of garlic inoculated with arbuscular mycorrhizal fungi to phosphorus fertilization. In: Plant nutrition for food security, human health and environmental protection; Fifteenth International Plant Nutrition Colloquium. Beijing : Tsinghai University Press. p.832-833. ref.
111. **Al-Karaki, G.N**. and A. Al-Ajmi. 2006. Influence of Arbuscular Mycorrhizal Fungi on Tissue Culture Derived Plantlets of Cucumber. Proceedings of "The First International Conference on the Theory and Practices in Biological Water Saving" May 21-25, 2006, Beijing, China. Pages 42-49.
112. **Al-Karaki, G.N**. 2006. Nursery inoculation of tomato with arbuscular mycorrhizal fungi and subsequent performance under irrigation with saline water. Proceedings "International Conference on Biological Water Saving" Bejing, China 21-25 May 2006.

113. **Al-Karaki, G**. 2005. Soilless Culture: a developed Technique to maximize utilization of natural resources in arid regions. Presented at "Techniques of Agriculture and Irrigation Workshop". Organized by UNEDO, 12-13 November 2005. Kingdom of Bahrain.
114. **Al-Karaki, G**. 2006. Soilless Culture: a modern technique to save water in arid lands (in Arabic). Presented at "Water Management in GCC countries Workshop". Organized by Ministry of Water and Electricity, 12 April 2006, Kingdom of Bahrain.
115. **Al-Karaki, G.N**. 2006. Nursery inoculation of tomato with arbuscular mycorrhizal fungi and subsequent performance under irrigation with saline water (in abstracts). International Conference on the Theory and Practices in Biological Water Saving. 21 - 25 May 2006 in Beijing, China
116. **Al-Karaki, G.N**. 2003. Mycorrhizal fungi technology in agriculture: Nature and Applications.. Sixth Scientific Day. 15/5/2003. Faculty of Agriculture, Jordan University of Science & Technology, Irbid-Jordan. (Abstract)
117. A**l-Karaki, G.N**. 2003. Wheat response to phosphogypsum and arbuscular mycorrhiza in alkaline soil In: Abstracts of " 7th International Conference on Development of Dry Lands". 14-17 September 2003. Tehran, Iran.
118. **Al-Karaki, G.N**. 2003. Use of mycorrhizal fungi technology to improve tomato growth and productivity under irrigation with saline water. Abstracts: Third Scientific Conference. 21-22/5/2003. Faculty of Science, Al al-Bayt University, Mafraq-Jordan.
119. A**l-Karaki, G.N.** 1994. Food legume genetic resources in Jordan. Meeting of Food Legumes Group, West Asia and North Africa Plant Genetic Resources Network. April, 1994. Cairo, Egypt.
120. **Al-Karaki, G.N**. 1997. Benefit/cost analysis and water use efficiency of arbuscular mycorrhizal association with wheat genotypes under drought stress. Pages 694-701. Proceedings of the International Conference on Agricultural Engineering and Technology. 15-18/12/1997. Dhaka, Bangladesh.
121. **Al-Karaki, G.N.** 1998. Role of mycorrhizal fungi in reducing environmental stresses. Scientific Conference on Dimension of Environmental Stress in the Region. 26-27/10/1998. Yarmouk University, Irbid, Jordan. (Abstract)
122. **Al-Karaki, G.N**. 1998. Germination of fifteen tomato cultivars as influenced by salinity. P. 14. In: Abstracts of "The First Conference of Environmental Problems". 14-16 April 1998. Mu'tah University, Karak, Jordan.
123. **Al-Karaki, G.N.** 1999. Use of mycorrhizal fungi technology in agriculture. Second Conference on Biotechnology in Jordan. 23-24/3/1999. Faculty of Science, Al-Elbait University, Mafraq, Jordan. (Abstract)
124. **Al-Karaki, G.N.** 1999. Growth, water use efficiency, and mineral acquisition by tomato cultivars grown under salt stress. Pages 47-53. Proceedings of Regional Symposium on Irrigation Management and Saline Conditions. 21-23/6/1999. Jordan University of Science & Technology, Irbid-Jordan.
125. **Al-Karaki, G.N**. and R. Hammad. 1999. Response of tomato to mycorrhiza fungi and salt stress. Sixth International Conference on Development of Dry lands. 22-27/8/1999. Cairo, Egypt (Abstract).
126. Abu Samra, W. and **G. Al-Karaki**. 1999. Screening wheat cultivars for salt tolerance at two growth stages. P. 10. In: Abstracts of "The Third Agricultural Scientific Conference". 27-29 April 1999. Muta University, Karak, Jordan.

127. **Al-Karaki, G**. 1999. Use of mycorrhizal fungi technology in agriculture: Role of fungi in reducing environmental stresses. P. 7. In: Abstracts of "The Third Agricultural Scientific Conference". 27-29 April 1999. Muta University, Karak, Jordan.
128. **Al-Karaki, G.N**. 2000. Effects of arbuscular mycorrhizal fungi on tissue culture derived plantlets of cucumber. P. 1. In: Abstracts of " International Conference on Biotechnology in Agriculture". 5-7 September 2000. Balqa Applied University, Al-Salt, Jordan.
129. **Al-Karaki, G.N**. 2000. Growth, mineral uptake and water use of mycorrhizal wheat grown under \water stress. Abstracts of "Conference on Scientific Research and its role in Biotechnology in Arid and Semiarid regions" held in Algeria. 1-4/10/2000. Ministry of Education and scientific Research, Algeria.
130. **Al-Karaki, G. N**., and J. Zak. 2002, Influence of plant genotype on AM fungi production & colonization. General Seminar, Dept. of Biology, Texas Tech. University, USA.
131. A**l-Karaki, G.N**. , R.B. Clark, and C.Y. Sullivan. 1991. Effects of water stress and phosphorus nutrition on growth, plant water relations and proline accumulation in beans. P. 122. 1991 Annual Meetings of Crop Science Society of America. 27/10-1/11, 1991. Denver, Colorado, USA (Abstract).

Brochures (3)

132. **Al-Karaki, G**.. 2005. Mycorrhizal technology: Modern technique to increase crops production and protect environment in arid lands. Published Brochure in Arabic. Desert and Arid Zone Studies Program, Arabian Gulf University.
133. **Al-Karaki, G**. 2006. Soilless Agriculture: Concept and Advantages. Brochure in Arabic. Arabian Gulf University, Bahrain.
134. **Al-Karaki, G**. 2006. Nutritional elements and their deficiency in plants Brochure in Arabic. Sultan Qaboos Center for Developed and Soilless Agriculture, Arabian Gulf University.