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Education:

1. **Ph.D.:** Agronomy (Crop Physiology; 4.0/4.0 GPA) - Dept. of Plant and Soil Science, Texas Tech. University, Lubbock-Texas. USA. August 1995 – August 1998.
2. **M.Sc.:** Plant Production (forage management; 85.8% GPA) - The University of Jordan, Amman-Jordan. Sept. 1989 - June 1992.
3. **B.Sc.:** Plant Production; 85.5 GPA- the University of Jordan, Amman-Jordan. Sept. 1985 - June 1989.

Professional Experience

1. **Professor of Crop physiology:** October 2019- up to date. Department of Horticulture and Crop Science, The University of Jordan. Amman.
2. **Associate Professor of Crop physiology:** March 2011 – October 2019. Department of Horticulture and Crop Science, The University of Jordan. Amman.
3. **Dean Assistance for Community Affairs,** Deanship of Academic Research, The University of Jordan, Sept 2012-Sept, 2014.
4. **Assistant Professor of Crop physiology:** October 1998 – March 2011. Department of Horticulture and Crop Science, The University of Jordan. Amman.
5. **Research Assistant:** August, 1995-August, 1998. Department of Plant and Soil Science /Texas Tech University - Texas.
6. **Teaching and research Assistant:** July, 1993 – July, 1995. Department of Plant Production / the University of Jordan- Amman.

7. **Field Crop Researcher:** Dec, 1992-June 1993. National Center for Agriculture Research and Technology Transfer, Ministry of Agriculture, Jordan.

Principal Research Interests:

My research interest is focused on plants responses to environmental stresses, mainly drought and salinity. Understanding the effect of environmental stresses on plant growth and elucidating the physiological factors that may contribute to plant stress tolerance is of particular importance to my research group. Enhancement of drought and salinity tolerance of major food/feed crops to improve their performance under encountered stresses. Assessment of nutrient uptake and partitioning and their possible role in alleviating negative stress responses by plants. Simulation and adaptation measures of the impact of climate change on crops productivity in Jordan.

Taught Courses

- **Undergraduate Courses:**

- 0661101 Principles of plant production
- 0641100 Home Garden
- 0601241 Crop physiology
- 060133 Industrial Crops,
- 0631231 Forage Crops Production
- 0641491 Seminar in Horticulture & Crop Science
- 3400105 Campus Life and Ethics

- **Graduate Courses:**

- 0631925 Industrial Crops
- 0601946 Stress physiology
- 0601945 Plant Bioregulators
- 0601948 Physiology of plant growth and development
- 0601705 Crop Physiology
- 0641792 Equipments and tools in Horticulture & Crop science
- 0631702 Research methodology

Professional Services

1. Local Technical Reviewer for GHG Inventory (Agriculture sector), Jordan's Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC), 2009
2. National Consultant for Low Rainfall Areas Program at National Center for Agricultural Research and Extension (NCARE) January, 2008-December 2009.

Training and Workshops:

1. Attend training workshops held by the Center for Accreditation and Quality Assurance / University of Jordan
 - a. Perform tests through Moodle system. Samsung Labs. King Abdullah II School of Information Technology. 2, August, 2018.
 - b. Ethics Of Teaching From A Practical Perspective, Conference Hall - Prince Al Hussein Bin Abdullah II School of International Studies. 21, March, 2019.
 - c. Management and Leadership Skills. Conference Hall - Prince Al Hussein Bin Abdullah II School of International Studies. 28, March, 2019.
 - d. Using MCQs to Test Higher Order Thinking Skills. Conference Hall - Prince Al Hussein Bin Abdullah II School of International Studies. 25, July, 2019.
2. Participation in the specialized fertilizers day - Specialty Fertilizers Day - Arab Potash Company - Kempinski Hotel Amman. 11/9/2019.
3. Lecturer, Seminar on Reducing the phenomenon of loose skin in the dates. Jordan Dates Association (JDA), the University of Jordan Research Farm. The Central Jordan Valley. 17, November, 2016.
4. Desertification and its control in developing counties. Lanzhou, China. 10-28, September, 2011.
5. The use of isotopes and gas exchange instruments on plants environmental stress studies. School of Agriculture, University of Jordan, 8-12, April, 2012.
6. Hydroponics in Jordan - Reality and Challenges. Faculty of Agriculture. University of Jordan. 2, July, 2019
7. Traits Influencing Water x Nitrogen Interactions and Scope for Developing GECROSS. Mini-Workshop held at the University of Nottingham, Sutton Bonington Campus, United Kingdom. 28-30, Jan 2007
8. GECROSS Modelling. WatNitMED-workshop at the University of Wageningen, Wageningen, the Netherlands. 10-11, Oct 2005.
9. Farmer participation in selection of wheat and barley landraces in Jordan/ Agro-Biodiversity Project. University of Jordan. June 2004.
10. On-farm conservation and management of target crop landraces and improved soil fertility. University of Jordan. May, 2001.

