MOHAMMED N. SAWALHAH, PH.D.

ASSOCIATE PROFESSOR, PRINCE EL-HASSAN BIN TALAL FACULTY FOR Natural Resources and Environment, THE HASHEMITE UNIVERSITY.
P.O. BOX 330127, ZARQA 131333, JORDAN
sawalhah@hu.edu.jo
Google Scholar, Researchgate, Mendeley, ORCID

EDUCATION

- **Ph.D. (Summa cum laude) New Mexico State University**. Range science/GIS and Remote Sensing. 2014.

  Dissertation: Livestock and vegetation responses to stocking rate treatments in two rangeland ecosystems of New Mexico.

  Advisor: Andres Cibils.

  Co-advisor: Jerry Holechek.

- **M.Sc. Jordan University of Science and Technology**. Animal production. 2009.

  Thesis: The use of melatonin or progestogen to advance puberty in Awassi ewe lambs.

  Advisor: Rami Kridli.

  Co-advisor: Khaleel Jawasreh.

- **B.Sc. Jordan University of Science and Technology**. Animal production. 2005.

PROFESSIONAL EXPERIENCES

- **Associate Professor 10/2020 – Present.**
  Prince El-Hassan bin Talal Faculty for Natural Resources and Environment, Department of Lands Management and Environment, The Hashemite University, Zarqa, Jordan.

- **Assistant Dean 9/2020 - present**
  Prince El-Hassan bin Talal Faculty for Natural Resources and Environment, The Hashemite University, Zarqa, Jordan.

- **Assistant Professor 10/2015 – 10/2020.**
  Prince El-Hassan bin Talal Faculty for Arid Lands, Department of Natural Resources in Arid Lands, The Hashemite University, Zarqa, Jordan.

- **Postdoctoral Research Associate 3/2015 – 10/2015.**
  E (Kika) de la Garza American Institute for Goat Research, Langston University, Langston, OK, USA.
  Areas: Target grazing, GIS, and Remote sensing (Drone technology), Vegetation inventory and monitoring, Prescribed fire, Animal nutrition.

- **Research Associate Senior 5/2014 – 8/2014.**
  Animal and Range Science department, New Mexico State University, Las Cruces, NM, USA.
  Areas: Rangeland inventory and monitoring, Spatial patterns of livestock grazing on rangelands.

- **Research Assistant 8/2010 – 5/2014.**
  Animal and Range Science department, New Mexico State University, Las Cruces, NM, USA.
  Areas: Animal behavior, Rangeland inventory and monitoring, Spatial patterns of livestock grazing on rangelands, GIS, and Remote sensing.

- **Teaching Assistant 1/2011 – 5/2014.**
  Animal and Range Science department, New Mexico State University, Las Cruces, NM, USA.
  Classes: Rangeland Resource Management (4 semesters), Range Communities (4 semesters), Rangeland Analysis (1 semester), and Rangeland Plants (1 semester).

- **Research Assistant 8/2006 – 5/2008.**
  Animal Science department, Jordan University of Science and Technology, Irbid, Jordan.
  Areas: Animal reproduction physiology, Animal nutrition, Poultry management and nutrition.

- **Teaching Assistant 8/2006 – 5/2008.**
  Animal Science department, Jordan University of Science and Technology, Irbid, Jordan.
  Classes: Animal physiology (2 semesters), Artificial insemination (2 semesters), Feed analysis (1 semester), and Meat science (1 semester).

- **Courses Taught**
  Arid Lands Resources and Environment**,** Introduction to Animal Science, Sustainability of Rangeland and Protected Areas, Rangeland Management, Animal Products Management, Environmental Volunteering, Special Topic in Natural Resources and Ecology, Landscape Design and Landscape Ecology, Environmental Awareness, Geographic Information System, Principles of Nutrition Science.

AWARDS, HONORS, AND ORGANIZATIONS

- Outstanding Graduate Assistantship Award for 2013-2014, New Mexico State University.
- Outstanding Graduate Assistantship Award for 2012-2013, New Mexico State University.
- Travel Award to attend 67th annual Society for Range Management meeting in Orlando, Florida, New Mexico State University, 2014.
- Phi Kappa Phi honor society, member, USA, 2013 – Present.
- Gamma Sigma Delta honor society of agriculture, member, USA. 2013 – Present.
- Society for Range Management, member USA. 2011 – Present.
- New Mexico Section of the Society for Range Management, 2011 – 2014.
- Agricultural Engineering Association, member, Amman, Jordan. 5/2005 – Present.
- Animal and Range Science Graduate Student Association., member, New Mexico State University.2010 – 2014.

RESEARCH INTERESTS AND PUBLICATIONS

RESEARCH INTERESTS

- My research interests include use the new technologies such as Geographic Information Systems (GIS) and Remote Sensing to better understanding and solve natural resources related problems. My goal is to develop effectual methods that can provide scientists and decision makers with information that can be used to afford natural, agricultural, and human societies with a sustainable development.

