

CURRICULUM VITAE

Dr. MUMTAZ A. CHEEMA

TABLE OF CONTENTS

1. RESEARCH DOSSIER

- 1.1 Academic Background
- 1.2 Academic and Research Experience
- 1.3 Research interests
- 1.4 Research Projects Funding
 - 1.4.1 Pending projects
 - 1.4.2 Active Research Projects
 - 1.4.3 Projects completed
 - 1.4.4 Older Projects
 - 1.4.5 Research Projects - Unsuccessful
- 1.5 Special Honors and Awards
- 1.6 Publications
 - 1.6.1 Books/Monographs
 - 1.6.2 Book chapters
 - 1.6.3 Peer Reviewed Journal Papers
 - 1.6.4 Posters and Abstracts Presented at National and International Meetings
 - 1.6.5 Presentations at Conferences and Professional Society Meetings
 - 1.6.6 Conference Proceedings
- 1.7 Training of Highly Qualified Personals
 - 1.7.1 Post-doc and visiting scientists
 - 1.7.2 Visiting PhD students
 - 1.7.3 Current graduate students
 - 1.7.3.1 PhD students
 - 1.7.3.2 MSc students – Committee chair
 - 1.7.3.3 MSc – Co-supervisor/committee member
 - 1.7.3.4 Summer Students/MUCEP/WISE
 - 1.7.4 Past Graduate students
 - 1.7.4.1 PhD Students
 - 1.7.4.2 MSc/BS (Hons.)
 - 1.7.4.3 MSc awarded, University of Agriculture, Faisalabad, Pakistan
- 1.8 Most Significant Research, Development and Technology Transfer Contributions
 - 1.8.1 Integrated nutrient management practices to enhance nutrient use efficiency and forage quality of crops
 - 1.8.2 Monitoring of greenhouse gases emission and mitigation strategies to reduce gaseous and nitrate leaching using different approaches (biochar amendment, crop rotation, nitrogen stabilizers) in boreal climate cropping systems.
 - 1.8.3 Abiotic stress management strategies to induce stress tolerance in agronomic crops
 - 1.8.4 Established a state-of-the-art research facility and initiation of new MSc/PhD program at Grenfell Campus, Memorial University
 - 1.8.5 Extension Presentations/Demonstrations
 - 1.8.6 Articles of Research Output Covered in Newspapers and Magazines
 - 1.8.7 Television Programs

2. TEACHING DOSSIER

- 2.1 Teaching Areas
 - 2.1.1 Undergraduate Courses, Memorial University (MUN)
 - 2.1.2 Graduate Courses at MUN
 - 2.1.3 Courses taught at Dalhousie University, Truro, NS.
 - 2.1.4 Courses taught at University of Agriculture, Faisalabad, Pakistan.
- 2.2 Development of New Graduate Courses

- 2.2.1 New graduate courses
- 2.2.2 New Graduate Programs Developed/Instituted

3. SERVICE DOSSIER

- 3.1 Conferences, Seminars, and Workshops
- 3.2 Significant Institute Committee Services
- 3.3 Community Services
 - 3.3.1 Refereeing of Journal Articles
 - 3.3.2 Reviewing books, grants, and faculty applications
 - 3.3.3 Theses examinations and evaluation
 - 3.3.4 Conference committees/chair sessions
 - 3.3.5 Memberships and Editorial activities

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1.1 Academic Background

Degree	Discipline	University/Country	Year
Ph.D.	Agronomy	University of Agriculture, Faisalabad, Pakistan	1999
M.Sc.	Agronomy	University of Agriculture, Faisalabad, Pakistan	1989
B.Sc. (Hons)	Agronomy	University of Agriculture, Faisalabad, Pakistan	1987

1.2 Academic, Research and Administrative Experience

Position	Institution	Period
Associate Vice President Res. & GS (<i>Interim</i>)	Memorial University Grenfell Campus	March 1, 2022 – To-date
Associate Vice President Res. & GS (<i>Interim</i>)	Memorial University Grenfell Campus	March 1, 2022 – August 31, 201
Professor	Memorial University-Grenfell Campus	September 2020 To-date
Graduate Officer BEAS program	Memorial University-Grenfell Campus	September 2015 To-date
Associate Prof.	Memorial University-Grenfell Campus	Aug 2013 - Aug 2020
Visiting Professor	Dalhousie University, Truro, NS, Canada	June 2011 July 2013
Professor	University of Agriculture, Faisalabad, Pakistan	Jan. 2011 To-date
Director Graduate Studies	University of Agriculture, Faisalabad, Pakistan	Feb. 2008 June 2011
Post-Doctoral Fellow	Iowa State University of Science & Technology Ames, Iowa, USA	Jan. 2007 Dec. 2007
Associate Professor	University of Agriculture, Faisalabad, Pakistan	Jan. 2004 Jan. 2011
Assistant Professor	Dept. of Agronomy, University of Agriculture Faisalabad, Pakistan	2000 2004
Lecturer	Dept. of Agronomy, University of Agriculture Faisalabad, Pakistan	1993 2000
Agronomist	Pan Pacific (Pvt.) Limited, Sahiwal, Pakistan	1990 1993

1.3 Research Interests

- 1) To develop productive and sustainable cropping systems in boreal climate using innovative approaches/management practices, 2) Integrated nutrient management practices to enhance nutrient use efficiency, improve soil quality and health, 3) Abiotic stress management strategies to induce stress tolerance in crop plants, 4) Greenhouse gas mitigation and

adaptation strategies, 5) Developing and evaluating beneficial management practices (BMPs) (crop rotation, intercropping, cover crops, biochar amendment, nitrification inhibitors) in different cropping systems to sequester C, reduce N leaching losses, improve soil health and quality, 6) To develop and test growth media formulation for production of high value crops using industry waste (pulp & paper mills, mining, and dairy), 7) Effect of climate change on crop growth, yield and produce quality, maximizing phosphorus use efficiency (PUE) in plants and cropping systems.

1.4 Research Projects Funding

1.4.1 Pending Projects

1. **PI**, Cropping, fertilization, and soil conditioning strategies for climate change mitigation in NL (NL-LL). AAFC, NL-LL model [(\$4.00 millions) (2022 - 2027)].
2. **PI**, Assessing cover cropping options for improved forage yield, quality and soil health in a boreal climate. Industry, Energy and Technology (IET), Government of NL – Leverage R&D application [(\$568,418.00) (2022 -2027)].
3. **PI**, Developing and evaluation of Chaga based growth media formulations and their effects on agronomic performance and phytochemical profile of Cannabis under controlled environment. **NSERC – Alliance** [(\$200,000) (2022 – 2026)].

1.4.2 Active Projects

1. **PI**, Newfoundland, and Labrador living laboratories Initiative (Creating a Collaborative Network). Associate Vice-President (Research) Special Award [(\$26,500) (2021- 2022)].
2. **PI**, Newfoundland, and Labrador living laboratories Initiative – NL-LL. Agriculture and Agri-Food, Canada - ACS program [(\$51,240) (2021 – 2022)].
3. **COAP**, Repurposing marine by-products or raw materials for the development and production of functional food and bioactives to improve human health and coastal community sustainability. New Frontiers in Research Fund – Transformation (NFRF-T) [(\$15.8 Millions) (2021-2027)].
4. **COAP**, Collaborative research program on Cannabis edibles as functional foods. **NSERC**, Fanshawe College, MUN, Beehive Inc. and Wake Inc. [(\$505,913) (2021-2024)].
5. **PI**, Formulation and Product Testing of Seafood Compost. Mitacs Accelerate [(\$60,000) (2021-2023)].
6. **PI**, Low-input Agriculture in Cool Climate Boreal Ecosystems. Department of Fisheries, Forestry and Agriculture, NL - contribution agreement [(\$55,000) (2021 - 2022)].
7. **PI**, Effects of medium-term dairy manure and biochar application on the growth, forage production and quality, soil quality and health in a silage corn monocropping system in boreal climate. Canadian Agricultural Partnership (CAP) [(\$24,915.00) (2021-2022)].
8. **External collaborator**, Improving the health of northern soils. AAFC [(\$300,000) (2021-2023)]. PI - Vicky Lévesque, Research Scientist – Soil Health and Microbiome, Kentville Research and Development Centre, Agriculture and Agri-Food Canada, NS, Canada.

9. **PI**, Assessing cover cropping options for improved forage yield, quality and soil health in a boreal climate. **NSERC DG** [(\$165,000) (2021 – 2026)].
10. **PI**, Standardizing dairy digestate utilization as a nutrient source in commercial hydroponic greenhouse vegetable production settings in Newfoundland. Seed, Bridge and Multidisciplinary Fund [(\$10,000) (2020-2022)].
11. **COPI**, Design, fabrication, and evaluation of a small scale and low-cost vertical garden hydroponic system. Mitacs Accelerate [(75,000) (2020-2022)]. PI, Dr. Galagedara, School of Science and the Environment, MUN.
12. **COPI**, Bridging the divide: Connecting and preparing refugees for work in the province's agriculture industry, Newfoundland, and Labrador Department of Advance Skills & Labour - Workforce Innovation Centre (WIC), and Mitacs [(\$438,139) (2018-2022)].
13. **COPI**, Rock dust from mine waste as a natural media amendment in forest reclamation and the production of high value agronomic and horticultural crops. Total funding \$ 383,800 [Anaconda Mining Inc. Memorial University of Newfoundland, **NSERC-CRD**, Tourism, Culture, Industry, and Innovation (TCII)] (2019-2022).
14. **PI**, Study of Corner Brook Pulp and Paper Limited (CBPPL) by-products and potential uses for food production. Mitacs, \$200,000 (2019-2022).

1.4.3 Projects completed

1. **PI**, Low-input agriculture in cool climate boreal ecosystems. Funded by Agricultural Clean Technology Program, Tourism, Culture, Industry, and Innovation (TCII), Atlantic Canada Opportunities Agency (ACOA), Fisheries and Land Resources (FLR) and Memorial University of Newfoundland (MUN) [(\$1,330,885) (2019 -2021)].
2. **PI**, Engaging high school students in attacking food insecurity in their communities. Public Engagement Accelerator Fund, MUN [(\$10,000) (2020-2021)].
3. **PI**, Imparting best management practices to external collaborators and partners through public engagement activities. PEPDP, Memorial University of Newfoundland, \$25,000 (2019-2020).
4. **COPI**, Assessment of the nutrient value and utilization options for anaerobic digestate obtained from a dairy liquid waste stream. Total funding \$ 288,407.00 [Atlantic Canada Opportunities Agency, \$90,000; New World Dairy Inc., \$64,595; Memorial University of Newfoundland, student funding, \$53,812; TCII, \$55,000 (2018-2020)].
5. **COPI**, Assessing the dairy digestate as a nutrient and water source in soil-based and hydroponic greenhouse vegetable production. Canadian agricultural partnership NL, \$24,610 (2019-2020).
6. **PI**, Biomass production and phosphorus availability from dairy manure in silage corn, Research & Development Corporation Newfoundland and Labrador, \$100,000 (2016-2019).
7. **COPI**, Sprouted fodder as an alternate feed source for Newfoundland and Labrador agriculture industry, Research & Development Corporation Newfoundland and Labrador,

\$100,000 (2016-2019).

8. **PI**, Biomass production, phosphorus acquisition and GHG emission from dairy manure in silage corn, Atlantic Canada Opportunities Agency, \$80,000 (2017-2019).
9. **PI**, Evaluating phosphorus utilization efficiency (PUE) of wheat genotypes under different P environments, Seed, Bridge and Multidisciplinary Fund, Memorial University of Newfoundland, \$10,000 (2017-2019).
10. **PI**, Improving shelf life and quality of greenhouse vegetables, Canadian agricultural partnership NL, \$24,992 (2018-2019).
11. **COPI**, Assessing the dairy digestate as a nutrient and water source in soil-based and hydroponic greenhouse vegetable production, Canadian Agricultural Partnership NL, \$24,610 (2018-2019).
12. **COPI**, Hydrogeophysical characterization of agricultural fields in Western Newfoundland using Integrated GPR-EMI, Research & Development Corporation Newfoundland, and Labrador, \$100,000 (2016-2018).
13. **COPI**, Investigating the main operational challenges and opportunities for developing sustainable greenhouses in Newfoundland, Harris Centre, \$15,000 (2016-2018).
14. **COPI**, Effects of organic soil amendments on soil health and nutrient kinetics for silage-corn in monoculture or short-term rotations with legume crops under Newfoundland conditions. Newfoundland and Labrador Forestry and Agrifoods Agency (\$16,637), and Agriculture and Agri-Food Canada, Growing Forward 2 (\$ 10,000) (2016-2017).
15. **PI**, Biomass production and phosphorus acquisition from dairy manure in silage corn. Seed, Bridge and Multidisciplinary Fund, Memorial University of Newfoundland, 10,000 (2015-2017).
16. **COPI**, Understanding soil fertility under land-use change scenarios; implications for land management and introduction of novel crops, Research & Development Corporation Newfoundland, and Labrador, \$100,000 (2015-2017).
17. **COPI**, Quantitative and qualitative organic waste inventory for integrated re-use, Harris Centre, \$15,000 (2015-2016).
18. **COPI**, Viability of winter wheat and spring barley cultivation for animal feed production in insular Newfoundland. Provincial Agriculture Research and Development Program & Agricultural Research Initiative, \$ 237,635.00 (2015-2017).

1.4.4 Older Projects

1. **PI**, Managing wheat weeds by application of allelopathic plant water extracts. Higher Education Commission of Pakistan (HEC), 2 million Pak. currency (2006-2009).
2. **PI**, Renovation of analytical Laboratories. Endowment Fund, University of Agriculture, Faisalabad, Pakistan, 2.5 million (2005-2008).

3. **PI**, Induction of salt tolerance in wheat (*Triticum aestivum* L.) by seed invigoration techniques. Higher Education Commission of Pakistan (HEC), 1.2 million (2007-2010).
4. **COPI**, Production potential of canola under different agro-management practices. Higher Education Commission of Pakistan (HEC), 1.4 million (2007-09).
5. **COPI**, Laboratory Equipment-Kjeldhal and Soxhlet Apparatus. Higher Education Commission of Pakistan (HEC), 1Million (2008).
6. **PI**, Evaluating wheat performance by Silicon application under late sown conditions. Higher Education Commission of Pakistan (HEC), 1.2 million (2008-2012).
7. **PI**, Growth and yield response of spring maize (*Zea mays* L.) hybrids under different poultry manure levels and soil moisture regimes. University of Agriculture, Faisalabad, Pakistan, Promotion of Research Fund, 0.098 million (2010-2011).

1.4.5 Research Projects-Unsuccessful

1. **PI**, Greenhouse gas emissions from manured and inorganic N fertilizer-based forage cropping systems in Newfoundland and Labrador. Agriculture Greenhouse Gas Program (AGGP) \$1,168,483.00 (2016-2021)
2. **PI**, Photosynthetic efficiency, growth, yield and grain quality of wheat under elevated CO₂ concentration and soil moisture levels. Harris Centre-ARF program (\$15, 000) (2016-2017).
3. **PI**, Improving the production efficiencies and health benefits in a low input cool climate vegetable production system. Canadian Agri-Science Cluster for Horticulture-\$752,000.00.
4. **PI**, Maximizing phosphorus use efficiency (PUE) in cropping systems. NSERC-DG, with funding request of CAD 500,000.00 (2018-2023).

1.5 Special Honors and Awards

Sr. #	Period	Name
1	2010	Australian Leadership Award (ASLA) fellowship on “Food Security in South Asia “organized by Charles Sturt University, Wagga Wagga, Australia
2	2009	Represented the University in Kick off Conference of six members countries consortium (Germany, Brazil, South Africa, Kenya, India and Pakistan) under the umbrella of International Center for Development and Decent Work (ICDD), organized by University of Kassel, Germany
3	2006	Quid-e-Azam Gold medal for best performance in agricultural research by Tehreek-Istehqam-e-Pakistan Counsel, Lahore, Pakistan
4	2006	Cash Prize for writing a book “Production of Vegetables” University of Agriculture, Faisalabad, Pakistan. Rs.10, 000/
5	2006	Represented Pakistan in workshop on “Ecological Agriculture” Organized by UBINIG, Bangladesh.
6	2002	Star Award, South Asian Publications, Karachi, Pakistan

1.6 Publications

1.6.1. Books/Monographs

- Jatoi W. N, M. Mubeen, A. Ahmad, [M. A. Cheema](#), Z. Lin, M. Z. Hashmi. (Eds.). 2021. Building Climate Resilience in Agriculture: Theory, Practice and Future Perspective. Springer Nature publishing. doi.org/10.1007/978-3-030-79408-8
- Sattar, A, [M. Cheema](#) and M. A. Wahid. 2011. Heat stress in late sown wheat: High temperature due to climate change limits the productivity of wheat in sub-tropical conditions. LAP LAMBERT Academic Publishing, Germany.
- [Cheema, M](#), M.A. Wahid and M.A. Randhawa. 2010. “Production of Wheat”. Published by University Press, University of Agriculture, Faisalabad, Pakistan
- Ayub, C.M, M. A. Pervaiz and [M. Cheema](#). 2005. “Production of Vegetables” Published by University Press, University of Agriculture, Faisalabad, Pakistan.
- [Cheema, M](#). and S. Ahmed. 2003. “Calendar of Agricultural Operations”. Published by University Press, University of Agriculture, Faisalabad, Pakistan.