Professional and Honorary Societies

American Society of plant physiologists

Honors and Awards

1. Jordanian Australian Dryland Project Scholarship, MSc. 1989-1992
2. Harold and Mary Dregne Graduate Program Endowment Fund Scholarship. Ph.D. Scholarship, 1997.
3. Contributing Knowledge Among Professionals in The Technical Community award (The IT Group) for the article "Influence of Neotyphodium coenophialum on Copper Concentration in Tall Fescue" 1998

Ongoing Research:

1. Feb., 2018. Scientific Research Fund, Ministry of Higher Education and Scientific Research, Jordan. 46500 JOD. Project title: Utilization of salinity tolerance and genetic diversity in selected forage genotypes for the improvement of marginal lands productivity in Jordan.
2. Feb., 2018. Scientific Research Fund, Ministry of Higher Education and Scientific Research, Jordan. 20000 JOD. Project title: Evaluation of the effects of some agricultural practices and climatic conditions on fruit skin separation of date palm (*Phoenix dactylifera* L.) cvs medjool and berhee.
3. August, 2015. Deanship of Scientific Research, the University of Jordan. 18000 JOD. Project title: Influence of new rootstocks on growth and yield of cucumber under the impact of soil-borne pathogens.

Funded Research Projects:

1. June 2014-June 2016. Deanship of Academic Research, The University of Jordan. 14000 JOD. Estimating the impact of zeolitic and soil substrates on water saving, growth, and marketing value of *Lilium longiflorum* Thunb.
2. December 13, 2011 to December 13, 2012. A New Ecophysiology Laboratory for the University of Jordan. Integrative action Funded by *Agencia Española de Cooperación Internacional para el Desarrollo (AECID)*, University of Granada and University of Barcelona/ Spain and University of Jordan/Jordan.

3. May 2009, Ministry of Higher Education and Scientific Research: 100000 \$. Project title: A Biotechnological approach to improve drought tolerance traits in local barley genotypes.
4. January 2009, Higher Council for Science and Technology: 95000 \$. Project title: A Novel Biotechnological Approach to Improve Water Use Efficiency in Barley through Regulating Stomatal Closure under Drought Conditions.
5. March 2007, University of Jordan, Deanship of Academic Research: 75000 \$ over three years. Project title: Enhancement of Drought Tolerance in Barley (*Hordeum vulgare* L.) by the Manipulation of Stress Responsive genes.
6. February, 2005, FP6 project funded by European Commission (INCO-MPC Program): 114,000 Euro over 4.3 years. Project title: Management Improvements of WUE and NUE of Mediterranean Strategic Crops (Wheat and Barley).
7. January, 2000. GEF (global Environment Facility) project implemented by UNDP and the national executing agency is NCARTT . Project title: Conservation and sustainable use of dry-land agro-biodiversity in Jordan.