REFEREED PUBLICATIONS

- Holechek, J. L., Geli, H. M., Cibils, A. F. and **Sawalhah, M. N.,** 2020. Climate Change, Rangelands, and Sustainability of Ranching in the Western United States. *Sustainability*, 12(12), 4942.
- Zaied, A. J., Geli, H. M., **Sawalhah, M. N.,** Holechek, J. L., Cibils, A. F., Gard, C. C. 2020. Historical Trends in New Mexico Forage Crop Production in Relation to Climate, Energy, and Rangelands. *Sustainability*, 12(5), 2051.

- Zaied, A. J., Geli, H. M., Holechek, J. L., Cibils, A. F., **Sawalhah, M. N.,** Gard, C. C. 2019. An Evaluation of Historical Trends in New Mexico Beef Cattle Production in Relation to Climate and Energy. *Sustainability*, 11(23), 6840.

- **Sawalhah, M. N.,** J. L. Holechek, A. F. Cibils, H. M. E. Geli, A. Zaied. 2019. Rangeland Livestock Production in Relation to Climate and Vegetation Trends in New Mexico. *Rangeland Ecology and Management.* 72(5): 832-845.

- **Sawalhah, M. N.,** S. D. Al-Kofahi, Y. A. Othman, A. F. Cibils. 2018. Assessing Rangeland Cover Conversion in Jordan after the Arab Spring Using a Remote Sensing Approach. *Journal of Arid Environments* 157: 97-102.

- Al-Kofahi, S. D., Hammouri, N., **Sawalhah, M. N.,** Al-Hammouri, A. A., Aukour, F. J. 2018. Assessment of the urban sprawl on agriculture lands of two major municipalities in Jordan using supervised classification techniques. *Arabian Journal of Geosciences*, 11(3), 45.
- **Sawalhah, M. N.,** A. F. Cibils, H. Cao, D. M. Vanleeuwen, J. L. Holechek, C. M. Black-Rubio, R. L. Wesley, R. L. Endecott, T. J. Mulliniks, M. K. Petersen. 2016. Forage and Weather Influence Day- Vs. Nighttime Cow Behavior and Calf Weaning Weights on Rangeland. *Rangeland Ecology and Management.* 69(2): 134-143.

- Holechek, J. L., **Sawalhah, M. N.,** Cibils, A. F. 2015. Renewable Energy, Energy Conservation and Rangelands. Ra*ngelands*. 37(6): 217-225.

- Holechek, J. L., **Sawalhah, M. N.** 2014. Rangelands and Energy: A Perspective. Ra*ngelands.* 36 (6): 36-43.

- Thomas, M. G., Mohamed, A. H., **Sawalhah, M. N.,** Holechek, J. L., Bailey, D. W., Hawkes, J. M., Luna-Nevarez, P., Molinar, F., Khumalo, G. 2015. Long-term Forage and Cow-calf Performance and Economic of Two Stocking Levels on Chihuahuan Desert Rangeland. *Rangeland Ecology and Management.* 68(2): 158-165.

- **Sawalhah, M. N.,** A. F. Cibils, C. Hu, H. Cao, J. L. Holechek. 2014. Animal-Driven Rotational Grazing Patterns on Seasonally Grazed New Mexico Rangeland. *Rangeland Ecology and Management.* 67(6):710-714.

- **Sawalhah, M. N**., Kridli, R. T., Jawasreh, K. I., and Meza-Herrera, C. A., 2011. The Use of Melatonin and Progestagen–eCG to Initiate Reproductive Activity in Prepuberal Awassi Ewe Lambs. *Tropical Animal Health Production*, 43(7):1345–1350.

PROCEEDINGS PAPERS

- **Sawalhah, M. N.,** A. F. Cibils, H. Cao, D. M. Vanleeuwen, J. L. Holechek, C. M. Black-Rubio, R. L. Wesley, R. L. Endecott, T. J. Mulliniks, M. K. Petersen. 2015. Assessment of foraging behavior of beef cows on rangeland: analysis of four years of GPS data, 25th International Meeting on Beef and Milk Production in Hot Climates in Ensenada, Baja California, Mexico.

- Andrés Cibils, Christina Black-Rubio, Robert Wesley, Vanessa Prileson, **Mohammed Sawalhah**, Rachel Endecott, Travis Mulliniks, Mark Petersen. 2014. Cattle grazing site preferences in pastures with different amounts of juniper woodland: what we've learned. Corona Range and Livestock Research Center 4th Triennial Research Field Day, 13-14.

- F. A. Allataifeh, J. B. Taylor, L. Chen, **M. N. Sawalhah**, and C. A. Löest. 2014. Plasma amino acids of wether lambs supplemented with novel feed products to reduce locoweed toxicity. Proc. West. Sec. Am. Soc. Anim. Sci. 65: 223-226.

- F. A. Allataifeh, C. A. Löest, **M. N. Sawalhah**, L. N. Tracey, J. Browne-Silva, C. D. Allison, J. B. Taylor, and D. M. Hallford. 2012. Efficacy of novel feed products to reduce locoweed toxicity in wether lambs. Proc. West. Sec. Amer. Soc. Anim. Sci. 63: 138-142.