1.6.2. Book Chapters

1. Rabia Javed, Muhammad Arslan Ahmad, Ayesha Gul, Taswar Ahsan, [Mumtaz Cheema](#). 2021. Comparison of chemically and biologically synthesized nanoparticles for the production of secondary metabolites, and growth and development of plants. *Comprehensive Analytical Chemistry, Elsevier*, volume 94, 303-329; <https://doi.org/10.1016/bs.coac.2021.02.002>

1.6.3. Peer Reviewed Research Articles

1. Nadeem M, J. Wu, H. Ghaffari, A. J. Kedir, S. Saleem, A. Mollier, J. Singh and [M. Cheema](#). 2022. Understanding the adaptive mechanisms of plants to enhance phosphorus use efficiency on podzolic soils in boreal agroecosystems. *Front. Plant Sci.*,13, <https://doi.org/10.3389/fpls.2022.804058>
2. Zaeem M, M. Nadeem, T.H. Pham, W. Ashiq, W. Ali, S. M. Gilani, E.R.D. Moise, H. Leier, V. Kavanagh, L. Galagedara, [M. Cheema](#), R. Thomas. 2021. Data set showing the development of a hyperspectral imaging technique using LA-ICP-MS to determine the spatial distribution of nutrients in soil cores. *Geoderma*. 385, 114,831; <https://doi.org/10.1016/j.geoderma.2020.114831>
3. Rajakaruna A, C. F. Manful, I. M. Abu-Reidah, A. L. Critch, N.P. Vidal, T.H. Pham, [M. Cheema](#), R. Thomas. 2022. Application of solvent pH under pressurized conditions using accelerated solvent extraction and green solvents to extract phytonutrients from wild berries. *Food Bioscience* 47, 101471; <https://doi.org/10.1016/j.fbio.2021.101471>
4. Mustafa T, A. Sattar, A. Sher, S. Ullah, M. Ijaz, M. Irfan, M. Butt, [Mumtaz Cheema](#). 2021. Exogenous application of silicon improves the performance of wheat under terminal heat stress by triggering physio-biochemical mechanisms. *Nature Scientific Reports*, 11:23170. <https://doi.org/10.1038/s41598-021-02594-4>
5. Farhain, M., [M. Cheema](#)., Katanda, Y., Nadeem, M., Javed, B., Thomas, R., Saha, R., Galagedara, L. 2022. Potential of developing podzolic soil-based potting media from wood ash, paper sludge and biochar. *Journal of Environmental Management*, 301(1), 113811. <https://doi.org/10.1016/j.jenvman.2021.113811>
6. Irshad M, M.A. Wahid, M. F. Saleem, S. Khan, S. Irshad, A. Matloob, M. Sarwar, M. Ali, Z. Hasnain & [M. Cheema](#). 2021. Zinc coated urea enhanced the growth and quality of rice cultivated under aerobic and anaerobic culture. *Journal of Plant Nutrition*, <https://doi.org/10.1080/01904167.2021.2005803>
7. Abu-Reidah, I.M, Critch, A.L. Manful, C.F, Rajakaruna, A, Vidal, N.P, Pham, T.H, [Cheema](#),

- M**, Thomas, R. 2021. Effects of pH and Temperature on Water under Pressurized Conditions in the Extraction of Nutraceuticals from Chaga (*Inonotus obliquus*) Mushroom. *Antioxidants*,10, 1322. <https://doi.org/10.3390/antiox10081322>
8. Abdul Sattar, T. Abbas, A. Sher, M. Ijaz, M. Irfan, M. Butt, M. A. Wahid, X. Wang, **M. Cheema**, S. Fiaz, A. Qayyum, S. Ali Alharbi, M. Wainwright, K. Xie, A. T. K. Zuan, S. Ullah, M. J. Ansari and F. Ahmad. 2021. Combined application of zinc and silicon alleviates terminal drought stress in wheat by triggering morpho-physiological and antioxidants defense mechanisms. *PLOS ONE*. 16(10): e0256984. <https://doi.org/10.1371/journal.pone.0256984>
 9. Wahid M A, M. Saleem, S. Khan, S. Irshad, **M. Cheema**, M. F. Saleem, H. Z. Khan, M. Ali, A. Bakhsh, Z. Hasnain, S. T. Alrashood and S. A. Alharbi. 2021. Foliar applied Boron not only enhances seed cotton yield but also improves fiber strength and fineness of cotton cultivars. *Philipp Agric Scientist*, 104 (2): 124-134
 10. Arnott, A., L. Galagedara, **M. Cheema**, J. Sobze, R. Thomas. 2021. Seedling vigor of native species for mine site reclamation: A Review. *Science of the Total Environment*. 775, 145139. <https://doi.org/10.1016/j.scitotenv.2021.145139>
 11. Zaeem M, M. Nadeem, T.H. Pham, W. Ashiq, W. Ali, S.S.M. Gilani, E. Moise, S. Elavarthi, V. Kavanagh, **M. Cheema**, L. Galagedara, R. Thomas. 2021. Corn-soybean intercropping improved the nutritional quality of forage cultivated on podzols in boreal climate. *Plants*, 10 (5), 1015. <https://doi.org/10.3390/plants10051015>
 12. Waqar Ashiq, H. Vasava, **Mumtaz Cheema**, K. Dunfield, P. Daggupati, A. Biswas. 2021. Interactive role of topography and best management practices on N₂O emissions from agricultural landscape. *Soil & Tillage Research*, 212; doi.org/10.1016/j.still.2021.105063
 13. Kedir A. J, J. Nyiraneza, L. Galagedara, **M. Cheema**, K. A. Hawboldt, D. B. McKenzie and A. Unc. 2021. Phosphorus adsorption characteristics in forested and managed podzolic soils. *Soil Science Society of American Journal*, <https://doi.org/10.1002/saj2.20180>
 14. Zaeem M, M. Nadeem, T.H. Pham, W. Ashiq, W. Ali, S. M. Gilani, E.R.D. Moise, H. Leier, V. Kavanagh, L. Galagedara, **M. Cheema**, R. Thomas. 2020. Development of a hyperspectral imaging technique using LA-ICP-MS to show the spatial distribution of elements in soil cores. *Geoderma*, 385,114831; <https://doi.org/10.1016/j.geoderma.2020.114831>
 15. Oludoyin Adeseun Adigun, M. Nadeem, T. H. Pham, L. E. Jewell, **M. Cheema**, R. Thomas. 2020. Recent advances in bio-chemical, molecular and physiological aspects of membrane lipid derivatives in plant pathology. *Plant, Cell & Environ.*, [doi: 10.1111/pce.13904](https://doi.org/10.1111/pce.13904)
 16. Ali M.H, J.M. Sobze, T. H. Pham, M. Nadeem, C. Liu, L. Galagedara, **M. Cheema**, R. Thomas. 2020. Carbon nanotubes improved the germination and vigor of plant species from peatland ecosystem via remodeling the membrane lipidome. *Nanomaterials*, 10, 1852; [doi:10.3390/nano10091852](https://doi.org/10.3390/nano10091852)
 17. Wahid M.A, M. Saleem, S. Irshad, S. Khan, **M. A. Cheema**, M. F. Saleem and S. A. Tung. 2020. Foliar feeding of boron improves the productivity of cotton cultivars with enhanced boll retention percentage. *Journal of Plant Nutrition* 43(16): 2411-2424; doi.org/10.1080/01904167.2020.1783300
 18. Ashiq W, M. Nadeem, W. Ali, M. Zaeem, J. Wu, L. Galagedara, R. Thomas, V. Kavanagh and **M. Cheema**. 2020. Biochar amendment mitigates greenhouse gases emission and global warming potential in dairy manure-based silage corn in boreal climate. *Environmental Pollution*, 265, 114869; doi.org/10.1016/j.envpol.2020.114869
 19. Sey A, T.H. Pham, V. Kavanagh, S. Kaur, **M. Cheema**, L. Galagedara, R. Thomas. 2020.

- Canola produced under boreal climatic conditions in Newfoundland and Labrador have a unique lipid composition and expeller press extraction retained the composition for commercial use. *Journal of Advanced Research*, 24:423-434; doi.org/10.1016/j.jare.2020.05.002
20. Illawathure C, [M. Cheema](#), V. Kavanagh, L. Galagedara. 2020. Distinguishing the capillary fringe reflection in a GPR profile for precise water table depth estimation in a boreal podzolic soil field. *Water*, 12, 1670; [doi:10.3390/w12061670](https://doi.org/10.3390/w12061670)
 21. Nadeem M, R. Thomas, O. Adigun, C. Manful, J. Wu, T. H. Pham, X. Zhu, L. Galagedara, and [M. Cheema](#). 2020. Root membrane lipids as potential biomarkers to discriminate silage-corn genotypes cultivated on podzolic soils in boreal climate. *Physiologia Plantarum*; [doi:10.1111/ppl.13181](https://doi.org/10.1111/ppl.13181)
 22. Sattar A, A. Sher, M. Ijaz, S. Ullah, M. S. Rizwan, M. Hussain, K. Jabran, [M. Cheema](#). 2020. Terminal drought and heat stress alter physiological and biochemical attributes in flag leaf of bread wheat. *PLoS ONE* 15(5): e0232974; <https://doi.org/10.1371/journal.pone.0232974>
 23. Samiullah, A. Sattar, A. Sher, M. Ijaz, M. Butt, M. Irfan, M.S. Rizwan, H. Ali and [M. Cheema](#). 2020. Interactive effect of biochar and silicon on improving morpho-physiological and biochemical attributes of maize by reducing drought hazards. *Journal of Soil Science and Plant Nutrition*; doi.org/10.1007/s42729-020-00253-7
 24. Farooq M, I. Khan, A. Nawaz, [M. Cheema](#), K. H. M. Siddique. 2020. Using sorghum to suppress weeds in autumn planted maize. *Crop Protection*, 133; doi.org/10.1016/j.cropro.2020.105162
 25. Ali M.H, J.M. Sobze, T. H. Pham, M. Nadeem, C. Liu, L. Galagedara, [M. Cheema](#), R. Thomas. 2020. The use of nano-priming in boreal forest upland species: Potential applications in boreal forest reclamation following anthropogenic disturbance. *Nanomaterials*, 10, 176; doi.org/10.3390/nano10010176
 26. Ghaffari H, Mahmoud R. Tadayon, Muhammad Nadeem, Jamshid Razmjoo and [Mumtaz Cheema](#). 2019. Foliage applications of jasmonic acid modulate the antioxidant defense under water deficit growth in sugar beet. *Spanish Journal of Agricultural Research*, 17(4), e0805; doi.org/10.5424/sjar/2019174-15380
 27. Hafiz M. R. Javeed, R. Qamar, A. Rehman, M. Ali, A. Rahman, M. Farooq, S. Zamir, M. Nadeem, [M. Cheema](#), M. Shehzad, A. Zakir, M. Aqeel, A. Iqbal and M. Hussain. 2019. Improvement in soil characteristics of sandy loam soil and grain quality of spring maize by using phosphorus solubilizing bacteria. *Sustainability*, 11, 7049; [doi:10.3390/su11247049](https://doi.org/10.3390/su11247049)
 28. Ali W*, M. Nadeem, W. Ashiq, M. Zaeem, S. S. M. Gilani, S. R. Khamseh, V. Kavanagh, R. Thomas, [M. Cheema](#). 2019. The effects of organic and inorganic phosphorus amendments on the biochemical attributes and active microbial population of agriculture podzols following silage corn cultivation in boreal climate. *Nature Scientific Reports*, 9, 17297; [doi: 10.1038/s41598-019-53906-8](https://doi.org/10.1038/s41598-019-53906-8)
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- * Graduate Students/Postdocs
 ** Co-advised
 *** Collaborative publications

1.6.4. Posters and Abstracts in National and International Meetings

1. [Mumtaz Cheema](#), Raymond Thomas, and Lakshman Galagedara (2021). Sustainable solid waste management practices: challenges and opportunities for high value crop production. 3rd International Conference on Emerging Trends in Earth and Environmental Sciences, University of the Punjab Lahore, Pakistan. November 16-18, 2021.
2. [Mumtaz Cheema](#) (2021). Rooting for net zero-emissions: Building climate resilient cropping systems to achieve global food security. 1st International Conference on “Innovations in Agriculture to Ensure Global Food Security, Islamia University Bahawalpur, Pakistan. Nov. 10-11, 2021.
3. Javed B, M. M. Farhain, T. Wickremasinghe, Y. Katanda, R. Thomas, L. Galagedara, X. Guo and [M. Cheema](#) (2021). Effect of wood ash, sludge, and biochar on heavy metals mobility in plant soil system of annual ryegrass and kale. Tri-Society Virtual Conference on “Innovation in Plant Science and Agricultural Resilience”. July 5-9, 2021, Canada – Virtual (Oral).
4. Nadeem M., O. A. Adigun, C. F. Manful, T. H. Pham, R. Thomas, [M. Cheema](#) (2021). Potential role of root neutral lipids in mediating forage soybean acclimation to cultivation on acidic soil in boreal climate. Tri-Society Virtual Conference on “Innovation in Plant Science and Agricultural Resilience”. July 5-9, 2021, Canada – Virtual (Oral).
5. Wu, J., M. Nadeem, D. Sveshnikov, R. Thomas, L. Galagedara and [M. Cheema](#) (2021). Effects of low temperature stress on physiological and biochemical processes of silage-corn genotypes. Tri-Society Virtual Conference on “Innovation in Plant Science and Agricultural Resilience”. July 5-9, 2021, Canada – Virtual (Poster 2nd position).
6. Javed B, M. M. Farhain, T. Wickremasinghe, Y. Katanda, R. Thomas, L. Galagedara, X. Guo and [M. Cheema](#) (2021). Wood ash and paper sludge: Potential liming and nutrient sources for podzolic soils. Tri-Society Virtual Conference on “Innovation in Plant Science and Agricultural Resilience”. July 5-9, 2021, Canada – Virtual (Oral).
7. Nzwinda, T. A. M., Y. Katanda, M. Nadeem, S. Ellsworth, R. Thomas, L. Galagedara and [M.](#)

- [Cheema](#) (2021). The effects of nitrogen fertilizer stabilizers on the growth, yield, and feed quality of silage corn in a boreal climate. Tri-Society Virtual Conference on “Innovation in Plant Science and Agricultural Resilience”. July 5-9, 2021, Canada – Virtual (Oral).
8. Faran, M., M. Nadeem, C. Manful, A. Unc, L. Galagedara and [M. Cheema](#) (2021). Potential of dairy digestate as a biofertilizer: Effects on growth, yield and phytochemical profile of lettuce in hydroponics. Tri-Society Virtual Conference on “Innovation in Plant Science and Agricultural Resilience”. July 5-9, 2021, Canada – Virtual (**Poster 2nd position**).
 9. Illawathure, C., Galagedara, L., [Cheema, M.](#), Unc, A., Kavanagh, V. (2021). Estimating the capillary height in a boreal podzolic soil field using ground penetrating radar. 5th CIGR International Conference 2020 on “Integrating Agriculture and Society through Engineering”, May 11-14, 2021, Quebec, Canada – Virtual (Oral).
 10. Farhain, M., [Cheema, M.](#), Katanda, Y., Nadeem, M., Javed, B., Thomas, R., Galagedara, L. (2021). Assessment of hydrological properties of soil-based growth media using wood ash, paper sludge and biochar. 5th CIGR International Conference 2020 on “Integrating Agriculture and Society through Engineering”, May 11-14, 2021, Quebec, Canada – Virtual (Oral).
 11. Farhain, M., [Cheema, M.](#), Katanda, Y., Nadeem, M., Javed, B., Mushtaq, I., Thomas, R., Galagedara, L. (2021). Heavy metals leaching potential and water flow simulation of NL podzolic soil amended with wood ash, paper sludge and biochar in boreal ecosystem. 5th CIGR International Conference 2020 on “Integrating Agriculture and Society through Engineering”, May 11-14, 2021, Quebec, Canada – Virtual (Oral).
 12. Sabrina Ellsworth, Yeukai Katanda, Xiaobin Guo, Vanessa Kavanagh, Lakshman Galagedara, Raymond Thomas, and [Mumtaz Cheema](#) (2020). The Effects of Nitrogen Fertilizer Stabilizers on Mineral Nitrogen Dynamics and Greenhouse Gas Emissions under Various Crop Rotations within a Boreal Climate. Sustainability of Canadian Agriculture: Farming for Solutions. March 12-13, 2020, Holiday Inn Express and Suites, Saskatoon, SK.
 13. Waqar Ashiq, M. Nadeem, J. Wu, L. Galagedara, R. Thomas, V. Kavanagh, [M. Cheema](#) (2020). Biochar amendment mitigates global warming potential, greenhouse gas intensity and nitrogen losses in dairy manure based agricultural soil under boreal climate. Sustainability of Canadian Agriculture: Farming for Solutions. March 12-13, 2020, Holiday Inn Express and Suites, Saskatoon, SK.
 14. Muhammad Faran, M. Nadeem, A. Unc, L. Galagedara, [M. Cheema](#) (2020). Organic media amendments enhance superior bioactive phytochemical profile in vegetables. International Horticulture Conference (IHC 2020), Feb. 26-18, 2020, University of Punjab, Lahore, Pakistan.
 15. Muhammad Faran, M. Nadeem, A. Unc, L. Galagedara, [M. Cheema](#) (2020). Ammonium toxicity inhibits root growth of lettuce in hydroponic under controlled environmental conditions. International Conference at the College of Earth and Environmental Sciences, March 4-6, 2020, University of the Punjab, Lahore, Pakistan.
 16. [Cheema, M.](#), W. Ali, M. Nadeem, W. Ashiq, M. Zaem, S. Gillani, S. Khamseh, V. Kavanagh, R. Thomas (2019). Evaluating the effects of organic and inorganic phosphorus amendment on soil biochemical and microbial characteristic in podzol following silage corn cultivation under boreal climate. Plant Canada 2019, July 7-10, University of Guelph, ON, Canada
 17. Zachary H, R. Thomas, [Cheema, M.](#), Lakshman Galagedara (2019). Development and testing of

