

Curriculum Vitae

Ludovic J.A. Capo-chichi, Eng., Ph.D., P.Ag.

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HIGHLIGHTS

- PhD (Outstanding) in plant breeding with an emphasis in the areas of genetics, agronomy, cropping systems, molecular genetics and biostatistics.
- Over 15 years of experience in conducting hands on scientific research and leading interdisciplinary research teams in the public and private sectors.
- Combination of Certificates of Project Leadership, Project Management, and Strong Research Experience.
- Experience in providing strategic advice, coaching and hands-on assistance for the development of grant applications and proposals to researchers from idea through to submission, including strategizing on how to leverage funding and take advantage of other opportunities to bring in more research funding at the individual researcher level.
- Experience with quantitative, qualitative, and mixed research design/methods (writing research/evaluation questions, selecting appropriate methods, applying appropriate analytic techniques). Extensive experience in developing and evaluating science proposals, preparing grants applications and field research processes.
- Experience in working in/with government organizations, research institutions, not-for-profits, and industry in agriculture and food production, biomaterials, and climate change impact including leading research programs and participating in joint industry projects.
- Effective and diplomatic approach in providing recommendations to senior management and officials and institutional representatives.
- Experience in coordinating and training students and researchers on the development of research proposals.
- Strong organizational skills in planning and coordinating experiments across environments and abilities to effectively share results across organizations.
- Experience in contributing to leadership aspects of the research activities.
- Good communication skills and ability to transfer technology.
- Excellent personal interaction skills required for effectively developing strong internal and external working relationships with a diverse group of people.
- Highly motivated and self-directed researcher.
- Experience in developing and maintaining positive working relationships within assigned areas.
- Experience in facilitating the development of research partnership and connection between faculty staff and potential collaborators including Universities and research centres.

- Experience with Univariate (bivariate correlations, dependent samples t-tests, Regression, ANOVA) and multivariate (multiple regression) analysis.
- Advanced in MS Office, PeopleSoft, google Suite, Zoom, IT skills relevant to today's work environment, statistical modeling with SAS version 9.4, Mixed model and GLM, Biostatistics, Statistical Genomics.
- Bilingual: English & French (Fluency in English and French both spoken and written).

EDUCATION

Auburn University, Alabama, U.S.

- Ph.D. in Plant Breeding and Agronomy (Outstanding)
- Master of Science degree in Agronomy and Plant Breeding.
- Engineer Agriculture /BSc Agronomy (Honor)

PROFESSIONAL DEVELOPMENT

University of Alberta

- Certificate of Leadership and Team Development, 2022

Northern Alberta Institute of Technology (NAIT)

- Certificate of Project Leadership, 2019
- Certificate of Project Management, 2019

University of Birmingham/School of Bioscience, England & The International Institute of Plant Genetic Resources (IPGRI), Cotonou, Benin

- Certificate of Plant Biodiversity Conservation and Sustainable Utilization.

PROFESSIONAL EXPERIENCE

Saken Seifullin Kazakh Agrotechnical Research University, Astana, Kazakhstan (November 1 - 29, 2023)

- Visiting Scientist
 - Reviewed of educational program «Genetics and breeding of crops». The educational program involves fundamental, educational, methodological and research training and in-depth study of disciplines in agricultural areas of education for higher and postgraduate education and enterprises in the agricultural sector.
 - Reviewed for the educational program «Agrobiotechnology», field of education: 7M08-«Agriculture and Bioresources», direction of training 7M081-«Agronomy», group of educational programs: «Crop Production»
 - Delivered several seminars, lectures, doctorate and master classes – 15 lectures, 30 practical sessions, , 34 hours of round tables, seminars, trainings for young scientists,