Refereed Publications:

1. Abu-Elenein, Jamal, Rabea Al-Sayaydeh, Zahera Akkeh, Zakaria Al-Ajlouni, AbdRaheem A. Al-Bawalize, Shireen Hasan, Tariq Hindi, Randa Rahahla, **Jamal Y. Ayad**, and Ayed M. Al-Abdallat. (2021). "Agronomic Performance and Flowering Behavior in Response to Photoperiod and Vernalization in Barley (*Hordeum vulgare* L.) Genotypes with Contrasting Drought Tolerance Behavior."
2. Khasawneh, A. E. R., Alsmairat, N., Othman, Y. A., **Ayad, J. Y.**, Al-Qudah, T., & Leskovar, D. I. (2021). Influence of nitrogen source on physiology, yield and fruit quality of young apricot trees. *Journal of Plant Nutrition*, 1-12.
3. Tala, S., Al-Ajlouni, M. G., **Ayad, J. Y.**, Othman, Y. A., & Hilaire, R. S. (2020). Performance of six different soilless green roof substrates for the Mediterranean region. *Science of The Total Environment*, 139182
4. Amarin, R., Kafawin, O., **Ayad, J.**, Al-Zyoud, F., & Ghidan, A. (2020). Effect of Saline Water Irrigation and Growing Media on Growth, Physiological and Mineral Parameters of Clove Pink *Dianthus caryophyllus*. *Jordan Journal of Agricultural Sciences*, 16(3).
5. Al-Hajaj, H. S., **Ayad, J. Y.**, Othman, Y. A., & Abu-Rayyan, A. (2020). Foliar Potassium Application Improves Fruits Yield and Quality of 'Medjool' date Palm. *Fresenius Environmental Bulletin*, 29(3), 1436-1442.
6. Albdaiwi R.N., Khyami-Horani H. & **Ayad J.Y.** 2019. Plant Growth Promoting Rhizobacteria: An Emerging Tool for the Enhancement of Wheat Tolerance against Salinity Stress-(Review). *Jordan Journal of Biological Sciences*, 12 (5) *Accepted*.

7. **Ayad, J.Y.**, Othman, Y. A. & Al Antary T.M. 2019. Irrigation Water Salinity and Potassium Enrichment Influenced Growth and Flower Quality of Asiatic Lily. *Fresenius Environmental Bulletin*, (28) 11A:8900-8905
8. Abusalem, M. M., Awwad A.M. & **Ayad J.Y.** 2019. Green Synthesized α -Fe₂O₃ Nanoparticles Using Pistachio Leaf Extract Influenced Seed Germination and Seedling Growth of Tomato. *Jordan Journal of Earth and Environmental Sciences*, 10 (3): 161-166.
9. Albdaiwi, R. N., Khyami-Horani, H., **Ayad, J. Y.**, Alananbeh, K. M., & Al-Sayaydeh, R. 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*, 10.
10. Othman, Y., Bataineh, K., Al-Ajlouni, M., Alsmairat, N., **Ayad, J.**, Shiyab, S., Al-Qarallah, B. & St Hilaire, R. 2019. Soilless Culture: Management Of Growing Substrate, Water, Nutrient, Salinity, Microorganism And Product Quality. *Fresenius Environmental Bulletin*, 28(4 A), 3249-3260.
11. Boussios, D., Preckel, P.V., Yigezu Y.A., Dixit, P. Akroush, S., Cheikh M'hamed, H., Annabi, M., Aw-Hassan, A., Shakatreh, Y, Hadi, O., Al-Abdallat, A., Abu El Enein, J. and **Ayad, J.** 2019. Modeling Producer Responses with Dynamic Programming: A Case for Adaptive Crop Management. *Agricultural Economics*. 50(1), 101-111.
12. Al-Hajaj, H.S. and **Ayad, J. Y.** 2018. Effects of foliar boron applications on yield and quality of Medjool date palm *Phoenix dactylifera* L. *Journal of Applied Horticulture*. 20(3):181-188
13. **Ayad J.Y.**, Y. Othman, M. Al-Ajlouni, N. Alsmairat. 2018. Photosynthesis, gas exchange and yield of two strawberry (*Fragaria × ananassa* Duch.) cultivars in response to gibberellic acid. *Fresenius Environmental Bulletin*, 27(12 A), 9127-9134.
14. Alsmairat, N., Othman, Y., Al-Ajlouni M., **Ayad J.Y.** 2018. Composition of soilless substrates affect the physiology and fruit quality of two strawberry (*Fragaria × ananassa* Duch.) cultivars. *J. Plant Nutrition*, 41(18), 2356-2364.
15. Ghidan, A.Y., Al-Antary, T.M., Awad, A.M. and **Ayad, J.Y.** 2018. Physiological Effect of Some Nanomaterials on Pepper (*Capsicum Annuum* L.) Plants. *Fresenius Environmental Bulletin*, 27(11): 7872-7878.
16. Al-Satari, Y., Al-Ramamneh, E. A. D., **Ayad, J.**, Dalbough, M. A., Amayreh, I., and Khreisat, Z. 2018. Impact of seedling age on the survival and productivity of *Atriplex halimus* shrubs in drought-affected rangelands of Jordan. *The Rangeland Journal*, 40(3), 287-296.