- F. A. Allataifeh, C. A. Löest, **M. N. Sawalhah**, F. Castillo, A. F. Cibils, and E. J. Scholljegerdes. 2012. Swainsonin excretion, nutrient digestibility and nitrogen retention of lambs fed alfalfa hay, locoweed, and novel feed additives. Proc. West. Sec. Amer. Soc. Anim. Sci. 63:320-323.

- F. A. Allataifeh, **M. N. Sawalhah**, S. A. Soto-Navarro, and C. A. Löest. 2013. Visceral organ mass and jejunum cell proliferation of lambs fed alfalfa hay, locoweed, and feed additives. Proc. West. Sec. Amer. Soc. Anim. Sci. 64:405-408.

ABSTRACTS

- **Sawalhah, M. N.,** A. F. Cibils, J. L. Holechek, H. M. E. Geli, A. J. Zaied. The changing relation between precipitation and rangeland grazing capacity in a warmer Southwest. Abstract.72nd Annual Society for Range Management meeting, Minneapolis, Minnesota. 2019.

- **Sawalhah, M. N.,** Cibils, A., Geli, H. M. E., Zaied, J. A., 2018 Identifying Linkages between water and beef production in New Mexico: a FEW Systems Analysis, 2018 Fall Meeting, AGU, Washington DC, 10-14 Dec. 2018.

- Zaied, J. A., Geli, H. M. E. Cibils, A., **Sawalhah, M. N.,** 2018, An Evaluation of Historical Trends in New Mexico Beef Production in Relation with Water, Energy, and Economic Shocks, 2018 Fall Meeting, AGU, Washington DC, 10-14 Dec. 2018.

- Cibils, A., Black, C., Wesley, R., Prileson, V., **Sawalhah, M**., Endecott, R., Mulliniks, T., Petersen, M., Cox, S., Dunlap, R. Cows and Trees in New Mexico: Using Cattle Behavior to Inform Piñon Juniper Woodland Management. Abstract. Society of American Foresters National Convention. Albuquerque, New Mexico. 2017.

- **Sawalhah, M**. Effect of Population Growth and Syrian Refugees on Rangelands Degradation in Jordan**.** Abstract. International Conference on Advanced Technologies and their Applications in Agriculture, Cairo, Egypt. 2017.

- Hart S., **Sawalhah, M**. Use of fecal NIRS to predict red cedar intake by goats**.** Abstract. 94 Southern Section, American Society of Animal Science, San Antonio, Texas. 2016.

- **Sawalhah, M.,** Cibils, A., Hu, C., Cao, H., Holechek, J. 2014. Animal-driven rotational grazing patterns in a seasonally grazed New Mexico rangeland pasture. Abstract.67th Annual Society for Range Management meeting, Orlando, Florida. 2014.

- **Sawalhah, M.,** Cibils, A., Prileson, V. Mother-infant social interactions in rangeland-raised beef cattle.Abstract. 48th Congress of the International Society for Applied Ethology (ISAE) Vitoria Gasteiz, Spain. 2014.

- **Sawalhah, M**., Cibils, A., Cao, H., Holechek, J., Wesley, R., Black, C., Cox, S., Dunlap, R. 2013. Influence of stocking rate and weather on activity patterns of young cows: A GPS assessment. Abstract. 66th Annual Society for Range Management meeting, Oklahoma City, Oklahoma. 2013.

- **Sawalhah, M**., Cibils, A., Steele, C., Holechek, J., Wesley, R., Black, C., Cox, S., Dunlap, R. Habitat selection patterns of young cows in grassland/woodland mosaics in relation to stocking rate and weather. Abstract. 66th Annual Society for Range Management meeting, Oklahoma City, Oklahoma. 2013.

FUNDED RESEARCH

- Advanced sensing technologies to predict nutritional status of selected field crops, 56,000 JD Deanship of Scientific Research, The Hashemite University, Jordan. December 2019.

GRADUATE STUDENTS

- Investigating plant cover biodiversity in protected and non-protected semi-arid Mediterranean ecosystem. Student: Ahmad Abu Dkhineh **(Co-advisor)**. Master in Climate Change and dryland Sustainability. The Hashemite University, Jordan. April 2020.
- Training needs for field crop farmers to face climate change impact in Irbid governorate. Student: Alia Rasheed AI-Jarrah **(External Examiner)**. Master in Climate Change, Sustainable Agriculture and Food Security. Jerash Private University, Jordan. June 2020.
- Evaluation of the seed vigor of Jojoba seeds of different ages & seed sizes and feasibility of Jojoba planation in Jordan. Student: Mohammed Noor Hajat **(Internal Examiner)**. Master in Climate Change and dryland Sustainability. The Hashemite University, Jordan. February 2018.
- Vegetation responses in open access areas and exclosure areas at Yarmouk Protected Area in Northern Jordan. Student: Aladdin Al-Hiyasat **(Co-advisor)**. Master in Climate Change and dryland Sustainability. The Hashemite University, Jordan. April 2017.