- glacial sediment as a suitable growth medium for vegetable production. In: Abstract Booklet of Joint Annual Meeting of the CSSS-CSAFM, June 9-13, University of Saskatchewan, Saskatoon, SK, Canada.
18. Manful, C, Vidal, N.P, Pham, T, Debnath, S, Doody, K, Simms, D, Ellsworth, S, Cheema, S., [Cheema, M](#), Stewart, P, Thomas, R. (2019). The nutritional and sensory characteristics of 33 novel blueberry hybrids obtained from crosses between Newfoundland wild berries and commercial high bush blueberries of wild and hybrid Newfoundland blueberries. CIFST 2019, May 22-24, Halifax, Nova Scotia, Canada.
 19. W. Ali, M. Nadeem, R. Thomas, V. Kavanagh, A. Unc, [Cheema, M](#). (2018). Evaluating forage production and quality of silage corn genotypes under different phosphorus sources. Our Food Our Future, Research Symposium, 4th biennial agriculture symposium, Nov. 22-23, 2018 Corner Brook, NL.
 20. Ashiq, W, W. Ali, M. Nadeem, M. Zaeem, S. M. Gillani, J. Wu, L. Galagedara, V. Kavanagh and [Cheema, M](#). (2018). Potential of biochar in reducing greenhouse gases flux and nitrogen losses in silage corn cropping systems under organic and inorganic amendments. ASA-CSSA-CSA meeting, Enhancing Productivity in a Changing Climate, Nov. 4-7, 2018, Baltimore, MD.
 21. Prieto-Vidal, N., Pham, H., Manful, C., Pumphrey, R., Nadeem, M., Galagedera, L., [Cheema, M](#), Leke-Aladekoba, A., Natesh, N., Abbey, L., and Thomas, R. (2018). Effects of natural media amendments on the functional lipids of kale grown under control environment production system. European Federation for the Science and Technology of Lipids Conference, Belfast, UK, Sept 16-19.
 22. Zaeem, M., Nadeem, M., Pham, T., Vidal, N., [Cheema, M](#), Galagedera, L., and Thomas, R. (2018). Microbial phospholipid fatty acids indicate silage corn intercropped with forage soybeans enhanced the active microbial community structure and forage in cool climate production system. European Federation for the Science and Technology of Lipids Conference, Belfast, UK, Sept 16-19.
 23. Badewa, E., Unc, A., [Cheema, M](#), Galagedera, L. (2018). Temporal stability of Apparent Electrical Conductivity (ECa) in Managed Podzols (POSTER - 146). CSBE/SCGAB AGM and Technical Conference - 2018, Guelph, "Greening the Globe: Sustainability through Innovation", July 22-25, 2018 - Guelph, Ontario, Canada.
 24. Vermooten, M., Wanniarachchi, D., [Cheema, M](#), Muhammad, N., Kavanagh, V., Galagedera, L. (2018). Assessment of physicochemical properties of a loamy sand soil treated with dairy manure and biochar in Western Newfoundland. CSSS_01. In: 2018 Joint Meeting Abstract Booklet, CGU-CSSS-CIG-ES-SSA-CSAFM, June 10-14, Niagara Falls, ON, Canada. DOI: 10.13140/RG.2.2.11862.75844
 25. Wanniarachchi, D., Unc, A., [Cheema, M](#), Galagedera, L. (2018). Effect of Biochar on TDR based Volumetric Soil Moisture Measurements in a Loamy Sand Soil. CSSS_01. In: 2018 Joint Meeting Abstract Booklet, CGU-CSSS-CIG-ES-SSA-CSAFM, June 10-14, Niagara Falls, ON, Canada. DOI: 10.13140/RG.2.2.35350.86088
 26. Wanniarachchi, D., [Cheema, M](#), Thomas, R., Kavanagh, K., Galagedera, L. (2018). Impact of Soil Amendments on Field Hydraulic Conductivity of Loamy Sand Soils in Western

- Newfoundland. CSSS_05. In: 2018 Joint Meeting Abstract Booklet, CGU-CSSS-CIG-ES-SSA-CSAFM, June 10-14, Niagara Falls, ON, Canada. DOI: 10.13140/RG.2.2.24445.67040
27. Thu. H. P, Pumphrey, R., Zaeem, M., Nadeem, Prieto-Vidal, N., [Cheema, M](#), Thomas, R., (2018). Targeting modified lipids by hydrophilic interaction and reverse phase liquid chromatography coupled to high resolution tandem mass spectrometry. American Society of Mass Spectrometry. June 3-7, San Diego, California.
 28. Badewa, E., Galagedara, L., Altdorff, D., [Cheema, M](#), Kavanagh, V., Unc, A. 2017. Soil moisture mapping using multi-coil and multi-frequency EMI sensors on managed podzols. Annual meeting of Canadian society of soil science-2017, June 10-14, Trent University, Peterborough, Ontario. P 102.
 29. Zaeem, M., Nadeem, M., Ashiq, W., Ali, W., Gillani, S.M., Pham, H., Kavanagh, V., Elavarthi, S., [Cheema, M](#), Galagedara, L., Thomas, R. (2017). Relationship between rhizosphere soil acid phosphatase activities and forage production in silage corn and soybean intercropping in cool climate. Canadian Journal of Plant Pathology. 39(4), 540- 586. Doi: 10.1080/07060661.2017.1386378.
 30. Ali, W*, Ashiq, W., Nadeem, M., Zaeem, M., Gillani, S.M., Kavanagh, V., Unc, A., Thomas, R., [Cheema, M](#) (2017). Effects of phosphorus sources on soil phosphatase activity, phosphorus availability and dry matter production of corn silage. Canadian Journal of Plant Pathology 39(4), 540-586. Doi: 10.1080/07060661.2017.1386378.
 31. Ashiq, W., Ali, W., Nadeem, M., Zaeem, M., Gillani, S.M., Wu, J., Galagedara, L., Kavanagh, V., [Cheema, M](#) (2017). Effects of phosphorus sources on soil phosphatase activity, phosphorus availability and dry matter production of corn silage. Canadian Journal of Plant Pathology 39(4), 540-586. Doi: 10.1080/07060661.2017.1386378.
 32. [Cheema, M](#), Nadeem, M., Pham, M., Thomas, R., Galagedara, L., Kavanagh, V. (2017). Genotypic variations in root plasma membrane lipidome of silage corn grown under cool climatic production systems. Canadian Journal of Plant Pathology, 39(4), 540-586. Doi: 10.1080/07060661.2017.1386378.
 33. W. Ashiq, W. Ali, M. Nadeem, J. Wu, L. Galagedara, V. Kavanagh and [Cheema, M](#). Evaluating the impact of biochar in mitigating greenhouse gases emission in dairy manure based corn silage cropping system in Newfoundland. 2nd Agriculture and Climate Change Conference: Climate ready resource use-efficient crops to sustain food and nutritional security, March 26-28, 2017, Meliá Sitges, Sitges, Spain.
 34. Galagedara, L., Unc, A., [Cheema, M](#). 2016. Improving soil hydrology and soil health through cover crops, Our Food Our Future, Research Symposium, Nov. 2-4, 2016, St. John's NL.
 35. Nadeem, M., W. Ali, W. Ashiq, R. Thomas, V. Kavanagh and [Cheema, M](#). 2016. Profiling of root exudates in corn silage genotypes, Our Food Our Future, Research Symposium, Nov. 2-4, 2016, St. John's NL.
 36. Thu H. P., E. Wheeler., M. Nadeem., V. Kavanagh., M. Zaeem., [Cheema, M](#) and R. Thomas. 2016. Functional foods: A potential niche for Newfoundland and Labrador agriculture and food industry, Our Food Our Future, Research Symposium, Nov. 2-4, 2016, St. John's NL.
 37. Emmanuel, B, Altdorff, D., Unc, A., [Cheema, M](#), Kavanagh, V., Galagedara, L. 2016. Mapping

- spatio-temporal variability of apparent electrical conductivity under different land uses, Our Food Our Future, Research Symposium, Nov. 2-4, 2016, St. John's NL.
38. Ramasamy, A., McCall, C., Galagedara, L., [Cheema, M.](#), Kavanagh, V., Unc, A. 2016. Soil microbial diversity and function around and within a long term agricultural plot in Newfoundland, Our Food Our Future, Research Symposium, Nov. 2-4, 2016, St. John's NL.
 39. [Cheema, M.](#), Nadeem, M., Unc, A., Galagedara, L., Kavanagh, V. 2016. Evaluating the biomass production potential of corn silage (*Zea mays* L.) genotypes under varying manure based phosphorus applications in Newfoundland, Our Food Our Future, Research Symposium, Nov. 2-4, 2016, St. John's NL.
 40. Ashiq, W., Ali, W., Zaeem, M., Gillani, S.M., Nadeem, M., Kavanagh, V., Galagedara, L., Unc, A., Wu, J., [Cheema, M.](#) 2016. Does biochar mitigate greenhouse gases emission and nitrogen losses in dairy manure-based corn silage production system? Our Food Our Future, Research Symposium, Nov. 2-4, 2016, St. John's NL.
 41. Ali, W., Ashiq, W., Zaeem, M., Gillani, S.M., Nadeem, M., Kavanagh, V., Galagedara, L., Thomas, R., [Cheema, M.](#) 2016. Spatial and temporal profiling of corn silage root traits under manure and phosphorus fertilizer supplies in field conditions, Our Food Our Future, Research Symposium, Nov. 2-4, 2016, St. John's NL.
 42. Unc A, Galagedara L, [Cheema, M.](#), Kavanagh V. 2016. Known and unknown in plant agriculture in Newfoundland and Labrador, 9th International conference of the circumpolar Agricultural Association, Oct. 6-8, Reykjavik, Iceland.
 43. [Cheema, M.](#), M. Nadeem, J. Wu, L. Galagedara, A. Unc, and V. Kavanagh. 2016. Estimating greenhouse gas fluxes from dairy manure based silage corn cropping systems in western Newfoundland. CMOS Congress & joint CGU Annual Meeting, monitoring of and adapting to extreme events and long-term variations. May 29 - June 2, 2016, Fredericton NB.
 44. Galagedara, L., Diamond, N., Unc, A., [Cheema, M.](#), Altdorff, D., Muhammad, N. 2016. Water retention properties of agricultural soils in Western Newfoundland Amended with Biochar. CMOS Congress & joint CGU Annual Meeting, May 29 - June 2, 2016, Fredericton, NB.
 45. [Cheema, M.](#), A. M. Nadeem, A. Unc, L. Galagedara, and Vanessa Kavanagh. 2015. Sustainability of silage corn production system: The opportunities and necessities in western Newfoundland and Labrador. Collaboration for Sustainable Communities, Nov. 13, GCSU Student Lounge, Grenfell Campus, Memorial University, Corner Brook, NL.
 46. Galagedara L., Unc A., Altdorff, D., [Cheema, M.](#), Vanessa, K., 2015. Can soil properties be mapped without drilling? An introduction to non-invasive proximate soil sensing? International Year of Soils, soil health for sustainable life, Oct.14-15, 2015, Corner Brook, NL.
 47. Unc A, Galagedara L, [Cheema, M.](#), Krishnapillai M, Kavanagh V. 2015. Expanding plant agriculture in Newfoundland and Labrador; a story of uncertainties. NewLeaf 2015, Newfoundland & Labradors Green Economy Conference, Oct 8-9, St. John's NL.
 48. Unc A, Galagedara L, [Cheema, M.](#), Altdorff D. 2015. Soils and their fertility. What is so different about Newfoundland? Soils and their fertility; what is so different about Newfoundland? Health for Sustainable Life, Soils Symposium in Celebrating 2015 International Year of Soils, Oct. 14-15, 2015, Corner Brook, NL

49. [Cheema, M](#), B. Hussain, M. F. Saleem, M. A. Wahid, M. Farooq. 2015. Thiourea improves drought resistance in maize by modulating water relations, nutrients, and proline accumulation. Botany 2015, Science and plants for people, July 25 - 29, 2015 Edmonton, Alberta, Canada.
50. [Cheema, M](#), A. Unc, R. Thomas, L. Galagedara and V. Kavanagh. 2015. Evaluating the performance of silage corn genotypes for biomass production and P acquisition following dairy manure application. FARM Research Symposium, Food Futures NL. May 9, 2015, Beatrice Watts Boardroom, St. John's, NL.
51. Thomas, R, [Cheema, M](#), L. Galagedara, and A. Unc. 2015. Agriculture Research Capabilities of the New Boreal Ecosystem Research Facility at Grenfell Campus - Memorial University. FARM Research Symposium, Food Futures NL. May 9, 2015, Beatrice Watts Boardroom, St. John's, NL
52. Unc A, [Cheema, M](#), R. Thomas, L. Galagedara, V. Kavanagh. 2015. Microbial Ecology for Food Security and Environmental Sustainability; Challenges and Opportunities. FARM Research Symposium, Food Futures NL. May 9, 2015, Beatrice Watts Boardroom, St. John's, NL
53. Galagedara, L, A. Unc, [Cheema, M](#), R. Thomas. 2015. Mapping spatio-temporal variability of soil properties using near surface geophysics in agricultural fields in Western Newfoundland. FARM Research Symposium, Food Futures NL. May 9, 2015, Beatrice Watts Boardroom, St. John's, NL.
54. Thomas, R, [Cheema, M](#), A. Unc and C. McCall. 2014. Potential consideration for soybean production in Newfoundland and Labrador. In 2nd biennial symposium of Natural Sources, Our food Our future, Research Symposium, Nov.4-6 Corner Brook, NL.
55. [Cheema, M](#), R. Thomas, A. Unc and C. McCall. 2014. Hydroponic greenhouse vegetable production technologies; opportunities and options in Newfoundland and Labrador. In 2nd biennial symposium of Natural Sources "Our food Our future" Research Symposium, Nov.4-6 Corner Brook, NL.
56. Wahid, M. A, M. Saleem, M. F. Saleem, [Cheema, M](#), A. Sattar, A. Shakeel and H. Z. Khan. 2014. Influence of soil applied Boron on growth, boll retention and yield of three cotton genotypes. In International Annual Meetings of ASA-SSSA-CSSA, Grand challenges, Great solutions, Nov.2-5 Long Beach, CA.
57. Saleem, M. F, M. F. Bilal, [Cheema, M](#), M. A. Wahid, H. Z. Khan, A. Saeed and F. Rasul. 2014. Effect of fruiting branch/square removal on BT cotton under different nitrogen rates. In International Annual Meetings of ASA-SSSA-CSSA, Grand challenges, Great solutions, Nov.2-5 Long Beach, CA.
58. [Cheema, M](#), A. Sattar, S. M. A. Basra, M. F. Saleem and M. A. Wahid. 2014. Foliar applied Silicon improves water relations, chlorophyll contents and antioxidants in late wheat planting. In International annual meetings of ASA-SSSA-CSSA, Grand challenges, Great solutions, Nov.2-5 Long Beach, CA.
59. Unc, A, [Cheema, M](#), R. Thomas, V. Kavanagh. 2014. Soil Based Ecosystem Services Following Land-Use Changes from Forestry to Agriculture; Future Research Opportunities in Newfoundland and Labrador. SSSA's Ecosystems Conference, Soil's Role in Restoring