17. Al-Ajlouni, M. G., **Ayad, J. Y.**, and Othman, Y. A. 2017. Particle Size of Volcanic Tuff Improves Shoot Growth and Flower Quality of Asiatic Hybrid Lily Using Soilless Culture. *HortTechnology*, 27(2), 223-227.
18. Al-Ajlouni, M. G., **Ayad, J. Y.**, and Othman, Y. A. 2017. Increasing Nutrient Levels Promote Growth and Flower Quality in Lilies Grown Under Soilless Culture. *Horticultural Science*, 44(4), 171-177.
19. Al-Ajlouni, Z. I., Al-Ghzawi, A. L. A., Al-Abdallat, A. M., **Ayad, J. Y.**, Elenein, J. M. A., Al-Quraan, N. A., and Baenziger, P. S. 2017. Effect of Pre-Anthesis Water Deficit on Plant Height, Peduncle Length and Spike Length in 13 Barely (*Hordeum vulgare* L.) Genotypes. *Jordan Journal of Agricultural Sciences*, 13(1): 163-177.
20. Al-Ajlouni, M. G., Othman, Y. A., Al-Qarallah, B. M., and **Ayad, J. Y.** 2017. Using Environmentally Friendly Substrate in Soilless Lily Production. *Journal of Food, Agriculture & Environment*, 15(1), 34-38.
21. Al-Ajlouni, Z. I., Al-Abdallat, A. M., Al-Ghzawi, A. L. A., **Ayad, J. Y.**, Abu Elenein, J. M., Al-Quraan, N. A., and Baenziger, P. S. 2016. Impact of Pre-anthesis Water Deficit on Yield and Yield Components in Barley (*Hordeum vulgare* L.) Plants Grown Under Controlled Conditions. *Agronomy*, 6(2), 33.
22. Al-Abdallat, A. M., Al-Debei, H. S., **Ayad, J. Y.**, and Hasan, S. 2014. Over-Expression of SISHN1 Gene Improves Drought Tolerance by Increasing Cuticular Wax Accumulation in Tomato. *International Journal of Molecular Sciences*, 15(11), 19499-19515.
23. Al-Abdallat, A. M., **Ayad, J. Y.**, Elenein, J. A., Al-Ajlouni, Z., and Harwood, W. A. 2014. Overexpression of the transcription factor HvSNAC1 improves drought tolerance in barley (*Hordeum vulgare* L.). *Molecular breeding*, 33(2), 401-414.
24. Shiyab, S., Al-Qarallah, B., Akash, M., Statieh, M., **Ayad, J.**, and Al Sane, K. 2014. Response of Okra (*Abelmoschus esculentus* (L.) to Different Levels of Hoaglands Solution. *Life Science Journal*, 11(10).
25. Shiyab, S. M., Shatnawi, M. A., Shibli, R. A., Al-Smeirat, N. G., **Ayad, J.**, and Akash, M. W. 2013. Growth, nutrient acquisition, and physiological responses of hydroponic grown tomato to sodium chloride salt induced stress. *Journal of plant nutrition*, 36(4), 665-676.
26. Al-Debei, H.S., I. Makhadmeh, I. Abu-Al Ruz, A. Al-Abdallat, **J. Ayad**, N. Al Amin. 2012. Influence of different rootstocks on growth and yield of cucumber (*Cucumis sativus* L.) under the impact of soil-borne pathogens in Jordan. *International Journal for Food, Agriculture and Environment*, 10(2): 343-349.
27. Saoub H., M. W. Akash, **J. Y. Ayad**. 2012. Agronomic potential of vetch landraces from Jordan. *Research on Crops*, 13(1): 206-213.