- teaching staff, scientists of affiliated organizations (e.g. Baraev Institute, North Kazakhstan Agricultural Experimental Station).
- Conducted training and seminars for university staff – 18 hrs (in accordance with the approved work plan of the university). Conducted training and seminars for young scientists and doctoral students – 16 hrs (in accordance with the approved work plan of the institution).
- Review for research work on the project «Transfer and adaptation of the technology of growing flax of Kazakh and Chinese varieties to increase productivity in the production of oil, fibers in Northern Kazakhstan», Project manager Yelnazarkyzy Rakhiya
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University of Alberta, Edmonton, AB

2021-2023

- Agronomy Research Scientist
 - Coordinated research programs on cereal agronomy at the provincial scale.
 - Developed new research questions, implement and coordinate research projects, data analysis and interpretation. This involves modelling of cropping systems, developing management recommendations for Alberta farmers.
 - Collaborated with government, applied research associations, university and private industry researchers provincially, nationally and international crop commissions and scientific organizations to develop agronomic advice for cereals in all of Alberta's major agro-ecological environments.

Results Driven Agriculture Research, AB

- **Contractor**
 - Review proposals and project reports
 - Made recommendations to the Director of Research
 - Review financial and budget

InnoTech Alberta Inc. Edmonton, AB

2007 – 2019

(Previous names of the organization: Alberta Innovates Technology Futures, Alberta Research Council)

- Project Leader & Research Scientist, 2010 - 2019
- Ingenuity Industry R&D Associate, 2007 - 2010
- Provided scientific leadership and project management to support entrepreneurs in Alberta from the stage of generation of new ideas through applied testing to commercialization and end-use
- Managed the full cycle of research, lab testing, product development and field research by leading a team of technicians
- Conducted in-depth analysis and advice to leaders on issues relevant to the organization's priorities
- Facilitated communication between internal researchers, external funders and partners

- Represented the organization at high scale conferences, symposiums, meetings and partnership discussions
- Took responsibility for Environment, Health and Safety compliance within the work group

University of Georgia, USA

2006 – 2007

Assistant Research Scientist

- Designed and conducted research on turf grass, stress physiology
- Presentation of results at the international and national conferences

Auburn University, Alabama, USA

1993 - 2002

- Research Fellow, 2003 – 2006
- Research Assistant, 1993 – 2002
- Designed and conducted research on invasive
- Developed strategies to eradicate the invasive species (*imperata cylindrica*) in the south eastern USA

Promotion of Agriculture and Development, Republic of Benin

1988 - 1993

- Head of Crop Production
- Hired, trained and assigned work to team members; assessed their performances and provided immediate feedback for improvement
- Regularly communicated to several thousands of farmers to identify efficiency issues with crop and agriculture production
- Managed a team of up to 10 people to conduct surveys with farmers, reviewed the compiled reports before making decisions and recommendations to the agriculture minister / official

SELECTED GRANTS & CONTRACTS

- Grant: Saskatchewan Wheat Development Commission (SWDC), Western Grain Development Foundation (WGDF), Manitoba Crop Alliance (MCA). Funded April 01, 2023 – March 31, 2026. Project title: “*High Yielding Wheat Varieties via Screening for Water Use Efficiency and Drought Tolerance under Different Thermal Conditions*”. Partners involved: University of Alberta, Agriculture and Agri-Food Canada, University of Saskatchewan. Guillermo Hernandez Ramirez (Project Account Owner) - **Ludovic Capo-Chichi (Project Investigator)**.
- Grant: Alberta Innovates – Bio Solutions (AI-Bio), Alberta Crop Industry Development Fund (ACIDF), Alberta Barley Commission (ABC) and Alberta Innovates – Technology Futures (AI-TF). Funded April 01, 2013 – March 31, 2016. *Genetic Improvement in Nitrogen Use Efficiency and Grain Yield of Barley*. Partners involved: Field Crop Development Centre/Alberta Agriculture and Forestry; InnoTech Alberta. **Ludovic Capo-Chichi (Co-Project Leader)]**.
- Grant: Alberta Innovates – Bio Solutions, Busch Agricultural Resources, LLC, Dow AgroSciences Canada, InnoTech Alberta Inc. Funded April 01, 2015 – March 31, 2018. *Improving drought tolerance, nitrogen and water use efficiency using rapid and reliable*

techniques for root traits in barley. Partners involved: Crop Development Centre/University of Saskatchewan; Field Crop Development Centre/Alberta Agriculture and Forestry; InnoTech Alberta. [**Ludovic J.A. Capo-chichi (Project Leader)**].