- Ecosystem Services. March 6-9, Sacramento CA
60. [Cheema, M.](#), 2011. Comparative response of maize hybrids to composted and non- composted poultry manure under different irrigation regimes. In International Annual Meetings of ASA-SSSA-CSSA, Fundamental for life: Soil, Crop, & Environmental Sciences, Oct. 16-19 San Antonio, TX.
 61. Saleem, M.F, M. F. Bilal, [Cheema, M.](#), A. Shakeel. M. A. Wahid and S. A. Anjum. 2011. Varietal comparisons of Bt and non-Bt cotton (*Gossypium hirsutum* L.) under different sowing dates and nitrogen rates. In international Annual Meetings of ASA-SSSA-CSSA, Fundamental for life: Soil, Crop, & Environmental Sciences, Oct. 16-19, San Antonio, TX,
 62. Wahid, M. A, W. Ahmad, [Cheema, M.](#), M. F. Saleem and A. Sattar. 2011. Impact of foliar applied Boron on yield components of Spring Maize (*Zea mays* L.) under drought conditions. In International Annual Meetings of ASA-SSSA-CSSA, Fundamental for life: Soil, Crop, & Environmental Sciences, Oct. 16-19San Antonio, TX,
 63. Saleem, M.F, [Cheema, M.](#), A. Shakil, H. Z. Khan, M. F. Bilal. 2011. Heat tolerance of Bt and non-Bt cotton (*Gossypium hirsutum* L.) under varying nitrogen rate. Plant Canada, Saint Mary's University, July 17-21 Halifax, Nova Scotia.
 64. Saleem, M.F, A. Sammar, [Cheema, M.](#), S. A. Anjum, M. Q. Shahid, F. Rasul, H. Z. Khan. 2010. Interactive effect of GB and K in improving drought tolerance potential in wheat. International Annual Meetings of ASA-SSSA-CSSA, Green Revolution 2.0; Food+ Energy and Environmental Security, Oct. 31 - Nov. 4, Long Beach, CA.
 65. [Cheema, M.](#), M. Saleem, M. A. Wahid, M.F. Saleem and A. Sattar. 2010. Improving the yield and quality of spring planted sugarcane through nitrogen management. International Annual Meetings of ASA-SSSA-CSSA Green Revolution 2.0; Food+ Energy and Environmental Security, Oct. 31 - Nov. 4, Long Beach, CA
 66. Wahid. M.A, [Cheema, M.](#), M.F. Saleem, A. Sattar and B. H. Babar. 2010. Influence of cattle manure and phosphorus fertilizer on fatty acid composition of canola. International Annual Meetings of ASA-SSSA-CSSA, Green Revolution 2.0; Food+ Energy and Environmental Security, Oct. 31 - Nov. 4, Long Beach, CA.
 67. Afzal, I, S. M. A. Basra, [Cheema, M.](#), and M.T. Tariq. 2009. Hormonal priming: a terrific approach to improve salt tolerance in wheat. In 8th Int. Conf. Eco-Physiological aspects of plants responses to stress factors. Sept. 16-19 Cracow, Poland.
 68. Wahid. M. A, N. Muhammad., [Cheema, M.](#), M. F. Saleem, Z. A. Cheema, M. Farooq, M. Zaman and B. H. Baig. 2009. International Annual Meetings ASA-SSSA- CSSA, Footprints in the landscape: Sustainability through Plant and Soil Sciences, Nov.1-5, Pittsburg, PA.
 69. Saleem, M. F, A. Ghaffar, H. Z. Khan, [Cheema, M.](#), M. A. Wahid, and S. Hussain. 2009. Yield and quality of sugarcane as influenced by higher dose of Potash and time of application. International Annual Meetings ASA-SSSA-CSSA, Footprints in the landscape: Sustainability through Plant and Soil Sciences Nov.1-5, Pittsburg, PA.
 70. [Cheema, M.](#), A. Ghaffar., M. F. Saleem., M. A. Wahid., B. H. Babar and S. Hussain. 2009. Growth and yield response of sugarcane as influenced by Potassium management. International Annual Meetings ASA-SSSA-CSSA, Footprints in the landscape: Sustainability through Plant

and Soil Sciences Nov.1-5, Pittsburg, PA.

71. [Cheema, M.](#), J.S. Dar, M.A. Wahid, M.F. Saleem and M. Hussain. 2008. Improving the achene yield, oil contents and nutrient uptake in spring planted Sunflower (*Helianthus annuus* L.). Joint International annual meetings of ASA, SSSA, CSSA, Celebrating the International year of Planet Earth, Oct.5-9 Houston, TX.
72. M. A. Wahid, [Cheema, M.](#), A. P. Mollarino, J. S. Dar and M. F. Saleem. 2008. Enhancing yield and Phosphorus uptake of Canola hybrids through integrated use of manure fertilizer phosphorus. Joint International annual meetings of ASA, SSSA, CSSA, Celebrating the International year of Planet Earth, Oct.5-9 Houston TX.
73. [Cheema, M.](#), L. R. Gibson and J. L. Jannink. 2007. Genotypic response to early and late planting in winter triticale. International Annual Meetings ASA-CSSA-SSSA, A century of Integrating Crops, Soils, and Environment, Nov. 4-8 New Orleans, LA.

1.6.5. Presentations in national and International Conferences and Professional Society Meetings

1. [Mumtaz Cheema](#) (2021). **Keynote speech** - Sustainable solid waste management practices: challenges and opportunities for high value crop production. 3rd International Conference on Emerging Trend in Earth & Environmental Sciences Nov. 16-19, 2021, PU, LHR, Pakistan
2. [Mumtaz Cheema](#) (2021). **Keynote speech** - Rooting for net zero-emissions: Building climate resilient cropping systems to achieve global food security. 1st International Conference on “Innovations in Agriculture to Ensure Global Food Security” Nov. 10, 2021, IUB, Pakistan
3. [Mumtaz Cheema](#) (2021). Evaluating paper industry waste products for liming and nutrient source for high value crop production under controlled environment. Corner Brook Pulp & Paper Mill Forum, Oct. 28-29, 2021.
4. Javed B, M. M. Farhain, T. Wickremasinghe, Y. Katanda, R. Thomas, L. Galagedara, X. Guo and [M. Cheema*](#) (2021). Effect of wood ash, sludge, and biochar on heavy metals mobility in plant soil system of annual ryegrass and kale. Tri-Society Virtual Conference on “Innovation in Plant Science and Agricultural Resilience”. July 5-9, 2021, Canada – Virtual (Oral).
5. Farhain, M. M.; [Cheema, M.](#), Nadeem, M.; Katanda, Y.; Javed, B.; Thomas, R.; Galagedara, L. 2021. Assessment of hydrological properties of soil-based growth media using wood ash and paper sludge. "The 22nd Annual Aldrich Interdisciplinary Conference, Memorial University of Newfoundland" Aug 16-25, 2021, St. John's, Canada – Virtual (Oral).
6. Nadeem, M., O. A. Adigun, C. F. Manful, T. H. Pham, R. Thomas, [M. Cheema](#) (2021). Potential role of root neutral lipids in mediating forage soybean acclimation to cultivation on acidic soil in boreal climate. Tri-Society Virtual Conference on “Innovation in Plant Science and Agricultural Resilience”. July 5-9, 2021, Canada – Virtual (Oral).
7. Javed, B., M. M. Farhain, T. Wickremasinghe, Y. Katanda, R. Thomas, L. Galagedara, X. Guo and [M. Cheema](#) (2021). Wood ash and paper sludge: Potential liming and nutrient sources for podzolic soils. Tri-Society Virtual Conference on “Innovation in Plant Science and Agricultural Resilience”. July 5-9, 2021, Canada – Virtual (Oral).
8. Nzwinda, T. A. M., Y. Katanda, M. Nadeem, S. Ellsworth, R. Thomas, L. Galagedara and [M. Cheema](#) (2021). The effects of nitrogen fertilizer stabilizers on the growth, yield, and feed

- quality of silage corn in a boreal climate. Tri-Society Virtual Conference on “Innovation in Plant Science and Agricultural Resilience”. July 5-9, 2021, Canada – Virtual (Oral).
9. [Cheema Mumtaz](#) (2021). **Keynote speech** on Ecosystem Restoration, Nature based solution dialogue - Building momentum for change. International virtual conference, World Environment Day, June 5, 2021, YPARD, Pakistan.
 10. [Cheema Mumtaz](#) (2021). **Keynote speech** on Carbon sequestration for mitigating climate change. UN Independent Dialogue “Transforming food system through Climate Smart Agriculture Practices”. May 25, 2021, University of Punjab, Lahore, Pakistan - Virtual.
 11. Illawathure, C., Galagedara, L., [Cheema, M.](#), Unc, A., Kavanagh, V. (2021). Estimating the capillary height in a boreal podzolic soil field using ground penetrating radar. 5th CIGR International Conference 2020 on “Integrating Agriculture and Society through Engineering”, May 11-14, 2021, Quebec, Canada – Virtual (Oral).
 12. Farhain, M., [Cheema, M.](#), Katanda, Y., Nadeem, M., Javed, B., Thomas, R., Galagedara, L. (2021). Assessment of hydrological properties of soil-based growth media using wood ash, paper sludge and biochar. 5th CIGR International Conference 2020 on “Integrating Agriculture and Society through Engineering”, May 11-14, 2021, Quebec, Canada – Virtual (Oral).
 13. Farhain, M., [Cheema, M.](#), Katanda, Y., Nadeem, M., Javed, B., Mushtaq, I., Thomas, R., Galagedara, L. (2021). Heavy metals leaching potential and water flow simulation of NL podzolic soil amended with wood ash, paper sludge and biochar in boreal ecosystem. 5th CIGR International Conference 2020 on “Integrating Agriculture and Society through Engineering”, May 11-14, 2021, Quebec, Canada – Virtual (Oral).
 14. [Cheema Mumtaz](#) and **Kelly Vodden** (2021). Supporting sustainable food systems through research and innovation. NLFA annual meeting (virtual), Feb. 1, 2021.
 15. [Cheema Mumtaz](#) (2021). Agricultural initiatives at Grenfell Campus MUN. **Invited research talk** to Liberal Caucus (MPs, Premier and ministers of NL). Jan. 18, 2021, Grenfell Campus, Memorial University, NL.
 16. [Cheema Mumtaz](#) (2020). Transforming Subsistence Farming to Sustainable Agriculture Enterprise. **Keynote speaker** in UK-Pakistan Science and innovation Global Network (UPSIGN), Nov. 30, 2020.
 17. Farhain, M. M.; [Cheema, M.](#); Katanda, Y.; Nadeem, M.; Javed, B.; Thomas, R.; Galagedara, L. 2020. Assessment of physicochemical properties of growth media based on wood ash and sludge in combination with biochar. CSBE/SCGAB Webinar series 2020 (Virtually presented on Nov-20-2020).
 18. [Cheema Mumtaz](#) (2020). Food and Agriculture activities at Grenfell. Grenfell Matters, May 14, 2020, Grenfell Campus, Memorial University, NL.
 19. W. Ashiq, M. Nadeem, J. Wu, L. Galagedara, V. Kavanagh and [M. Cheema](#) (2020). Biochar amendment mitigates global warming potential, greenhouse gas intensity and nitrogen losses in dairy manure based agricultural soil under boreal climate. Sustainability of Canadian Agriculture Conference – Farming for solutions, March 12-13, 2020, Holiday Inn Express and Suites, Saskatoon, SK.

20. W. Ashiq, W. Ali, M. Nadeem, M. Zaeem, S. M. Gillani, J. Wu, L. Galagedara, V. Kavanagh and [M. Cheema](#) (2020). Biochar mitigates global warming potential and greenhouse gases flux in corn cropping systems under boreal climate. **Keynote speaker** in Smart Plantation - an ultimate solution to climate change” March 2-4, 2020, LCWU, Lahore.
21. [Cheema Mumtaz](#) (2020). Organic media amendments enhance superior bioactive phytochemical profile in vegetables. **Keynote speaker** at International Horticulture Conference (IHC 2020), Feb. 26-18, 2020, University of Punjab, Lahore, Pakistan.
22. Faran M, M. Nadeem, A. Unc, L. Galagedara, [Mumtaz Cheema](#) (2020). Ammonium toxicity inhibits root growth of lettuce in hydroponic under controlled environmental conditions. **Keynote speech** in International Conference at the College of Earth and Environmental Sciences, March 4-6, 2020, University of the Punjab, Lahore, Pakistan.
23. Faran M, M. Nadeem, L. Galagedara, A. Unc and [M. Cheema](#) (2020). Assessing the nutrient value and utilization option of anaerobic dairy digestate for greenhouse vegetable production- Newfoundland and Labrador Federation of Agriculture, annual meeting 2020, January 29-30, Quality Hotel & Suites, Gandar, NL, Canada.
24. [Cheema, M.](#), W. Ali, M. Nadeem, W. Ashiq, M. Zaeem, S. Gillani, S. Khamseh, V. Kavanagh, R. Thomas (2019). Evaluating the effects of organic and inorganic phosphorus amendment on soil biochemical and microbial characteristic in podzol following silage corn cultivation under boreal climate. Plant Canada 2019, July 7-10, University of Guelph, ON, Canada.
25. Sey, A**, Pham T.H., Kavanagh V., Vidal, N.P [Cheema, M.](#) Galagedara, L., and Thomas, R., (2019). Cool Climatic conditions improved the nutritional value of Canola: Implications in the potential of canola as a high value niche crop for commercial production in Newfoundland and Labrador. Oral talk in CIFST 2019, May 22-24, Halifax, Nova Scotia, Canada.
26. W. Ashiq, W. Ali, M. Nadeem, M. Zaeem, S. M. Gillani, J. Wu, L. Galagedara, V. Kavanagh and [Cheema, M.](#) 2018. Potential of biochar in reducing greenhouse gases flux and nitrogen losses in silage corn cropping systems under organic and inorganic amendments. ASA-CSSA-CSA annual meeting, Enhancing Productivity in a Changing Climate, Nov. 4-7, 2018, Baltimore, MD.
27. [Cheema, M.](#) Enhancing phosphorus use efficiency in crops: Is it a pragmatic approach for sustainable agriculture? Keynote Invited Speaker in 6th International conference of Pakistan Phytopathological Society, Plant health for sustainable agriculture-A focused approach for food security under changing climate. Nov. 20-22, 2017, Bahauddin Zakariya University, Multan, Pakistan
28. [Cheema, M.](#), M. Nadeem, H. Pham, R. Thomas, L. Galagedara, V. Kavanagh. Genotypic variations in root plasma membrane lipidome of silage corn grown under cool climatic production systems. 2017. Joint Meeting of the Canadian Phytopathological Society and the Canadian Society of Agronomy, Crop production and Disease Management – Cultivating Ideas. June 18 -21, 2017, Winnipeg, Manitoba.
29. Ali, W., Ashiq, W., Nadeem, M., Zaeem, M., Gillani, S.M., Kavanagh, V., Unc, A., Thomas, R., [Cheema, M.](#) Effects of phosphorus sources on soil phosphatase activity, phosphorus availability and dry matter production of corn silage. Joint Meeting of the Canadian Phytopathological

- Society and the Canadian Society of Agronomy, Crop production and Disease Management – Cultivating Ideas. June 18 -21, 2017, Winnipeg, Manitoba.
30. W. Ashiq, W. Ali, M. Nadeem, J. Wu, L. Galagedara, V. Kavanagh and [Cheema, M.](#) Evaluating the impact of biochar in mitigating greenhouse gases emission in dairy manure-based corn silage cropping system in Newfoundland. Agriculture and Climate Change Conference: Climate ready resource use-efficient crops to sustain food and nutritional security, March 26-28, 2017, Meliá Sitges, Sitges, Spain.
 31. [Cheema, M.](#), M. Nadeem, A. Unc, L. Galagedara, and Vanessa Kavanagh. 2015. Sustainability of silage corn production system: The opportunities and necessities in west Newfoundland and Labrador, Collaboration for Sustainable Communities, Nov. 13, GCSU Student Lounge, Grenfell Campus, Memorial University, Corner Brook, NL.
 32. [Cheema, M.](#) Sustainable corn silage production in western Newfoundland. Presented at ACOA office at St. John’s NL. February 5, 2016
 33. Unc A, Galagedara L, [Cheema, M.](#), Krishnapillai M, Kavanagh V. 2015. Expanding plant agriculture in Newfoundland and Labrador; a story of uncertainties. NewLeaf 2015, Newfoundland & Labrador’s Green Economy Conference, Oct 8-9, 2015, St. John’s NL
 34. Unc A, Galagedara L, [Cheema, M.](#), Altdorff D. 2015. Soils and their fertility. What’s so different about Newfoundland? 2015. Soils and their fertility; what is so different about Newfoundland? Health for Sustainable Life, Soils Symposium in Celebrating 2015 International Year of Soils, Oct. 14-15, 2015, Corner Brook, NL
 35. [Cheema, M.](#), B. Hussain, M. F. Saleem, M. A. Wahid, M. Farooq. 2015. Thiourea improves drought resistance in maize by modulating water relations, nutrients and proline accumulation. Botany 2015, Science and plants for people, July 25 – 29, 2015 Edmonton, Alberta, Canada.
 36. [Cheema, M.](#) Overview of BERI. In water research exchange “A Water Quality Workshop” at Husky Energy Easter Seals House St. John’s, May 25, 2015.
 37. [Cheema, M.](#), A. Unc, R. Thomas, L. Galagedara and V. Kavanagh. 2015. Evaluating the performance of silage corn genotypes for biomass production and P acquisition following dairy manure application. FARM Research Symposium, Food Futures NL. May 9, 2015 Beatrice Watts Boardroom, St. John’s, NL.
 38. Thomas, R, [Cheema, M.](#), L. Galagedara, and A. Unc. 2015. Agriculture Research Capabilities of the New Boreal Ecosystem Research Facility at Grenfell Campus Memorial University. FARM Research Symposium, Food Futures NL. May 9, 2015 Beatrice Watts Boardroom, St. John’s, NL
 39. Unc, A, [Cheema, M.](#), Thomas R., Galagedara L., Kavanagh V. 2015. Microbial Ecology for Food Security and Environmental Sustainability; Challenges and Opportunities. FARM Research Symposium, Food Futures NL. May 9, 2015 Beatrice Watts Boardroom, St. John’s, NL
 40. Galagedara, L, A. Unc, [Cheema, M.](#), R. Thomas. 2015. Mapping spatio-temporal variability of soil properties using near surface geophysics in agricultural fields in Western Newfoundland. FARM Research Symposium, Food Futures NL. May 9, 2015, Beatrice Watts Boardroom, St. John’s, NL.