28. Saoub, H., R. Al Tabini, K. Al Khalidi and **J. Ayad**. 2011. Effect of three water harvesting techniques on forage shrub and natural vegetation in the badia of Jordan. *International Journal of Botany*, 7(3): 230-236.
29. **Ayad, J.** 2011. Effects of salinity stress on germination, growth and some physiological characteristics of *Kochia plants (Kochia scoparia L.)*. *Jordan Journal of Agricultural Sciences*, 7(2): 284-299.
30. **Ayad, J.**, H. Saoub, and R. Ajjour. 2010. Influence of salinity and nitrogen application on dry matter and ion accumulation in *Kochia scoparia L.* *Schrader. Crop Research*.40 (3): 40-52.
31. **Ayad, J.**, A. Al-Abdallat, and Hani Saoub. 2010. Variation in root water and nitrogen uptake and their interactive effects on growth and yield of spring wheat and barley genotypes. *International Journal of Botany*, 6(4): 404-413.
32. **Ayad, J.** 2010. Comparative effects of CaCl₂ and NaCl salinity on growth and ion partitioning of *Atriplex halimus L.* *DIRASAT, Agricultural Sciences Journal*, 37 (2): 82-90.
33. **Ayad, J.**, M.N. Talhouni and H. Saoub. Variation in growth and water uptake of *Atriplex halimus* and *Atriplex nummularia* plants in relation to water deficit. *DIRASAT, Agricultural Sciences Journal*. 37 (2): 91-100.
34. Al-Bakri, J., A. Suleiman, F. Abdulla and **J. Ayad**. 2010. Potential impacts of climate change on the rainfed agriculture of a semi-arid basin in Jordan. *Journal of Physics and Chemistry of the Earth*, 35: 125-134.
35. Akash, M.W., A. Al-Abdallat, H. Saoub and **J. Ayad**. 2009. Molecular and field comparison of selected barley cultivars for drought tolerance. *Journal of New Seeds*.10: 98-111.
36. Al-Tabbal, J. A. and **J. Y. Ayad**. 2007. Effects of water stress conditions and plant growth regulators on growth, yield, and yield components in durum wheat (*Triticum turgidum L. var durum*) under the Jordan conditions. *Journal of Agronomy*. 6 (1): 100-105.
37. Al-Tabbal J. A. O. M. Kafawin and **J. Y. Ayad**. 2006. Influence of water Stress and Plant Growth Regulators on Growth and Yield of Two Durum Wheat Cultivars (*Triticum turgidum L. var. durum*). *Jordan Journal of Agricultural Sciences*, Vol 2(2) 132-141.
38. Al-Tabbal J. A., **J. Y. Ayad** and O. M. Kafawin. 2005. Effect of Water Deficit and various concentrations of mepiquat chloride and ethephon on biochemical constituents of two durum wheat cultivars (*Triticum turgidum L. var. durum*). *DIRASAT, Agricultural Science*, 32 (2):195-204.
39. Allen, V. G., K. R. Pond, K.E. Saker, J.P. Fontenot, C. P. Bagley, R. L. Ivy, R. R. Evans, R. E. Schmidt, J. H. Fike, X. Zhang., **J. Y. Ayad**, C. P. Brown, M. F. Miller, J.

