

MOHAMMED ANTAR (BSc. agr, MSc., Ph.D. Candidate)

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Work Experiences

Mar 2018 - Present **Ph.D. Student** (***Microbial Inoculants, Biostimulants, PGPRs and Agronomy***) at Department of Plant Science, McGill University, Sainte-Anne-de-Bellevue, Quebec, Canada.

- ✓ The evaluation of specific microbial consortia, microbe coating fertilizers, as plant growth-promoting agents
 - to an improved understanding of microbial consortia's role in plant growth enhancement
 - to increase agronomic parameters (**biomass and yield**) in two high valued and widely produced crops: **corn and potato**
- ✓ field study factors include microbial Biostimulants, soil types and seeding dates. Controlled environment/greenhouse study factors include water deficit stress and microbial inoculation.

Apr 2019 – Present **Research Assistant**, *Soil Microbial Ecology*, Department of Natural Resource Sciences, Macdonald Campus, McGill University, Sainte-Anne-de-Bellevue, Quebec, Canada.

- ✓ Field experimental design, fertilizer preparation and seeding
- ✓ Fertilizer application: starter, top dressing with granular and liquid fertilizers
- ✓ Biostimulant seed treatments and foliar applications
- ✓ Supervising projects and assisting with data collection from corn, canola, soybean, wheat, and barley experiments
- ✓ Collecting soil samples for nutrient analysis
- ✓ Collecting Greenhouse Gas samples from 4R Nutrient Stewardship projects for CO₂, N₂O and CH₄ analysis
- ✓ Processing GHG samples through Gas Chromatography (GC), soil sample processing for ammonium and nitrate concentration
- ✓ Fiber analysis (Cellulose, Hemicellulose, Lignin - NDF, ADF and ADL)
- ✓ Plant and soil organic matter analysis
- ✓ Total carbon and nitrogen analysis using a C/N analyzer

July 2022 - Sept 2022 **Consultant**, *BioSun Biostimulants*, Laval, Quebec, Canada.

Jan 2018 – Dec 2021 **Graduate Teaching Assistant in** (*Plant Propagation, Introduction to Plant Science, Soil Fertility, Principles of Ecological Agriculture, Agri-ecosystems Field Course, The Biophysical Environment, Pesticides in Agriculture, Plant Ecology, General Biology, and Biochemistry*) Courses at the Faculty of Agriculture and Environmental Sciences, Macdonald Campus of McGill University, Sainte-Anne-de-Bellevue, Quebec, Canada.

- ✓ Setting up labs and preparing lab materials, including plant materials, fertilizers both chemical and organic, chemicals and soil samples
- ✓ Guiding and helping students with their lab assignments and experiments
- ✓ Grading midterm exams, discussions, questions/answers, assignments, and lab reports
- ✓ Office hours to meet students and answer their questions and solve lab-related problems

Sept 2019 - Apr 2021 **Consultant**, *BioFuelNet Canada (Biomass Canada Cluster)*, McGill University, Sainte-Anne-de-Bellevue, Quebec, Canada.

Apr 2019 – Aug 2020 **Research Assistant in Resource Efficient Agricultural Production (REAP-Canada, NPO)**, Sainte-Anne-de-Bellevue, Quebec, Canada.

Jan 2020 - Apr 2020 **Course Lecturer**, *Plant Propagation Course*, Department of Plant Science, Macdonald Campus, McGill University, Sainte-Anne-de-Bellevue, Quebec, Canada.

April 2019 - Dec 2021 **Invigilator, Exam Coordinator and Supervisor**, Office of Students with Disabilities, McGill University, Montreal Quebec, Canada (Semester wise contacts, except for the pandemic time)

May 2019 - Jun 2019 **Communications Assistant**, Enrolment Services, McGill University, Montreal, Quebec, Canada.