41. Thomas, R, [Cheema, M](#), A. Unc and C. McCall. 2014. Potential consideration for soybean production in Newfoundland and Labrador. In 2nd biennial symposium of Forestry & Agrifoods Agency, Our food Our future, Nov.4-6 Corner Brook, NL.
42. [Cheema, M](#), R. Thomas, A. Unc and C. McCall. 2014. Hydroponic greenhouse vegetable production technologies; opportunities and options in Newfoundland and Labrador. In 2nd biennial symposium of Forestry & Agrifoods Agency, Our food Our future, Nov.4-6 Corner Brook, NL.
43. Wahid, M. A, M. Saleem, M. F. Saleem, [Cheema, M](#), A. Sattar, A. Shakeel and H. Z. Khan. 2014. Influence of soil applied Boron on growth, boll retention and yield of three cotton genotypes. In Annual Meetings of ASA-SSSA-CSSA, Grand challenges, Great solutions, Nov.2-5 Long Beach, CA.
44. Saleem, M. F, M. F. Bilal, [Cheema, M](#), M. A. Wahid, H. Z. Khan, A. Saeed and F. Rasul. 2014. Effect of fruiting branch/square removal on BT cotton under different nitrogen rates. In Annual Meetings of ASA-SSSA-CSSA, Grand challenges, Great solutions, Nov.2-5 Long Beach, CA.
45. [Cheema, M](#), A. Sattar, S.M.A. Basra., M. F. Saleem and M. A. Wahid. 2014. Foliar applied Silicon improves water relations, chlorophyll contents and antioxidants in late wheat planting. In annual meetings of ASA-SSSA-CSSA, Grand challenges, Great solutions, Nov.2-5 Long Beach, CA.
46. Unc, A, [Cheema, M](#), R. Thomas, V. Kavanagh. 2014. Soil based ecosystem services following land-use changes from forestry to agriculture; Future research opportunities in Newfoundland and Labrador. SSSA's Ecosystems Conference, Soil's Role in Restoring Ecosystem Services. March 6-9, Sacramento CA.US
47. [Cheema, M](#). Food security in Newfoundland and Labrador; Challenges and options. NLFA meeting, Jan. 29-31, 2014. Terra Nova Resort, NL. Canada.
48. [Cheema, M](#). Abiotic stress management strategies in field crops. Agricultural Research Advisory Committee (ARAC), Sep. 18, 2014. Atlantic cool climate crop research Centre, NL. Canada.

1.6.6. Conference Proceedings

14. [Cheema M](#), I. Afzal, S.M.A. Basra B. Hussain, H. Rehman, S. Mumtaz. 2010. Hormonal priming for inducing salt tolerance in wheat cultivars In: International Science Conference, Rawalakot, Pakistan, (July.21-23, 2010)
13. Baig. K. S, M. Arshad, Z. A. Zahir and [Cheema M](#). 2010. Relative efficacy of rhizobacterial isolates carrying either P solubilizing or ACC deaminase activity to promote growth of wheat and maize seedlings under axenic condition with rock phosphate as P. In: 13th Conference of soil science on efficient resources management for sustainable agriculture Faisalabad, Pakistan, (March 24-27, 2010)
12. Saleem, M. F, [Cheema M](#), H. Z. Khan, M. A. Wahid and M. F. Bilal. 2010. Effect of different phosphorous levels on the earliness and yield of cotton cultivars. In: 13th Conference of soil science on efficient resources management for sustainable agriculture, Faisalabad, Pakistan, (March 24-27, 2010)
11. Wahid, M.A, A. Hussain, [Cheema M](#), M. F. Saleem and A. Sattar. 2009. Effect of different

- levels of phosphorus on yield and quality of canola genotypes. In: International conference on sustainable food grain production: challenges & opportunities, University of Agriculture, Faisalabad, Pakistan (Oct. 26-27, 2009)
10. Sattar, A, [Cheema M](#), M. A. Wahid, M.F. Saleem and B.H. Babar. 2009. Performance of various wheat genotypes as affected by temperature under late sowing condition. In: International conference on sustainable food grain production: challenges and opportunities, University of Agriculture, Faisalabad, Pakistan, (Oct. 26-27, 2009)
 9. Sadiq, S, [Cheema M](#), M. A. Wahid, M. F. Saleem and A. Sattar. 2009. Comparative performance of various canola (*Brassica napus* L.) genotypes under Faisalabad condition. In: International conference on sustainable food grain production: challenges & opportunities, University of Agriculture, Faisalabad, Pakistan, (Oct. 26-27, 2009)
 8. [Cheema M](#), M.F. Saleem, M.A. Wahid, B.H. Babar and A. Sattar. 2009. Growth, yield and quality response of canola as affected by nitrogen and 30ulphur fertilization. In: International conference on sustainable food grain production: challenges and opportunities, University of Agriculture, Faisalabad, Pakistan, (Oct. 26-27, 2009)
 7. [Cheema M](#), M. A. Wahid, M. Farooq, B. H. Babar, A. Sattar, S. Hussain and M. Tariq. 2009. Growth, yield and quality response of three canola (*Brassica napus* L.) varieties as affected by different sources of phosphorus fertilizer. In: International conference on sustainable food grain production: challenges & opportunities. University of Agriculture, Faisalabad, Pakistan, (Oct. 26-27, 2009)
 6. M. A. Malik, [Cheema M](#) and M. Tahir. 2002. Impact of NPK fertilizers on the growth, seed yield and oil contents of canola. In: 33rd All Pak. Sci. Conf. held at University of Agriculture, Faisalabad, Pakistan
 5. Ali, A, M. Tanveer, M. Azam and [Cheema M](#). 2002. Growth and yield performance of chickpea under seed inoculation and phosphorus application. In: 33rd All Pak. Sci. Conf. held at University of Agriculture, Faisalabad, Pakistan.
 4. Basra, S. M. A, E. Ullah, E. A. Warraich, [Cheema M](#) and I. Afzal. 2002. Comparative growth and yield performance of freshly primed and stored after seed priming of canola (*Brassica napus* L.). In: 33rd All Pak. Sci. Conf. held at University of Agriculture, Faisalabad, Pakistan.
 3. [Cheema M](#) and M.A. Malik. 2000. Production efficiency of canola (*Brassica napus* L.) under different agro-management practices. Pak. J. Agric. Sci. 37(3-4): 20
 2. Tanveer, A, S. Ahmad, R. M. Iqbal and [Cheema M](#). Post emergence application of herbicides alone and in combination with urea for control of weeds in wheat 1994. In: 4th Pak. Weed Sci. Conf. University of Agriculture, Faisalabad, Pakistan, (March 26-27, 1994)
 1. Ahmad, S. Z. A. Cheema, A. Rehman, S. Mohsin and [Cheema M](#). Evaluation of some crop residues for the allelopathic effects on germination and growth of cotton and cotton weeds 1994. In: 4th Pak. Weed Sci. Conf. University of Agriculture, Faisalabad, Pakistan, (March 26-27, 1994).

1.7 Training of Highly Qualified Personals

1.7.1 Postdoctoral Fellows

Dr. Emily Doyle (Co-supervising with Dr Vodden).	October 4, 2021, to September 30, 2022. Food and agricultural research initiatives including the NL Living Lab major proposal. Oversee and undertake community engagement activities including working closely with Indigenous Liaisons on community initiatives for the project.
Dr. Yeukai Katanda	May 2019-Todate Research Topic: Low-input agriculture in cool climate boreal ecosystems.
Dr. Ibrahim Abu-Reidah (Co-supervising with Dr. Thomas)	March 2020 – To date Research Topic: Refugee farmers as a resource to improve secondary product development in the agriculture sector in NL
Dr. Muhammad Nadeem	March 2018-Dec. 2021 Research Topic: Assessment of the nutrient value and utilization options for anaerobic digestate obtained from a dairy liquid waste stream.
Dr. Muhammad Nadeem	May 2015- Feb. 2018 Research Topic: Biomass production and phosphorus acquisition from dairy manure in silage corn.
Dr. Nasir Masood	Department of Environmental Sciences, COMSATS University of Islamabad, Vehari Campus, Pakistan (Dec. 2018- March 2019).

1.7.2 Visiting PhD Students

Sanaz Rajabi-Khamseh	Shahrekord University, Shahrekord, Iran, June – December 2017 Research Topic: Effects of plant growth promoting rhizobacteria (PGPR) on morpho-physiological growth indices, yield and quality of linseed (<i>Linum usitatissimum</i> L.) under water deficit.
Hamide Ghafari	Shahrekord University, Shahrekord, Iran, January – August 2018 Research Topic: Effect of proline, jasmonic acid and vermicompost tea treatments on seed germination, physiological characteristics, yield and sugar quality of sugar beet (<i>Beta vulgaris</i> L.) under water deficit conditions

1.7.3 Current Graduate Students

1.7.3.1 PhD candidates

Kamal Islam Supervised by Dr. Galagedara	<i>MUN, Transdisciplinary Sustainability</i> Research Topic: Measuring the impacts of climate change on Humber River watershed and economic efficiency of small-scale organic farm in Western Newfoundland.
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Eric Fordjour	<i>MUN, Boreal Ecosystems and Agricultural Science Program, Spring 2021</i> Research Topic: Effects of Chaga nano-powder and Chaga nano-tea application on the growth, trichome yield and phytochemical profile of Cannabis.
Annabel Arnott Supervised by Dr. Galagedara	<i>MUN, Boreal Ecosystems and Agricultural Sciences (transferred to PhD BEAS Fall 2021).</i> Research Topic: The potential of rock dust tailings and native species combinations for mine site rehabilitation in boreal climate.
Albert Sey Supervised by Dr. Thomas	<i>MUN, Boreal Ecosystems and Agricultural Science Program</i> Research Topic: Production of animal and plant based functional foods in controlled environment production system.
Oludoyin Adigun Supervised by Dr. Thomas	<i>MUN, Environmental Science Program</i> Research Topic: Oxylipins as novel sources of soybean tolerance to <i>Phytophthora sojae</i> infection.

1.7.3.2 MSc Students – Committee Chair

Emmanuel Ikumoinin	<i>MUN, Environmental Science Program, MUN, Fall 2017</i> Research Topic: Improving shelf life and quality of greenhouse vegetables.
Jiaxu Wu	<i>MUN, Boreal Ecosystems and Agricultural Sciences (Winter 2019)</i> Research Topic: Physiological, biochemical and molecular response at early crop growth stage of silage corn under low temperature stress.
Owen Bartlett	<i>MUN, Boreal Ecosystems and Agricultural Sciences (Spring 2019)</i> Research Topic: Rock dust from mine waste as a natural media amendment to enhance production of high value horticultural crops under field conditions.
Therese A. Nzwinda	<i>MUN, Boreal Ecosystems and Agricultural Sciences (Fall 2019)</i> Research Topic: Effects of N fertilizer stabilizer on growth, yield and quality of forage crops in boreal climate.
Irfan Mushtaq	<i>MUN, Boreal Ecosystems and Agricultural Sciences (Winter 2020)</i> Research Topic: Effects of nitrogen fertilizer stabilizers on soil pH, N dynamics and microbial gene expression in different crop rotations in a boreal climate.
Sabrina Ellsworth	<i>MUN, Boreal Ecosystems and Agricultural Sciences (Fall 2019)</i> Research Topic: The effects of nitrogen fertilizer stabilizers on ammonia volatilization, greenhouse gas emissions, leaching, and soil mineral nitrogen dynamics under various cropping systems in boreal climate.
Muhammad Usman	<i>MUN, Boreal Ecosystems and Agricultural Sciences (Winter 2021)</i> Research Topic: The effects of nitrogen fertilizer stabilizers and crop rotation on soil carbon pool and enzymes in boreal climate.
Hafiz Usama Abid	<i>MUN, Boreal Ecosystems and Agricultural Sciences (Spring 2021)</i> Research Topic: Evaluating medium-term effects of biochar and dairy manure application on soil microbiome, carbon sequestration and nitrogen dynamics in silage corn production system under boreal climate.
Muhammad Musa	<i>MUN, Boreal Ecosystems and Agricultural Sciences (Winter 2021)</i> Research Topic: Evaluating phosphorus utilization efficiency of wheat under different phosphorus environments.
Abiodun Adelowokan	<i>MUN, Boreal Ecosystems and Agricultural Sciences (Winter 2021)</i>

	Research Topic: Assess growth performance of commonly consumed leafy vegetables and micro-greens under ebb & flow vertical garden hydroponic systems and comparing with market available hydroponic systems.
Gift Anyanwu	<i>MUN, Boreal Ecosystems and Agricultural Sciences (Spring 2021)</i> Research Topic: Optimization of rock dust media for the growth and development of horticultural crops
Sharjeel Ahmad	<i>MUN, Boreal Ecosystems and Agricultural Sciences (Winter 2022)</i> Research Topic: Assessing the potential of legume-cereal cover crop mixtures in silage corn rotation.
S. Jahanzaib Rasool	<i>MUN, Boreal Ecosystems and Agricultural Sciences (Winter 2022)</i> Research Topic: Assessing the potential of legume-cereal cover crop mixtures in faba bean rotation.

1.7.3.4 MSc Candidates – Co-supervisor/Committee Member

Abraham Armah Supervised by Dr. Thomas	<i>MUN, Boreal Ecosystems and Agricultural Sciences</i> Research Topic: Evaluating the potential of rock dust as a natural media amendment for vegetable production in control environment
Thilini Wickremasinghe Supervised by Dr. Thomas	<i>MUN, Boreal Ecosystems and Agricultural Sciences</i> Research Topic: The Effect of natural media amendments on Kale and Ryegrass under controlled environment: A quality and safety analysis and its health benefits.
Elham Fathidarehniyh Supervised by Dr. Galagedara	<i>MUN, Boreal Ecosystems and Agricultural Sciences Winter2021</i> Research Topic: Designing, fabrication and testing of hydroponic systems
Salman Supervised by Dr. Galagedara	<i>MUN, Boreal Ecosystems and Agricultural Sciences Winter2021</i> Research Topic: Effect of silage corn-based rotations and N inhibitors on physicochemical properties of soil, crop growth and forage yield.
Menama Rallage, Indeewari Ashirwadini Supervised by Dr. Galagedara	<i>MUN, Boreal Ecosystems and Agricultural Sciences Winter2021</i> Research Topic: Investigating the effects of compost from paper mill and fish wastes combined with chemical fertilizer on soil greenhouse gas emissions and N transformations.
Olivia Barry Supervised by Dr. Thomas	<i>MUN, Boreal Ecosystems and Agricultural Sciences Spring 2021</i> Research Topic: Effects of Chaga based growth media on the growth, trichome yield and phytochemical profile of Cannabis.

1.7.3.5 Summer Students/MUCEP/WISE

Melanie Kennedy	MUN-GC, Environmental Science – MUCEP (Winter 2022)
Melanie Kennedy	MUN-GC, Environmental Science – MUCEP (Fall 2021)
Claire Brenton	MUN, Grenfell, Environmental Science (Biology) – CSJ - 2021
Claire Brenton	MUN, Grenfell, Environmental Science (Biology) – CSJ - 2019
Tanay B. Sarkar	MUN, Environmental policy Institute
Brandy Burden	Woman in Science and Engineering program (WISE), GovNL (2019)
Jodi Young	MUN Grenfell, Environmental Science, MUCEP 80 hours (Winter 2019)

Jodi Young	MUN Grenfell, Environmental Science, MUCEP 80 hours (Fall 2018)
Skylar Skinner	MUN Grenfell, Sustainable Resource Management, MUCEP 80 hours (Winter 2018)
Christopher Ratcliffe	MUN Grenfell, Sustainable Resource Management, MUCEP 80 hours (Fall 2017)
Kelsey Allan	Woman in Science and Engineering program (WISE), GovNL (2015)
F. I. M. Muktadir	Teaching assistant Fall 2014

1.7.4 Past Graduate Students

1.7.4.1 PhD Students

Year	Name	Present position
2020	Amana Jemal Kedir*	
Thesis Title: Soil phosphorus kinetics in across land-use scenarios in Newfoundland		
2014	Dr. A. Sattar	Assistant Prof. Agronomy, Agriculture College, BZU Bahadur Campus Layyah, Pakistan
Thesis Title: Evaluating wheat performance by Silicon application under late sown conditions		
2013	Dr. B. H. Babar	Assistant research officer, Ayub Agriculture Research Institute (AARI), Faisalabad, Pakistan
Thesis Title: Improving drought tolerance in maize (<i>Zea mays</i> L.) by exogenous application of thiourea.		
2013	Dr. S. Hussain*	Assistant Prof. Department of Agronomy, Bahaudin Zakaria University Multan, Pakistan
Thesis Title: Impact of Polyamines and Nitrogen application on the water economy of hybrid maize (<i>Zea mays</i> L.)		
2012	Dr. W. Farhad	Associate Professor-Agronomy, Lasbela University of Agriculture, Water & Marine Sciences, Lasbela, Pakistan.
Thesis Title: Optimizing nitrogen in maize (<i>Zea mays</i> L.) through poultry manure under drought conditions		
2011	Dr. F. Ahmad*	Research Officer, Soil and water testing laboratory, District Sargodha, Pakistan
Thesis Title: Iron availability in calcareous soils		
2010	Dr. K. Shahzad*	District Officer, Soil Fertility, Rahim Yar Khan, Pakistan
Thesis Title: Relative efficiency of PGPR possessing phosphate solubilizing and/or Acc-deaminase activity for improving growth and yield of cereals.		
2009	Dr. Javeed. S. Dar	Assistant Prof. Agronomy, Agricultural College Larkana, Pakistan
Thesis Title: Irrigation management in spring planted sunflower (<i>Helianthus annuus</i> L.) under different planting pattern and potash levels.		