Montgomery, J. Mahan, D. B. Wester, and C. Melton. 2001. Tasco: Influence of brown seaweed on antioxidants in forages and livestock – A review. *J. Anim. Sci.* 79 (E. Suppl.): E21 – E31.\

40. Dennis, S.B., V.G. Allen, K.A. Saker, J.P. Fontenot, **J.Y. Ayad**, and C.P. Brown. 1998. Influence of *Neotyphodium coenophialum* on copper concentration in tall fescue. *J. of Anim. Sci.* 76: 2687-2693..

Abstracts and Proceedings

1. Amarin R., Kafawin, O., **Ayad J.** and Ghidan A. 2018. Effect of saline water irrigation and growing media on growth, physiological and mineral parameters of Clove Pink *Dianthus caryophyllus*. Eighth Scientific Agricultural Conference. October, 2018 At: Faculty of Agriculture, Mutah University, Karak, Jordan.
2. Martos, V., Franco, E. L., Aljazairi, S., **Ayad, J.**, El Enein, J., & Nogues, S. 2013. Experiencia de investigación aplicada al desarrollo humano y sostenible entre universidades españolas y la Universidad de Jordania: movilidad interuniversitaria con la Facultad de Ingenieros Agrónomos de Amman. In Evaluación de programas de movilidad en cooperación universitaria para el desarrollo: I Jornadas sobre Universidad y Educación para el Desarrollo: actas, Pamplona, del 29 al 31 de octubre de 2012 (pp. 499-504). Servicio de Publicaciones de la Universidad Pública de Navarra.
3. Al-Ajlouni, Z. I. J. Abu-Eleinain, **J. Ayad**, A. Bawalize, and A. AlAbdallat. 2012. Environmental and genetic analysis for plant height genes in barley genotypes in Jordan. In Vision for a sustainable planet. ASA, CSSA, SSSA, International annual meetings. October 21-24, 2012, Cincinnati, Ohio.
4. Ibrahim, N., **J. Ayad**, M. Shatanawi and D. Badarneh. 2008. Root Growth and Water Capture of Durum Wheat (*Triticum turgidum* L. var durum) and Barley (*Hordeum vulgare* L.) in Response to Nitrogen and Irrigation Water. In Resource Capture by Crops: Integrated Approaches, Annals of Applied Biologist, September, 10-12, University of Nottingham, Sutton Bonington Campus. UK.
5. Slafer, G.A., M. karrou, F. Karam, C. Thabet, H.J. Spiertz, R. Dahan, J. Foulk, S. Nogues, P. Peltonen-Sainio, R. Albrizio, **J.Y. Ayad**, H. J. Mellouli. 2007. WatNitMed – Management improvement of WUE and NUE of Mediterranean strategic crops (Wheat and Barley). Proceeding of the International Conference on Water Saving in Mediterranean Agriculture and Future Research Needs, Valencia, Italy 14-17, February. Session 6: 291-299.
6. **Ayad, J.Y.**, J.E. Mahan, V.G. Allen, and C.P. Brown. 1997. Effect of Seaweed extract and the endophyte in tall fescue on superoxide dismutase, glutathione reductase, and ascorbate peroxidase under varying levels of moisture stress. In: M.J. Williams (ed) Proc. Amer. Forage Grassl. Council, Vol. 6. Ft. Worth, TX, April 13-16. Amer. Forage Grassl. Council, Georgetown, TX.

Graduate Students Supervision

• M.S.

1. **Yazid Raggad. 2019.** Effects of different salinity levels on productivity and quality of selected forage grasses in dry land area in Jordan; **Supervisor**
2. **Farah Z. Aljanabi. 2019.** Green synthesis of copper oxide nanoparticles and its effect on alleviating salinity stress in durum wheat (*Triticum turgidum* L. var durum). Dept. of Hort. and Crop Science, The University of Jordan; **Supervisor**
3. **Zahera Akka. 2014.** Molecular characterization of major flowering-time genes in a set of diverse barley (*H. vulgare* L) germplasm. Dept. of Hort. and Crop Science, The University of Jordan; **Co-Supervisor**
4. **Manar N Talhouni. 2011.** Effect of water deficit stress on biomass production of two atriplex species; M.S. Thesis, Dept. of Hort. and Crop Science, The University of Jordan; **Co- Supervisor**
5. **Ruba Ajour, 2003.** Influence of salinity in irrigation water and nitrogen fertilizer on kochia and soil chemical properties; M.S. Thesis, Dept. of Agricultural Resources and Environment, The University of Jordan; **Supervisor.**

• Ph.D.