- Jan 2019 – May 2019** **Field Operations Assistant** at Macdonald Campus Farm/Lods Research Centre, Faculty of Agricultural and Environmental Sci., McGill University, Sainte-Anne-de-Bellevue, Quebec, Canada.
- Jan 2014 – Nov 2017** **Agricultural Engineer** and **Plant Scientist** at Piril Company for Agriculture and General Trading, Erbil, Kurdistan Region, Iraq
- Jan 2014 – Nov 2017** **HR Officer** at CG Holdings Company (Erbil, Kurdistan Region, Iraq) from Mechelen, Belgium.
- Sept 2013 – Sept 2017** **Assistant Lecturer/Instructor** (Agricultural Engineer) and **Reporter** at Horticulture Department, College of Agriculture, Salahaddin University–Erbil, Kurdistan Region, Iraq
- ✓ Covered courses: Plant Tissue Culture, Plant Propagation, Plant Nurseries, Aquatic Flora, Plant Physiology, Organic Agriculture, Academic Debate and Critical Thinking.
 - ✓ Coordinating administration, exams, scientific committees, and academic staff-related issues within the department.
- Jul 2009 - Oct 2011** **Teaching and Research Assistant** (Assistant Agricultural Engineer) at Horticulture and Forestry Department, College of Agriculture, Salahaddin University-Erbil, Iraq
- ✓ Teaching and research assistant in Ornamental Plants and Plant Physiology labs
- Nov 2008 – Oct 2011** **Administrative Assistant** at Pauwels International Company from Mechelen, Belgium.

Education and Training

- Sept 2017 – Sept 2021** **Ph.D. Plant Science**, McGill University, Macdonald Campus, Sainte-Anne-de-Bellevue, Quebec, Canada
- ✓ Evaluation of Microbial Consortia and their effects on Plant Growth and Development under Greenhouse and Field Conditions.
- Feb 2015 - Mar 2015** **Teaching Methods Training** - Salahaddin University-Erbil, Kurdistan Region, Iraq
- ✓ Six weeks of intensive teaching methods training to develop and improve teaching systems, including teaching approaches, interaction with students, scientific communications, exam preparation, invigilation, and how to deal with problems both outside and inside the class.
- Sept 2012 – Sept 2013** **MSc (Hons) Plant Sciences** - The University of Manchester, Faculty of Life Sciences, Manchester, United Kingdom, Grade: **Distinction**.

Undertook two research projects in the Faculty of Life Sciences - Plant Science:

1. The Role of Programmed Cell Death in the Drought Response of Arabidopsis Roots.
2. Tissue Culture and Micropropagation: Establishing shoot regeneration regimes from Lettuce, Petunia, and Tobacco Explants suitable for genetic (Transient and Stable Nuclear) Transformations.

- Oct 2011 – Sept 2012** **General and Academic English Language Courses** at The University of Manchester Language Centre, Manchester, United Kingdom.
- Oct 2004 – July 2008** **BSc Plant Production/Agriculture** – Salahaddin University, College of Agriculture, Plant Production Department – Erbil, Kurdistan Region, Iraq. Grade: Good (75.4%)
- ✓ Several Agricultural Sciences courses include Horticulture (Plant Physiology, Breeding, Vegetables and Fruit Production, Ornamental Plants, Landscape Design), Forestry, Field Crops, Plant Protection, Soil and Water Sciences.

Extracurricular Activities - Involvement Volunteering

- ✓ Fall 2022 Graduate Orientation **Coordinator and Team Leader** – August 2022
- ✓ Macdonald Campus Graduate Students' Society (MCGSS) - **President** - Since June 2021
- ✓ Macdonald Campus Graduate Students' Society (MCGSS) - **Faculty Representative** - July 2019 – May 2021
- ✓ Federation of European Microbiological Societies (FEMS) – Member of **#OnThisDay team** – Since March 2020

Honours and Awards:

- ✓ **November 2022: G.R.E.A.T Travel Award** – Department of Plant Science, McGill University
- ✓ **November 2022: Center SÈVE (Interinstitutional Research Center, Quebec) Travel Grant**, Sherbrooke University, CA
- ✓ **February 2021: The Gold Key Award** – For leadership excellence, volunteer involvement in campus life, and extra-curricular activities in Macdonald Campus Community McGill University.
- ✓ **January 2020: Graduate Excellence Award** – McGill University
- ✓ **October 2019: Plant Science Postgraduate Award** – Good Citizenship in the Department of Plant Science, McGill University.
- ✓ **December 2019: Center SÈVE (Interinstitutional Research Center, Quebec) Travel Grant**, Sherbrooke University, CA
- ✓ **December 2019: G.R.E.A.T Travel Award** – Department of Plant Science, McGill University
- ✓ **July 2019: G.R.E.A.T Travel Award** – Department of Plant Science, McGill university
- ✓ **March 2018**; NSERC-CRD and AAFRC grants for the Ph.D. program at McGill University.
- ✓ Salahaddin University-Erbil, Quality Assurance Certificates for **best lecturers** in the College of Agriculture for **2014/2015, 2015/2016 and 2016/2017** academic years.
- ✓ **May 2015**, First Prize winner in **Academic Debate and Critical Thinking** competition with a letter of appreciation from Salahaddin University-Erbil president. Supervising a group of undergraduate students in a competition discussing Agriculture and its role in the labour market.
- ✓ **October 2011**, HCDP Full scholarship from the Ministry of Higher Education and Scientific Research to study a master's degree in the United Kingdom under Human Capacity Development Programme (HCDP) sponsored by Kurdistan Regional Government, Iraq.

Involvement in McGill University Committees

- ✓ Voting Member in McGill's Faculty of Agricultural and Environmental Sciences Academic Program Committee.
- ✓ Member of Graduate Studies Committee at McGill's Faculty of Agricultural and Environmental Sciences.
- ✓ Active Member in McGill's Macdonald Campus Research Group Committee in response to COVID-19 – 2022, 2021, 2022.
- ✓ Member in Advisory Committee for the Re-nomination of the Chair of the Department of Plant Science at McGill University - 2021.
- ✓ Member of McGill's Faculty of Agricultural and Environmental Sciences Planning Committee for Equity, Diversity and Inclusion, and Anti-black racism – Since Fall 2020.
- ✓ Member of Working Group for Revisions to University's Policy on Inventions and Software, and Policy on Copyright - 2021
- ✓ Member in McGill's Macdonald sub-committee on Physical Facilities 2021-2022.

Communication and Time Management Skills

- ✓ Excellent communication skills. Worked intensively in laboratories, greenhouses and open fields/farms and attended many groups works, seminars, meetings, and workshops.
- ✓ Time Management skills, establishment, and handling responsibilities very well.
- ✓ Can work under pressure with/without a leader and capable of finding solutions to problems.

Memberships

- ✓ McGill Course Lecturers and Instructors Union (MCLIU) – Member Jan 2020
- ✓ Association of Graduate Students Employed at McGill (AGSEM) – Invigilator Pre-Bargaining Committee Chair - **Executive** member Apr 2019 – November 2020
- ✓ Macdonald Campus Graduate Students' Society (MCGSS), McGill University, **Executive** member - May 2019
- ✓ Association of McGill University Research Employees (AMURE) – Member April 2019
- ✓ Association of McGill University Support Employees (AMUSE) – Member May 2019
- ✓ Association of Graduate Students Employed at McGill (AGSEM) – Member Jan 2018
- ✓ The University of Manchester Alumni Association, the UK, member since December 2013
- ✓ Kurdistan Teachers Union, member since November 2009
- ✓ Cultural Centre of Salahaddin University-Erbil, Kurdistan Region, Iraq, member since July 2009
- ✓ Kurdistan Agricultural Engineers' Syndicate - Erbil, Kurdistan Region, Iraq, member since December 2008

Languages

Turkmen (Mother Language), Kurdish (Professional), **English**, Arabic, and Turkish (Very Good)

Certificates:

Teaching Methods, Academic Debate and Critical Thinking, Health and Safety, IELTS, English Language Proficiency, IT, First Aid Training, WHMIS and Introduction of Biosafety Certificates

Courses, Group Works, Trainings:**McGill University**

- Workplace Hazardous Materials Information System (WHMIS) - Environmental Health and Safety Training; Introduction to Biosafety Training

University of Manchester

- Statistics and Experimental Design, Research Ethics, Scientific Communication, Tutorial and Workshops

Salahaddin University-Erbil

- Teaching Methods; Health and Safety; Chemical Inventory Storage and Waste Management, Academic Debate and Critical Thinking

The University of Manchester Language Centre

- English Pre-sessional and In-sessional (Academic Writing Courses); English Gateway (English for University Course)

Conference Presentations and Publications:**Poster Presentation:**

Title: Microbe-coating fertilizers for sustainable biomass production and yield enhancement: Corn and potato case studies.