2008	Dr. M. A. Wahid	Associate Prof. department of Agronomy, University of Agriculture, Faisalabad, Pakistan
Thesis Title: Phosphorus management in Canola hybrids.		
2008	Dr Liaqat Ali*	Research Officer, Adaptive Research Farm Vehari, Pakistan.
Thesis Title: Potassium requirements and its substitution by sodium in different cotton (<i>Gossypium hirsutum</i> L.) genotypes		
2007	Dr. Noor Muhammad	Plant physiologist, Plant Physiology section Agronomic research institute AARI, Faisalabad, Pakistan
Thesis Title: Agro-physiological studies on nitrogen management in Canola (<i>Brassica napus</i> L.)		

*co-advisor

1.7.4.2 M.Sc./BS (Hons.) awarded MUN Grenfell.

16	Bilal Javed (2021)	Research Topic: Evaluating the potential of wood ash and sludge as liming and mineral nutrient source in podzolic soils.
15	Muhammad Farhain* (2021)	Use of wood ash and paper sludge as potting substrate and potential soil amendment for agriculture production on podzols in boreal climate
14	Muhammad Faran (2021)	Potential of dairy digestate as a biofertilizer: Effects on growth, yield and phytochemicals of lettuce in hydroponics.
13	Vanessa Manuel* (2021)	Assessing the dairy digestate as a nutrient and water source in soil-based greenhouse vegetable production.
12	Victor Valdez*	Soil inorganic nitrogen fluxes during freeze-thaw cycles in the Boreal Atlantic Maritime climate: A gene-centric modelling approach.
11	Md. Hossan Ali* (2019)	Use of nanotechnology to improve plant performance in boreal Forest ecosystem.
10	Chameera Illawathure* (2019)	Improving the GPR reflection method for estimating soil moisture and detection of capillary fringe and water table.
9	Erika Young* (2019)	Abundance and diversity of nematodes and micro-arthropods in established and newly converted agricultural soils in western Newfoundland and in Labrador
8	Zachary R. Harvey* (2019), BS (Hons.)	Development and testing of glacial sediment as a growth medium for vegetable production
7	Mohioudin Gillani* (2019)	Hyperspectral remote sensing detection of chlorophyll contents and photosynthesis for silage corns.
6	Waqar Ashiq (2018)	Evaluating the potential of biochar in mitigating greenhouse gases emission and nitrogen retention in dairy manure based silage corn cropping systems.
5	Muhammad Zaeem* (2018)	Improving soil health, forage yield and forage quality via mix cropping forage soybeans and silage corn.

4	Waqas Ali (2018)	Effects of organic and inorganic phosphorus sources on agronomic performance, microbial communities and forage quality of silage corn cultivated under cool climatic conditions.
3	Dinushika Wanniarachige* (2018)	Effect of biochar on hydrological properties of agricultural soils.
2	Abiraami Ramasamy* (2018)	Variability of microbial taxonomic and functional diversities across management boundaries in a Boreal Podzol.
1	Emmanuel Badewa* (2017)	Apparent electrical conductivity mapping in managed podzols using multicoil and multifrequency EMI sensor measurements.

*co-supervised

1.7.4.3 M.Sc. Awarded - University of Agriculture, Faisalabad, Pakistan.

35	Abdul Sattar	Comparative performance of various wheat cultivars at varying sowing dates (2009)
34	M. N. Rehman	Comparative growth and yield performance of sunflower (<i>Helianthus annuus</i> L) (2009).
33	Subh Sadique	Comparative performance of various canola genotypes under Faisalabad conditions (2009).
32	Fida Hussain	Performance of various wheat genotypes under different nitrogen and irrigation levels (2009)
31	Mahmud B. Baber	Production potential of two canola (<i>Brassica napus</i> L.) as affected by rate and methods of phosphorus application (2006).
30	Muhammad Tariq	Growth and yield response of three canola (<i>Brassica napus</i> L.) varieties as affected by the different sources of phosphorus fertilizer. (2006)
29	Muhammad Qasim	Growth, yield and oil contents of spring planted sunflower of (<i>Helianthus annuus</i> L.) as influenced by potash (2006).
28	Muhammad Asif	Effect of rate and methods of phosphorus application with FYM on growth and yield of canola hybrids (<i>Brassica napus</i> L.) (2005).
27	Akhtar Rasul	Evaluation of seed priming techniques for vigor enhancement in synthetic and hybrids canola. (2005).
26	Muhammad Usman Chattha	Effect of organic and inorganic fertilizers alone and in combination on growth and yield of two autumn planted sunflower (<i>Helianthus annuus</i> L.) hybrids (2005).
25	Muhammad Sohail Arshad	Growth, yield and quality response of three canola cultivars two different sowing dates (2004).
24	Abdul Rauf	Effect of potash application on growth, yield and oil contents of two canola (<i>Brassica napus</i> L.) cultivars (2004).

23	Muhammad Hassan	Effect of nitrogen and sulphur application on growth, yield and oil quality of canola (2004).
22	Nusrat Javaid	Studies on comparative growth and yield performance of different chickpea (<i>Cicer arietinum</i> L.) cultivars (2004).
21	Hafiz Muhammad Shahid Karim	Growth and yield response of chickpea (<i>Cicer arietinum</i> L.) cv. Punjab-2000 to phosphorus levels and row spacing (2003).
20	Muhammad Sarwar	Effect of phosphorus levels on growth, yield and protein contents of mash bean (<i>Vigna mungo</i> L. hepper) (2003)
19	Muhammad Ashfaq Wahid	Effect of different fertilizer as a source of N and their method of application on growth, seed yield and oil quality of canola. (<i>Brassica napus</i> L.) (2003).
18	Hafeez ur Rehman	Effect of phosphorus levels on growth, yield and oil contents of two sunflower (<i>Helianthus annuus</i> L.) (2003)
17	Sajjad Saleem	Effect of different irrigation levels and planting methods on growth, yield and oil contents of sunflower (<i>Helianthus annuus</i> L.) (2003)
16	Muhammad Zaman	Effect of rate and time of N application on growth and seed yield and oil contents of canola (2003)
15	Abid Hussain	Effect of nitrogen levels on growth and yield of two canola hybrids (<i>Brassica napus</i> L.) 2002.
14	Naeem ur Rehman	Comparative study on the performance of different Brassica spp. (2003)
13	Sabir Ali	Growth and yield response of sunflower hybrid FH-81 to different irrigation and nitrogen management strategies (2002)
12	Ashfaq Ahmed	Growth and yield performance of canola (<i>Brassica napus</i> L.) under levels of nitrogen and planting densities (2001)
11	Asif Muhammad	Interactive effect of nitrogen and sulphur on the growth, seed yield and oil quality of canola (<i>Brassica napus</i> L.) (2000)
10	Muhammad Saleem	Effect of row-spacing and N fertilizer on the growth, seed yield and oil content of canola (2000).
9	Muhammad Imran Asghar	Effect of potassium on growth, yield oil contents two canola cultivars (2004).
8	Muhammad Iqbal	Effect of different levels of potassium on the growth and yield of spring planted hybrids maize (2001)
7	Muhammad Irfan Hafeez	Effect of time and method of nitrogen and phosphorus application on growth, yield and oil quantity of canola (<i>Brassica napus</i> L.) cv. Dunkeld
6	Zaheer ud Din Baber Shah	Agro-economic assessment of different rice-based cropping system under strip plantation.

5	Azhar Hussain Basra	Effect of irrigation levels and planting patterns on the growth, yield and oil contents of spring sunflower (<i>Helianthus annuus</i> L.) (2005)
4	Muhamma Saleem	Effect of row spacing and nitrogen fertilizer on the growth, seed yield and oil quality of canola
3	Muhammad Ahsan Afzal	Production potential of quinoa under different agro-management practices
2	Sana Ullah	Growth, yield and oil quality response of autumn planted sunflower hybrids to zinc application
1	Sikandar Ali	Comparative performance of linseed and linola under different nitrogen levels.

1.8 Most Significant Research and Technology Transfer Contributions

The most significant contributions I have made are in the areas of Agronomy, soil science and plant science. I have investigated integrated nutrient management, nutrient cycling, climate change mitigation and adaptation strategies in boreal climate, abiotic stress management strategies, HQP training and collaborative research. I have contributed to over 275 publications including journal research articles (135), peer reviewed conference proceedings (14), abstracts and posters (73), newspapers and magazine articles (08), books (02) book chapters (03), and TV programs (08), HQP and collaborative research (details are given in CCV).

1.8.1 Integrated nutrient management practices to enhance nutrient use efficiency and forage quality of crops

My research group have substantially contributed to understanding the effects of integrated nutrient management (INM) practices that enhanced nutrient use efficiency. For example, we used different waste materials in greenhouse and filed experiments to determine the growth, yield and bioavailability of nitrogen from manure/dairy digestate (*Faran et al. 2020-under review; Farhad et al. 2018; Farhad et al. 2013*), mussels (*Messiga et al. 2015*), phosphorus from manure (*Wahid et al. 2014; Ali et al. 2019*) and potassium from wood ash (*Sharifi et al. 2013; Cheema et al. 2012*). We also studied the role of micro-nutrients in enhancing dry matter yield/biomass, biofortification and effects on crop quality, (*Wahid et al. 2020; Javeed et al. 2019; Sattar et al. 2019; Khan et al. 2016; Saleem et al. 2016; Ahmad et al. 2014; Sanaullah et al. 2014; Sattar et al. 2013; Cheema et al. 2012; Saleem et al. 2012*). The uniqueness of these research experiments were all conducted on-farms to demonstrate the management practices at the farmer's field. The basic philosophy behind the demonstration trials was to display the benefits of INM practices that enhanced nutrient use efficiency (NUE), improved soil organic carbon, minimized environmental impacts, and helped in evolving a sustainable and productive cropping system. This research was well received and adapted by famers.

1.8.2 Monitoring of greenhouse gases emission and mitigating strategies to reduce gases and nitrate leaching using different approaches (biochar amendment, crop rotation, nitrogen stabilizers) in boreal climate cropping systems

My research group is working to document greenhouse gases emission (GHGE) from different cropping systems to develop an inventory in boreal climate (NL). We are also using different management practice to sequester carbon (C) and mitigating GHGE and N leaching losses as well as developing adaptation strategies under different climate change scenarios. One of my graduate student conducted a field trail for two years and completed his MSc thesis on "Potential of biochar (BC) in mitigating GHGE and nitrate leaching in dairy manure based cropping systems". He published several abstracts from this work in national and international conferences and a research article in Environmental Pollution (*Ashiq et al. 2020; Abstracts - Waqar et al. 2016; Waqar et al.*

2017a; Waqar et al. 2017b). Our research group has also investigated the effects of BC amendment in improving physiochemical properties of soil and C sequestration which has also been published (Samiullah 2020; Wanniarachchi et al. 2019a; Wanniarachchi et al. 2019b; Vermooten et al. 2019; Altdorff et al. 2018). A multi-year field trial to determine the role of crop rotation and N stabilizing fertilizers in reducing GHGE, ammonia volatilization, and NO₃ leaching in boreal climate is completed in 2021.

1.8.3 Abiotic stress management strategies to induce stress tolerance in agronomic crops

Abiotic stresses (drought, salinity, heat, cold and flooding) substantially hamper crop growth and yield across the globe. Impact of abiotic stresses on crop growth and yield could be worst in climate change scenario due to rise in global temperature and CO₂. My research group developed innovative management practices to induce stress tolerance in crops; for example, seed priming and exogenous application of plant hormones, chemicals, and compatible organic solutes in inducing tolerance against salinity, drought and heat in agronomic crops. Graduate and undergraduate students conducted laboratory and field experiments on induction of abiotic stress tolerance in maize through exogenous application of osmolytes or seed priming techniques or combination of both (Sattar et al. 2020; Samiullah 2020; Nadeem et al. 2020; Nadeem et al. 2019a&b; Ghaffari et al. 2019a&b; Sattar et al. 2019a,b,c,d; Sattar et al. 2018; Sattar et al. 2017a&b; Sattar et al. 2016; Babar et al. 2014; Afzal et al. 2013)

1.8.4 Establishing the State-of-the-Art Boreal Ecosystem Research Facility and Initiation of New Graduate Programs (MSc/PhD at Memorial University)

I am one of the faculty members who significantly contributed to the establishment of the Boreal Ecosystems Research Facility (\$4 million, equipment configuration, purchase, and installation in 2014). Developed new MSc and PhD degree programs in boreal ecosystems and agricultural sciences (BEAS) along with my colleagues (2015 & 2020). I have also worked with other colleagues at Memorial University to initiate and start another PhD program at Grenfell Campus, Memorial University (PhD in Transdisciplinary Sustainability).

1.8.5 Presentations

Results were presented in conferences, workshops, seminars and farmers and industry meetings in regional, national, and international meetings. Details can be seen in my CV section 1.6.4.

1.8.6 Articles in News Papers and Magazines

1. Climate change or climate crisis? | Local | News | The Telegram published my research work, June 10, 2019.
<https://www.thetelegram.com/news/local/climate-change-or-climate-crisis-320387/>
2. Facts sheet “Biomass production and phosphorus availability from dairy manure in silage corn” published by Fisheries and Land Resources, Government of NL (Oct. 23, 2018) <https://www.gov.nl.ca/ourfoodourfuture/outreach/>
3. On-line publication- “For the record” - highlights the work of a variety of researchers and students on campus. Our research was highlighted as one of the top stories “Getting to the root of the matter,” profiling the work of Mumtaz Cheema. September 20, 2016.
<http://www.grenfell.mun.ca/academics-and-research/Pages/Research/for-the-record.aspx>
4. Fueling the dairy industry in Newfoundland and Labrador. Gazette, MUN. Sept. 2, 2015.
http://issuu.com/memorialuniversity/docs/mun_gazette_sept_2_2015_web
5. Fueling the local dairy industry. The Western Star, Aug 22, 2015.
<http://www.thewesternstar.com/Business/2015-08-22/article-4253877/Fueling-the-local-dairy-industry/1>
6. Fueling the local dairy industry.

<http://www.grenfell.mun.ca/Releases/Lists/News/DispItem.aspx?ID=292&RootFolder=%2FReleases%2FLists%2FNews&Source=http%3A%2F%2Fwww%2Egrenfell%2Emun%2Eca%2FReleases%2FPages%2Fdefault%2Easpx>

<http://www.airterra.ca/updates/>

<https://www.cid-inc.com/newsletters/cid-bio-science-november-2015-roots-and-dormancy/>

7. Researchers working to increase the forage quality of corn published in Western Star. <http://www.thewesternstar.com/News/Local/2016-09-03/article-4631753/Researchers-working-to-increase-the-forage-quality-of-corn/1>

1.8.7 Television/Radio Program

- Transforming Subsistence Farming to Sustainable Agriculture Enterprise. UK-Pakistan Science and innovation Global Network (UPSIGN), Nov. 30, 2020. https://www.youtube.com/watch?v=6ABFK3J_OjA&ab_channel=UPSIGN
- Imperative to return to labs during pandemic, some university students say - ntv.ca (Nov. 3, 2020) <http://ntv.ca/imperative-to-return-to-labs-during-pandemic-some-university-students-say/>
- University research carries on during COVID-19 pandemic - ntv.ca (Nov. 2, 2020) <http://ntv.ca/university-research-carries-on-during-covid-19-pandemic/>
- Grenfell Matters Online: Food and Agriculture at Grenfell Campus, May 14, 2020. <https://facebook.com/events/s/grenfell-matters-online/548157542564210/?ti=icl>
- Cheema, M.A. 2016. *Researchers at Memorial University are keeping a close eye, A Story on NTV by Don Bradshaw, September 2, 2016* <https://www.facebook.com/DonBradshawNTV/videos/969339439841276/>
- Cheema, M.A. 2015. Newfoundland-grown corn project has successful first harvest was aired on Monday morning at 7.15am (Oct. 19) on *CBC Radio One (990AM)*.
- Newfoundland-grown corn project has successful first harvest by CBC News Posted: Oct 17, 2015 8:30 PM NT Last Updated: Oct 17, 2015 8:30 PM NT <http://www.cbc.ca/news/canada/newfoundland-labrador/corn-research-grenfell- 1.3270696>
- Cheema, M. A. 2015. *Better ways to grow corn in NL by Don Bradshaw - NTV News, Here's my story from Friday's NTV Evening News Hour (Aug 24, 2015)*.
- Cheema, M. A, 2010. TV program was aired on “Integrated Nutrient Management Technologies for canola crop” at *Sohni Darti Television, Lahore, Pakistan*
- Cheema, M.A, 2010. *TV program was aired on “Nutrient management in wheat”*
- Cheema, M.A, 2009. *TV program was aired on “How a successful sunflower crop can be grown in Rice-Wheat cropping systems of Pakistan”.*
- Cheema, M.A, 2008. *TV program was aired on “Potential of biofuel crops”.* This talk was based on my post-doc research at Iowa State University of Science and Technology, Ames, IA, USA.