1. **Majd M. Salem. 2019.** Effects of green synthesized iron nanoparticles on growth and physiological responses of tomato (*Solanum lycopersicum* L). Dept. of Hort. and Crop Science, The University of Jordan; **Supervisor.**
2. **Randa N. Bdawi. 2019.** Isolation and identification of indigenous plant growth promoting rhizobacteria for improving durum wheat (*Triticum turgidum* subsp. durum) salinity tolerance. Dept. of Biological Sciences, The University of Jordan; **Co-Supervisor.**
3. **Hashem Hajaj, 2018** Effect of foliar application of potassium and boron on fruits yield and quality of *Phoenix dactylifera* L. cv. Medjool. Dept. of Hort. and Crop Science, The University of Jordan; **Supervisor.**
4. **Afaf Abdullah Al-Adamat. 2017.** Effects of salinity and lead on growth and chemical composition of three forest tree species. Dept. of Hort. and Crop Science, The University of Jordan; **Supervisor.**
5. **Heba Kharabsha. 2017.** Simulation and adaptation measures of the impact of climate change on barley productivity in Jordan Dept. of Soil, Water and Environment, The University of Jordan; **Co-Supervisor.**

6. **Amal Ibraheem Alsayaheen**, 2017. Effect of irrigation with Zara water on radionuclide accumulation in plants and soil. Dept. of Soil, Water and Environment, The University of Jordan; **Co-Supervisor**.
7. **Muayyad Bani Hani**, 2016. Effect of water salinity on growth and ions uptake and accumulation of two citrus rootstocks (*Citrus* spp.), Dept. of Hort. and Crop Science, The University of Jordan; **Supervisor**.
8. **Rasha Talal Amarin**. 2016. Effect of saline water irrigation and growing media on growth, flower yield and quality of selected bedding plants, Dept. of Hort. and Crop Science, The University of Jordan; **Co-Supervisor**.
9. **Rabea Salem AL-Sayaydeh**, 2016. Physiological assessment of transgenic barley lines expressing HvABF2 transcription factor in response to water deficit stress, Dept. of Hort. and Crop Science, The University of Jordan; **Supervisor**.
10. **Samer Ahmad. Azzam**. 2015. Influence of the Inoculation with Some Indigenous Rhizosphere Bacteria and Yeast Isolates on Growth and Nutrient Uptake of Sour Orange (*Citrus auantium* L.) seedlings. Dept. of Hort. and Crop Science, The University of Jordan; **Supervisor**
11. **Baker O. Kafaween**. 2015. The Effect of Salt Stress on Growth, Chemical Composition and Physiological Responses of Selected Forage Sorghum (*Sorghum bicolor*) Genotypes, Dept. of Hort. and Crop Science, The University of Jordan; **Co-Supervisor**.
12. **Jamal M. Abu Elenein**. 2015. Analysis of Flowering Time Genes in Barley (*Hordeum vulgare* L.) under Dry Environments. Dept. of Hort. and Crop Science, The University of Jordan; **Supervisor**
13. **Naji Mohamed Saif Ebrahim**. 2008. Responses of Root and Shoot Growth of Durum Wheat and Barley Plants to Different Water and Nitrogen levels; Dept. of Hort. and Crop Science, The University of Jordan; **Supervisor**
14. **Jalal Al-Tabbal**. 2004. Effect of Mepiqat Chloride and Ethephon on Enhancing Drought of Two Durum Wheat Cultivars; Dept. of Hort. and Crop Science, The University of Jordan; **Co-Supervisor**