Presented in the Biomass Symposium: Developing Canadian Biomass to Power the Canadian Bioeconomy - BioFuelNet's BioMass Canada (BMC) AgriScience Cluster in collaboration with the Canadian Society of Agronomy (CSA). Halifax, Nova Scotia. November 14, 2022.

Flash Talk Presentation:

Title: Microbial consortia: a way to enhance crop yield under both controlled environment and field conditions

Presented in:

1. International miCROPe 2019 Symposium (Microbe-Assisted Crop Production Opportunities, Challenges & Needs), Vienna, Austria. December 2nd-5th, 2019
2. "Biomass to Fuel the Bioeconomy" workshop - Biomass Canada Cluster, Ottawa. September 23, 2019

Publications:

Antar et al., (2020). Inter-Organismal Signaling in the Rhizosphere. *Rhizosphere Biology: Interactions Between Microbes and Plants*. Springer, Singapore, 2020. pp. 255-293. https://doi.org/10.1007/978-981-15-6125-2_13

Antar et al., (2021). Biomass for a sustainable bioeconomy: An overview of world biomass production and utilization. *Renewable and Sustainable Energy Reviews* 139: 110691. <https://doi.org/10.1016/j.rser.2020.110691>

Lyu et al., (2021). Plant Holobiont Theory: The Phytomicrobiome Plays a Central Role in Evolution and Success. *Microorganisms*. 2021; 9(4):675. <https://doi.org/10.3390/microorganisms9040675>

Lyu et al., (2021). The coevolution of plants and microbes underpins sustainable agriculture. The Coevolution of Plants and Microbes Underpins Sustainable Agriculture. *Microorganisms*, 9(5), p.1036. <https://doi.org/10.3390/microorganisms9051036>

Shah et al., (2021). PGPR in Agriculture: A sustainable approach to increasing climate change resilience. *Frontiers in Sustainable Food Systems*, 5, 211. <https://doi.org/10.3389/fsufs.2021.667546>

Msimbira et al., (2022). Effect of Microbial Cell-Free Supernatants Extracted From a Range of pH Levels on Corn (*Zea mays* L.) and Tomato (*Solanum lycopersicum* L.) Seed Germination and Seedling Growth. *Front. Sustain. Food Syst.* 6: 789335. <https://doi.org/10.3389/fsufs.2022.789335>

Naamala et al., (2022). Cell-Free Supernatant Obtained from a Salt Tolerant *Bacillus amyloliquefaciens* Strain Enhances Germination and Radicle Length Under NaCl Stressed and Optimal Conditions. *Front. Sustain. Food Syst.* 6: 788939. <https://doi.org/10.3389/fsufs.2022.788939>

Riaz et al., (2022). A Bacterial Consortium and Synthetic Fertilizer Based Biocontrol Approach Against Potato Rot Disease “*Neocosmospora rubicola*”. *Front. Agron., Sec. Disease Management* <https://doi.org/10.3389/fagro.2022.828070>

Yaghoubian et al., (2022). The Effects of Hydro-Priming and Colonization with *Piriformospora indica* and *Azotobacter chroococcum* on Physio-Biochemical Traits, Flavonolignans and Fatty Acids Composition of Milk Thistle (*Silybum marianum*) under Saline Conditions. *Plants*, 11(10), 1281; <https://doi.org/10.3390/plants11101281>

Riaz et al., (2022). *Neocosmospora rubicola*, a stem rot disease in potato: Characterization, distribution and management. *Front Microbiol.* 13:953097. <https://doi:10.3389/fmicb.2022.953097>

Msimbira et al., (2022). Secretome Analysis of the Plant Biostimulant Bacteria Strains *Bacillus subtilis* (EB2004S) and *Lactobacillus helveticus* (EL2006H) in Response to pH Changes. *International Journal of Molecular Sciences* 23, no. 23: 15144. <https://doi.org/10.3390/ijms232315144>

For more information on ongoing projects and paper preparation, please visit my [ResearchGate](#) and [LinkedIn](#) profiles.