2. Teaching Dossier

2.1 Courses Taught

2.1.1 Undergraduate Courses Taught at Memorial University of Newfoundland

GEOG 2425 Natural Resources (Fall 2019, 2020)

Course Description:

Natural Resources 2425 is an introduction to the *concepts of natural resources, environment, and conservation*. The course examines historical and current issues associated with natural resource development, overexploitation or harvesting, degradation of natural resources and their sustainable management. Geography 2425 follows a lecture format with a number of guest lecturers. This course introduces students to (i) general principles and contemporary issues related to ecology and management of conservation of soil and water resources, forests wildlife, and fisheries (ii) challenges associated with mineral extraction and production, and (iii) renewable and non-renewable energy. As we begin the 21st century, our lives are increasingly touched by questions about environmental degradation at local, regional, and global scales. Students will acquire the knowledge necessary to advance beyond the simplistic portrayal of environmental dilemmas offered by commentators, pundits, and the mass media. The course will allow students to gain a better understanding of environmental stewardship, responsible citizenship, and theory underpinning environmental governance.

SRM-2001 Industry-specific approaches (Winter-2014, 2015, 2016)

This course develops topics presented in SRM-2000 with reference to specific industries such as forestry, soil and water, fisheries, mining, oil & gas. This course traces the importance of resources in their historical context both locally and globally.

SRM/EVST-4010 Research Seminar (Fall-2014 & 2015)

This is seminar course in which selected sustainable resource management topics are examined from an interdisciplinary perspective. The seminars are presented on current research and environmental issues by faculty, students and guest speakers from Universities, government, and industry. In Fall 2014, the selected topic was Organic Agriculture, and this topic was selected due to two very important reasons, 1) healthy food, and 2) environment friendly. Course contents include the following topics:

- Global Food Security in 2050
- Overview of organic agriculture (OA) and traditional agriculture (AG)
- Soil fertility in organic farming systems (crop nutrition, rotations, green manures), Why soil tillage?
- Conservation Agriculture, No-tillage cropping systems
- Fungus-plant symbiosis is essential for organic production

2.1.2 Graduate Courses Taught at Memorial University of Newfoundland

BEAS 6000 – Issues in Boreal Ecosystems and Agricultural Sciences (Fall semester)

Course description:

This is the first course for the interdisciplinary MSc BEAS graduate program, and it lays the groundwork for subsequent coursework in this program. This course is primarily designed to introduce the breadth or scope, approaches, and interdisciplinary nature of the fields of boreal ecosystems and agricultural sciences. Furthermore, this course serve to introduce students in the program to the breadth of their colleagues in the program as well as some of the faculty members participating in this program on the campus, as along with that of other research professionals in the region (e.g. industry, federal and provincial department staff).

Objectives and learning outcomes

The objectives of this course are: to develop an understanding of the main concepts and methodologies used in several key sub-disciplines of boreal ecosystems and agricultural sciences; further develop critical thinking skills by applying them to specific questions relevant to the fields of study; learn how to work within interdisciplinary teams and construct approaches to address interdisciplinary problems; and gain experience in critical writing within the context of boreal ecosystems and agricultural sciences.

BEAS 6002-Advanced Quantitative Research Methods for the Natural Sciences (Winter 2018)**Course description and objectives**

This course will introduce students to the basic concepts of experimental design and data analyses. Specific topics will mainly focus on the analyses of experimental designed experiments, including multivariate statistical analyses, linear and non-linear regressions and statistical distributions fitting. Exploratory statistics for spatially distributed datasets, time series analyses and microarray analyses will be included to match the various research questions of individual students. The course is in an applied form employing statistical software packages such as R, Statistix, Genstat or Minitab for Teaching and Learning. Students are expected to have basic statistical understanding obtained through an undergraduate statistical course. The course is to be taught in rotations by various faculty members. Reading list will include the freely available software manuals and selected research papers. Students are expected to have access to own laptops or desktops.

BEAS 6020 – Management of Crop Nutrition (Winter semester)**Course description and objectives**

An understanding of the mineral nutrition of plants is of fundamental importance in both basic and applied plant sciences. This course focuses on the management and physiological aspects of macro and micronutrients in crops. Topics may include Introduction and scope of crop nutrition; principles of mineral nutrition in crops, Nutrients and their classification, Biological membranes, Mechanisms of nutrients absorption, translocation, and metabolism, Novel sustainable nutrient management approaches for optimum crop productivity with minimum impact on environment. The objectives of this course are to develop an understanding of the main concepts of crop nutrition, water relations and functions of micro and macronutrients.

BEAS 600 B Graduate Research Seminar (Winter semester)

The course will provide support to students in the development of their critical scientific skills and the development of their research proposal. This will include critical evaluation of scientific literature, hypothesis development, development of research protocols and methodology, data collection, and handling and interpretation, and dissemination strategies. At the end of this course students should be able to write scientific abstract, poster and minimum one oral presentation on their research proposals. Students can apply these communication skills to disseminate scientific findings through visual and oral presentations.

BEAS 6033 Soil and Water Conservation (Fall semester)**Course description and objectives**

In this course, land degradation issues and management practices of soil, plant and water resources disturbed by human activities are reviewed. It intends to provide a holistic understanding of soil and water conservation in the perspective of conservation agriculture, climate change and

watershed management. At end of the course, successful students will be able to understand the issues and challenges related to degradation of soil and water resources and conservation agriculture. Soil and water conservation practices to improve agricultural productivity under climate change scenario; effects of climate change on agriculture and vice-versa and mitigation and adaptation strategies to minimize climate change impacts.

2.1.3 Undergraduate Course taught at Dalhousie University, Truro, NS, Canada

ENGN-2011 Precision Agricultural Technologies (Fall 2012)

Course Description

Principles and application of precision agriculture technologies including: GPS, GIS, sensors, digital photographic techniques, controllers, variable rate applicators for site-specific application of inputs (pesticide, fertilizer, irrigation etc.), auto guidance system, data acquisition and management, and precision agriculture equipment management.

2.1.4 Courses Taught at University of Agriculture Faisalabad, Pakistan

AGRON-309 Sustainable Agriculture and Organic Farming (Fall Semester)

Course Syllabus - Theory

Concept and scope of sustainable agriculture, components of sustainable agriculture, concept and meaning of organic farming; Brief history, Principles of organic farming; Soil and crop management, Organic manures – humus, severe, sludge; Use of bio-fertilizers and bio-pesticides, Farm waste recycling, organic mulches. Organic farming as a component of sustainable agriculture

Syllabus - Practical

Identification of manure, humus, compost etc.; demonstration of methods for their preparation and application to field/crops; visit to organic farming areas

AGRON-315 Crop Management under Stressful Conditions (Winter Semester)

Course syllabus - Theory

Components of crop productivity; Crop environment and its components; Environmental optima for crop growth and development; Concept of stress and stressful environments under field conditions, Modifications in growth and developmental patterns of crop plants under various stressful conditions, approaches for ameliorating the effects of stress for crop production.

Syllabus - Practical

Acquaintance with the symptoms of stresses on crop, visits to affected areas and noting the patterns of vegetative and reproductive growth of crop plants.

AGRON-703 Management of Crop Nutrition (Winter Semester)

Course syllabus - Theory

Concept of crop nutrition and its role in crop productivity; Essential crop nutrients; Efficient use of nutrients through management practices on normal and problem soil; Managing nutrients; Requirement of leguminous and non-leguminous crop in mono and multi culture; Improving nutrition through biological sources; Crop response to nutrition deficiencies; Factors affecting crop response to various nutrient; Agro-techniques to alleviate adverse effect of nutrition; stress in crop; Current fertilizer technologies use under dry land and Irrigated crop management

systems; Balanced nutrition for economic Production of different crops; Conserving nutrients through crop management techniques.

Course syllabus - Practical

Demonstration of deficiency symptoms in crop plants and their diagnosis; organizing and conducting experiment on crop nutrition management

AGRON-710 Crop Management on Problem Soils (Fall Semester)

Course syllabus - Theory

Perspective: Problems of crop production in weed infested, eroded, salt affected, water deficient and water-logged soils, site specific cultural practices, fertilizer and irrigation adjustment; Specific cropping patterns and crop management practices for economic production and soil improvement.

Course syllabus - Practical

Identification of problem soils and soil amendments; Preparation of solutions of different concentrations, raising plants on problems soils, artificial growth media and noting differences in their growth behavior, visit to research projects areas.

2.2 Development of new graduate courses/programs

2.2.1 New Courses

All courses were developed in the MSc degree in Boreal Ecosystems and Agricultural Sciences (BEAS) program at Memorial University during 2015.

BEAS 6000 Issues in Boreal Ecosystems and Agricultural Sciences (25 %)

BEAS 600A/B Graduate Research Seminar (100 %)

BEAS 6002 Advanced Quantitative Research Methods for the Natural Sciences (25%)

BEAS 6020 Management of Crop Nutrition (100 %)

BEAS 6021 Organic Farming for Sustainable Agriculture (100 %)

BEAS 6033 Soil and Water Conservation (50 %)

2.2.2 New Programs Developed/Progress

2.2.2.1 PhD Degree Program in Transdisciplinary Sciences (Fall 2020)

I am one of the core faculty members who drafted the proposal for this PhD degree program. This is the first PhD program at Grenfell Campus, Memorial University of Newfoundland. Proposal development was carried out in close collaboration and consultation with the BEAS and MAEP programs faculty, other faculty members at Grenfell and several faculty members across departments at MUN. Proposal has been approved and PhD degree in Transdisciplinary Sustainability has been instituted from Fall 2020. This indicates my ability to work with colleagues across multiple different disciplines to get the best program set up for our students at Grenfell.

2.2.2.2 PhD Program in Boreal Ecosystems and Agricultural Sciences

I am one of the proponents of who developed the PhD degree in the Boreal Ecosystems and Agricultural Sciences (BEAS) program. This is the first PhD degree program approved in Agricultural sciences at Memorial University of Newfoundland (effective fall 2021). I am Graduate officer and Chair of graduate committee overseeing admissions, allocation of graduate courses and student's resources, student

supervisor relations, development of new courses, courses integrity and any other matter related with PhD BEAS program.

2.2.2.3 MSc Program in Boreal Ecosystems and Agricultural Sciences

I am one of the faculty members who drafted and proposed the MSc in Boreal Ecosystems and Agricultural Sciences (BEAS) during 2014 and 2015. This is the first science MSc at the Grenfell campus of the Memorial University of Newfoundland. Proposal development was carried out in close collaboration and consultation with the Boreal Ecosystem Research Initiative (BERI) faculty, other faculty members at Grenfell and several faculty members across other departments at MUN. This degree was approved in June 2015. As of September 2015, I am the graduate officer and chair of the graduate committee of PhD BEAS program.

3. Services Dossier

3.1 Conferences, Seminars, and Workshops (National and International)

- Participated in Corner Brook Pulp & Paper Mill forum – Oct. 28-29, 2021
- Presented in Tri-Society Virtual Conference on “Innovation in Plant Science and Agricultural Resilience”. July 5-9, 2021, Canada – Virtual (Oral).
- Keynote speech on Ecosystem Restoration, Nature based solution dialogue - Building momentum for change. International virtual conference, World Environment Day, June 5, 2021, YPARD, Pakistan.
- Keynote speech on Carbon sequestration for mitigating climate change. UN Independent Dialogue “Transforming food system through Climate Smart Agriculture Practices”. May 25, 2021, University of Punjab, Lahore, Pakistan - Virtual.
- Supporting sustainable food systems through research and innovation. NLFA annual meeting (virtual), Feb. 1, 2021.
- Agricultural initiatives at Grenfell Campus MUN. Invited research talk to Liberal Caucus (MPs, Premier and ministers of NL). Jan. 18, 2021, Grenfell Campus, Memorial University, NL.
- Transforming Subsistence Farming to Sustainable Agriculture Enterprise. Keynote speaker in UK-Pakistan Science and innovation Global Network (UPSIGN), Nov. 30, 2020.
- Food and Agriculture activities at Grenfell Campus “Grenfell Matters” May 14, 2020, Grenfell Campus, Memorial University, NL.
- Presented in Sustainability of Canadian Agriculture Conference – Farming for solutions, March 12-13, 2020, Holiday Inn Express and Suites, Saskatoon, SK.
- Invited Keynote speaker, International Horticulture Conference (IHC 2020), Feb. 26-18, 2020, University of Punjab, Lahore, Pakistan.
- Invited Keynote speaker “smart plantation - an ultimate solution to climate change” March 2-4, 2020, LCWU, Lahore
- Invited Keynote speaker, International Conference at the College of Earth and Environmental Sciences, March 4-6, 2020, University of the Punjab, Lahore, Pakistan.

- Invited speaker at NLFA annual general meeting, Quality Hotel and Suites, Gander, January 29-30, 2020.
- Guest speaker ENV5 4000, Grenfell Campus Memorial University, September 23, 2019.
- Presented in Plant Canada 2019. *Communicating Innovation in Plant Science*, July 7-10, University of Guelph, Ontario.
- Participated in O'Cannabiz Conference & Expo, April 25-27, 2019, Toronto.
- Attended ASA-CSSA-CSA annual meetings, *Enhancing Productivity in a Changing Climate*, Nov. 4-7, 2018, Baltimore, MD.
- Participated in “*The way forward agriculture sector work plan*”- workshop, organized by Dept. of fisheries and land resources, Happy Valley Goose Bay, NL, Sep. 5, 2018.
- Participated in “Forestry Research Connector” meeting in FC-3019, Dec. 4, 2018.
- Participated in Baie Verte Peninsula Thriving Regions Workshop, College of North Atlantic Campus, Baie Verte, March 28-29, 2018.
- Participated in Agriculture Industry Summit at Centre for Agriculture and Forestry Development, Wooddale, NL, October 23, 2017.
- Presented in Joint annual meeting of the Canadian Society of Agronomy and Phytopathological Society “*Crop production and Disease Management – Cultivating Ideas*”. June 18 -21, 2017, Winnipeg, Manitoba.
- Presented in 2nd Agriculture and Climate Change Conference: *Climate ready resource use-efficient crops to sustain food and nutritional security*, March 26-28, 2017, Meliá Sitges, Sitges, Spain.
- Participated and presented 3rd biennial symposium “*Our Food Our Future-Research that feeds Newfoundland and Labrador*” November 2-3, 2016 St. John’s, NL.
- Attended a special lecture on motivation and success in graduate supervision by Dr. Brent Snook, Professor in Memorial University's Department of Psychology, organized by SGS October 6, 2017.
- Participated in Brownbag Supervision Series – “*The Ethics of Graduate Supervision*” (Presenter: Dr. Danine Farquharson, Associate Dean SGS) organized by SGS, MUN, October 5, 2016.
- Participated in the Conversation “*Climate change strategy consultations*” organized by office of engagement, and the department of environment and climate change. September 14, 2016.
- Organized an invited talk by Dr. Bill Deen on “*Diversification of the eastern Canada agroecosystem for climate change mitigation and adaptation*”. May 19, 2016.
- Entrepreneurship and innovation: unlocking regional potential, Organized by office of engagement Grenfell Campus. April 7-8, 2016.
- Participated in academic advising session. April 27, 2016
- Participated in a session “Climate change in Atlantic Canada” organized by Grenfell Campus research office, April 7, 2016.
- Harris Centre Northeast Avalon Regional Workshop on food security and economic diversification. Conception Bay South (CBS), St. John’s NL. (March 9 2016).
- Building a Graduate Writing Culture: Some Practical Strategies” organized by SGS on March 1, 2016.
- NLFA, 5th Agricultural Research Advisory Committee (ARAC) meeting held in Gander

- hotel on Jan. 27, 2016, Gander, NL.
- Presented in “*Collaboration for Sustainable Communities*” Nov. 13, 2015, GCSU Student Lounge, Grenfell Campus Memorial University, Corner Brook, NL.
- Presented and participated in international year of soil (IYS-2015) “*Soil health for sustainable life*” October 14-15, Greenwood Inn & Suites, Corner Brook, NL, Canada.
- Presented and participated in joint annual meeting of Botany and CSA 2015. *Science and plants for people*, July 25 – 29, 2015 Edmonton, Alberta, Canada.
- Water research exchange “A Water Quality Workshop” at Husky Energy Easter Seals House St. John’s, May 25, 2015.
- FARM symposium held at MUN St. John’s on May 9, 2015.
- Participated in 4th Agricultural Research Advisory Committee (ARAC) meeting held in Glynmill Inn on April 28, 2015, Corner Brook, Canada.
- Attended a workshop session on teaching and learning “A different approach to teaching problem solving: de Bono’s Six Thinking Hats “presented by Jason Geary Teaching consultant DELTS on April 6, 2015, Corner Brook, Canada.
- Organized an invited guest speaker talk (Dr. Andrew Hammermeister) on “Redesigning the food system through organic agriculture: Advances, opportunities and challenges.” March 10, 2015.
- Participated in training program “Developing and Enhancing Leadership Potential - A CHERD Program” for Grenfell Campus Memorial University, Pepsi center Nov.27-29, 2014, Corner Brook.
- Participated in International Annual Meetings of ASA-SSSA-CSSA 2014, Grand challenges, Great solutions, Nov.2-5 Long Beach, CA.
- Participated in 2nd biennial symposium of Natural Sources, *Our food, Our future*, Nov.4-6, 2014 Corner Brook, NL
- Participated in 3rd Agricultural Research Advisory Committee (ARAC) meeting held at Pasadena Ski & Nature Park, Pasadena, NL. September 4, 2014.
- Organized Li-Cor training workshop (LI-8100 and LI-6400XT), April 29-30, 2014. (Mr. Jason Hupp a field application scientist)
- Participated in 2nd Agricultural Research Advisory Committee (ARAC) meeting in Forest center building held on March 28, 2014.
- Attended Greenhouse conference. Feb.12-13, 2014, Greenwood Inn, Corner Brook,
- Attended NLFA meeting at Terra Nova Resort, Jan. 29-31, 2014
- Participated and presented research work in 1st Agricultural Research Advisory Committee (ARAC) meeting held at Atlantic cool climate crop research center, St. John’s, NL. Canada on Sep. 18, 2014.
- Participated in teaching workshop “Teaching with Conviction, Confidence and Charisma”, conducted by Jerry Etienne at Grenfell campus on Sept. 3, 2013
- Participated in Canadian Greenhouse conference, Oct. 2012, Niagara, ON.
- Participated in International workshop on precision agricultural technologies held at NSAC, Feb.23-24, 2012
- Participated in GPS/GIS workshop. Dec.8, 2011
- Participated in annual meeting of Nova Scotia Institute of Agrologists.
- Participated in Nova Scotia Federation of agriculture annual meeting and Trade show, Nov.24-25,2011

- Participated in New Brunswick Wild blue berry producers field day, July, 15-16, 2011
- Participated in Open House at Dalhousie University Agricultural Campus, Truro, NS, July,21,2011
- Organized an International Seminar on “Crop Management: Issues and options” at University of Agriculture, Faisalabad, Pakistan, June 1-2, 2011
- Organized a stakeholder workshop on “Edible oilseed crops: Threats and challenges from Production to Consumption” at University of Agriculture, Faisalabad, Pakistan -June 2010
- Invited Speaker in the annual meetings of the “Auriga Chemicals and seeds” Lahore, Pakistan-2010
- Invited speaker at Bahaud-din Zakaria University (BZU), Multan, Pakistan, July, 2010
- Invited speaker at University of Arid Agriculture, Rawalpindi, Pakistan Nov. 2010
- Invited Speaker in a training course organized by Higher Education Commission (HEC) of Pakistan, Islamabad, Pakistan-2010
- Invited speaker at International Center of Water at Charles Sturt University (CSU), Wagga Wagga, New South Wales, Australia. April-May 2010
- Presented a country paper in 5-day workshop on” Organic Farming for sustainable development” Organized by Asian Productivity Organization (APO), Colombo, Sri Lanka- 2006
- Invited speaker at the eve of 7-day Workshop on “Ecological Agriculture” organized by UBINIG, Dhaka, Bangladesh-2005
- Participated in “World Environment Conference” held at Palam pure, HP, India, June 2005

3.2 Significant Institute Committee Services

1. Grenfell Campus EDI - AR committee (2021 - 2022)
2. Grenfell Campus strategic planning committee (2021 – 2022)
3. Ad hoc advisory committee to review SGS baseline fellowships (2021).
4. Promotion & Tenure committee (2021-2022)
5. Chair, Agriculture working group (AWG), Grenfell Campus (2021)
6. Member conflict of Interest committee (COI), MUN (2021)
7. Member ARC-NL, MUN (2021)
8. Senate committee on research, MUN (2021)
9. Memorial Leadership Council MUN (2021)
10. Sustainability and climate action, MUN (2021)
11. Research – pandemic subcommittee, MUN (2021)
12. Equity, Diversity, and Inclusion (EDI) committee, Grenfell Campus (ad hoc) (2020-2021)
13. Hiring committee “Coordinator, International Student Programming” April 2021.
14. Committee to govern renewal process – AVPR & GS (July 2020)
15. Committee to govern renewal process – Dean SSE (2020)
16. Return to campus committee (2020 – 2021)
17. BERI lab coordinator hiring committee (June 2020)
18. Member academic council SGS, MUN (2019-20).
19. Member diversity committee SGS, MUN (2019-2021).
20. Member - Strategic Agriculture Research Planning Group Feb. 2018 to-date
21. Member Research Committee, Grenfell Campus (2018-Todate).

22. Member Graduate studies working group (2017-Todate)
23. Member evaluation committee for Harris Centre Thriving Regions Applied Research Fund, May 2018 (Baie Verte Peninsula).
24. Canadian Research Chair-proposal writing committee (2018).
25. Member PhD proposal writing committee - Sustainability Science (2017-2018)
26. Member academic council SGS (216 -2019).
27. Hiring committee -BERI laboratory coordinator (Feb. 2018).
28. Member appeals committee-SGS (217-2018).
29. Member graduate working group (2017-Todate).
30. Member Search Committee for Canada 150 Research Chairs (2017).
31. Cabinet committee on Jobs-Agriculture work plan steering committee (2017).
32. Chair graduate committee of boreal ecosystems and agricultural sciences (BEAS) program and Graduate Officer (2015-Todate).
33. Member Promotion & Tenure, School of Science and Environment (2017-18).
34. Chair- Research Committee, Grenfell Campus (2016-17).
35. Member Promotion & Tenure, School of Science and Environment (2016-17).
36. Member, Search Committee, Dean School of Science and Environment (2015-16).
37. Member Provincial Agricultural Research Advisory Committee (ARAC).
38. Member, Academic Studies Committee, Grenfell Campus (2015-17).
39. Member, Scholarship Committee, MUN (2015-16).
40. Member, Committee on experiential learning (2014).
41. Founding Member-Water Analytics Research Consortium (WARC), Memorial University of Newfoundland and Labrador, Canada.
42. Search committee, hiring research laboratory coordinator for Boreal Ecosystem Research Initiative (BERI)-2014
43. Member Dean's Committee, University of Agriculture, Faisalabad, Pakistan, (2008 - 2011).
44. Director Graduate Studies, University of Agriculture, Faisalabad, Pakistan, (2008-2011).
45. Secretary Graduate studies and Research Board, University of Agriculture, Faisalabad, Pakistan (2008 - 2011).
46. Secretary, University Equivalence Committee, University of Agriculture, Faisalabad, Pakistan (2008 - 2011).
47. Member University Senate, University of Agriculture, Faisalabad (2003-2011).
48. Member, organizing committee for annual Farmer's convention at University of Agriculture Faisalabad, Pakistan, (2004-2010).
49. Member curriculum committee, faculty of Agriculture, University of Agriculture, Faisalabad, Pakistan, 2008-2011.
50. Member, Academic council, University of Agriculture, Faisalabad, Pakistan (2004-2011)
51. Member strategic planning committee, UAF (2006-07).
52. Advisor, Punjab Public Service Commission (PPSC), Govt. of Punjab, Pakistan.
53. Approved PhD supervisor HEC (Higher Education Commission of Pakistan).
54. Technical Staff Officer to Vice Chancellor (Feb. 2004 - Jan. 2007)
55. Member, Admission committee, Faculty of Agriculture, 2001-2003
56. Convener Agricultural exhibition committee, Department of Agronomy, University of Agriculture, Faisalabad, Pakistan, 2004-2008
57. Member, Faculty board, 2004-2011
58. Member board of studies, dept. of Agronomy, University of Agriculture, Faisalabad,

Pakistan, 1993-2011

3.3 Community Services

3.3.1 Refereeing of Journal Articles (here are few recently reviewed).

International Journal of Agriculture and Biology (IJAB), Journal of Plant nutrition and Soil Science (JPNSS), Journal of Development and Agricultural Economics (JDAE), Annals of Applied Biology, Editorial Board - Advances in Agriculture, Journal of Crop and Environment Journal of Agricultural Sciences, Journal of Agronomy and Crop Science, Biomass and Bioenergy, Water, Air, & Pollution (Springer), Canadian Journal of Plant Science, Agronomy for sustainable development (ASDE), Rhizosphere, Field crop research, Botany, Potato Research, Cleaner Production, European journal of Agronomy, Agronomy MDPI, Scientific Reports, CJPS, Arabian Journal of Geosciences American Chemical Society *Nano*.

3.3.2 Reviewing books, grants, and faculty positions applications

- NSERC -Alliance research grant “Biochar based tree seed coatings for climate smart forest restoration Nov. 2021.
- Reviewed a book proposal “Sustainable Agriculture” submitted to Springer (2021).
- Reviewed a book proposal on “Sustainability, Sustainable Agriculture and Environment” Elsevier (August 23, 2020)
- Evaluation of soil quality parameters on a long-term cover cropping system on a Solodic Grey Luvisol in North Star, Alberta submitted by Mitacs. March 25, 2020.
- Reviewed a research grant of Dutch Research Council “Release and Catch! Using a light-controlled probe to uncover the signaling interactome of phosphatidic acid in the plant cold response. May 2020.
- Reviewed a research grant of Mitacs “Delineation of Soil Management Zones for Subsoiling to Mitigate Soil Compaction effects on Soil Properties and to Optimize Crop Yield”. Oct. 29, 2020.
- Evaluated applications for the positions of Professor in Agricultural Sciences, University of Punjab, Lahore, Pakistan – 2019.
- Reviewed a research grant submitted by Mitacs “Carbon footprints of agricultural production in Atlantic Canada”. Sep. 25, 2019.
- Unraveling the molecular mechanisms behind abiotic stress tolerance in *Medicago sativa* and adoption of advanced molecular breeding technology for alfalfa improvement (Research grant). Submitted by AAFC (Feb. 14, 2018).
- Reviewed research proposal sent by Mitacs “Improving the performance of forages on the Canadian prairies”. (August 12, 2017).

3.3.3 Theses examiner/evaluation

- Evaluated a PhD thesis of Ms. Nazia Hassan, department of agronomy, faculty of crop and food sciences, Pir Mehr Ali Shah Arid Agriculture University Rawalpindi, Pakistan - *Integrated effects of phosphorus solubilizing bacteria, organic and inorganic fertilizers on sunflower (Helianthus annus L.)* (2022).
- Evaluated a PhD thesis of Obaid Afzal, department of agronomy, faculty of crop and food sciences, Pir Meher Ali Shah Arid Agriculture University Rawalpindi, Pakistan - *Aadaptability evaluation and simulation of safflower (Carthamus tinctorius L.) productivity under rainfed conditions* (2021).

- Evaluated a PhD thesis of Mr. Akhtar Mahmood, faculty of Agriculture, University of Punjab, Lahore, Pakistan - *Gene action and hybrid vigour studies in Petunia* (2021).
- Evaluated a PhD thesis of Ms. Misbah Batool Zahra, faculty of Agriculture, University of Punjab, Lahore, Pakistan - *Effect of cow manure biochar and compost on soil, water productivity and diseases of maize crop under field conditions* (2021).
- Evaluated a PhD thesis of Mr. Abdul Mannan, faculty of Agriculture, University of Punjab, Lahore, Pakistan - *Evaluation of thermo tolerance potential and its enhancement in vigna radiate using plant growth promoters* (2021).
- Evaluated a PhD thesis of Mr. Adnan Zahid, faculty of Agriculture, University of Punjab, Lahore, Pakistan - *Modelling dynamics of soil organic carbon under conventional and conservation tillage in rice wheat cropping system of Punjab Pakistan* (2021).
- Evaluated a PhD thesis of Mr. Mujahid Rasool, Faculty of Agriculture, University of Punjab, Lahore, Pakistan - *Physiological and molecular characterization of biochar induced resistance against early blight (alternaria solani) in tomato* (2021).
- Evaluated MSc thesis of Ms. Ashmean Kaur Sran, faculty of Faculty of Business Administration, Memorial University of Newfoundland - *Design requirements for an online data exchange platform to bridge the gap between farmers and researchers in India* (2021).
- Thesis defense external examiner – Nazar Hussain, MSc student, Faculty of Sustainable Design Engineering, University of Prince Edward Island, August 5, 2020.
- Thesis defense external examiner - Zheyu Lin, MSc student, Department of Plant, Food and Environmental Sciences, Faculty of Agriculture, Dalhousie University - *Evaluation of Seasonal Dynamics of Soil Macro-Nutrients and Corn Nutrient Uptake in Fields Amended with Three Types of Municipal Biosolids* (Nov.18, 2020).
- Thesis defense external examiner – Humna Khan, MSc student, “*Development of management zones for site-specific fertilization in potato fields*” Faculty of Sustainable Design Engineering, University of Prince Edward Island. (Nov. 26, 2020)
- Thesis defense external examiner – Rimsha Khan, MSc student “*Carbon Footprints and Sustainable Solutions for Potato Cultivation on Prince Edward Island*” Department of Environmental Sciences, Faculty of Science, University of Prince Edward Island. (Dec. 12, 2020).
- Thesis defense external examiner - Nishchitha Hemmige Nateshm, MSc student, Department of Plant, Food and Environmental Sciences, Faculty of Agriculture, Dalhousie University, Truro. Nov.20, 2019.
- Evaluated a PhD thesis of Rashid Iqbal, Islamia University Bahawalpur, Pakistan (2019).
- Evaluated a PhD thesis of Farman Chaudhry, Faculty of Agriculture, University of Punjab, Lahore, Pakistan (2019).
- External examiner-MSc Thesis defense of Sanjamveer Singh Vehniwal, Plant, Food, and Environmental Sciences, Dalhousie University, Dec. 6, 2018. Thesis title “*Formulation of organic vase solution for cut-flowers using compost and other natural additives*”.
- Member PhD comprehensive oral exam of Mohammed Alsakit (Supervisor: Dr. Unc.) – May 14, 2018.
- Evaluated two PhD thesis during 2017.
- Comprehensive oral exam committee of PhD student (Ms. Mei Wang held on March 17, 2015).
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3.3.4 Conference committees/chair sessions

- Executive Committee, Tri-Society Virtual Conference 2021.

- Scientific Committee, Tri-Society Virtual Conference 2021.
- Session chair – AGR2 Agronomy Cropping Systems in Plant Canada 2019, July 7-10, University of Guelph, ON.
http://www.cspb-scbv.ca/PlantCanada2019/pdf/PC2019_finalprogram.pdf
- Committee chair – graduate student posters and oral presentation in Plant Canada 2019, July 7-10, University of Guelph, ON.
- Member judging committee graduate students' poster and oral presentations at ASA-CSSA-CSA annual meeting Nov. 4-7, 2018, Baltimore, MD, US.
- Member organizing committee “Global conference on plant biology” Prague, Czech Republic. Oct. 25-26, 2018.
<https://scientificfederation.com/plant-biology-2018/organizing-committee.php>
- Session chair: International Science Conference, University of Azad Jammu and Kashmir, Muzaffarabad, Pakistan (July.21-23, 2010)

3.3.5 Memberships/Editorship

- American Society of Agronomy (ASA)
- Soil Science Society of America (SSSA)
- Crop Science Society of America (CSSA)
- Canadian Society of Agronomy (CSA)
- Asian Council of Science Editors
- Nova Scotia Institute of Agrologist (NSIA)
- Pakistan Society of Agronomy
- Editor, Agriculture (MDPI) (2021-todate)
- <https://www.mdpi.com/journal/agriculture/editors>
- Member Editorial Board Journal of Maize Research and Development
<http://nmrp.gov.np/journal-of-maize-research-and-development/editorial-board-jmrd/>
- Member Editorial Board Journal of Agricultural Sciences (Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka, <https://jas.sljol.info/about/editorialboard/>)
- Eastern Director Canadian Society of Agronomy (CSA) 2017-2019_
https://gallery.mailchimp.com/ca7fd4410b9dab34e3ef8b381/files/6c206986-9081-461e-b370-0cbbf02413f3/May_2017_CSA_Newsletter.pdf
- **President, Canadian Society of Agronomy (CSA) (2021-2022).**
- <http://agronomycanada.com/download/newsletter/CSA-Newsletter-June-2020.pdf>
- Associate Editor -in-Chief (Agriculture, Agronomy, Plants, Horticulture – MDPI) - Physiological and Molecular Characterization of Crop Tolerance to Abiotic Stresses 2021-2022 (Special Issue).