- **Grant:** Alberta Innovates and Alberta Barley Commission. Funded March 1, 2018 – February 28, 2021. *Determining the critical traits associated with lodging in a set of elite breeding lines and Canadian barley varieties*. Partners involved: Field Crop Development Centre/Alberta Agriculture and Forestry and InnoTech Alberta. Joseph Nyachiro (Co-Project Leader), **Ludovic J.A. Capo-chichi (Co-Project Leader)**.
- **Grant:** Canola Council of Canada. Funded April 01, 2011 – March 31, 2014. *Assessment of seed germination and seedling performance of spring canola at low temperature*. Partners involved: Agriculture and Agri-Food Canada; InnoTech Alberta. [**Ludovic J.A. Capo-chichi (Project Leader)**].
- **Grant:** Alberta Crop Industry Development Fund (ACIDF) and Brewing and malting Barley Research Institute (BMBRI). Funded April 01, 2013 – March 31, 2016. *Development of low temperature tolerance of spring barley for genetic improvement of yield and malting quality*. Partners involved: Field Crop Development Centre/Alberta Agriculture and Forestry; InnoTech Alberta. [**Ludovic Capo-Chichi (Project Leader)**].
- **Grant:** Brewing and Malting Barley Research Institute and InnoTech Alberta. Funded April 01, 2016 – March 31, 2019. *Development of malting barley varieties with improved seedling cold tolerance and malting quality*. Partner involved: Field Crop Development Centre/Alberta Agriculture, Crop Development Centre/University of Saskatchewan, InnoTech Alberta. [**Ludovic Capo-Chichi (Project Leader)**].
- **Grant:** Alberta Ingenuity Fund. November 1, 2007 – October 31, 2009. Development of novel tools for seedling vigor in barley. Partners involved: 20/20 Seeds Lab Inc., InnoTech Alberta. Ludovic Capo-chichi (**Project Investigator**).
- **Contract:** Crop Development Centre/University of Saskatchewan. *Screening CDC Barley Germplasm and Breeding lines for Low Temperature Tolerance*. Partners involved: Crop Development Center/University of Saskatchewan and InnoTech Alberta. **Ludovic J.A. Capo-chichi (Co-Project Leader)**.
- **Contract:** Dow AgroSciences Canada/ AgriInnovation Program Stream B. September 1, 2013 – December 31, 2014. *Developing Novel Screening Tools to Improve Crop Establishment of Spring Canola*. Dow AgroSciences Canada and InnoTech Alberta. [**Ludovic Capo-Chichi (Project Leader)**].
- **Contract:** Pittsburgh Parks Conservancy. Amplified Fragment Length Polymorphism (AFLP) genotyping for *Acer rubra* and *Ilex opaca*. [**Ludovic Capo-Chichi**].
- **Contract:** Best environmental Technologies. Testing TM Agricultural on emergence and seedling development using field soil. [Ludovic Capo-Chichi (Project Leader)].

SELECTED ARTICLES

- Solovyov, O., Shvidchenko, V., Zaika, V. **Capo-chichi, L.J.A.**, and Kadirov, B. (2024) Spring wheat productivity and profitability under various crop rotations in northern Kazakhstan's chemozem. *International Journal of Design and Nature and Ecodynamics* (Accepted – In press).
- Elakhdar, A., J. J. Slaski, T. Kubo, A. Hamwieh, G. Hernandez Ramirez, A. Beattie and **L. J.A. Capo-chichi**. (2023). Elakhdar A, Slaski JJ, Kubo T, Hamwieh A, Hernandez Ramirez G, Beattie AD and Capo-chichi LJA (2023) Genome-wide association analysis provides insights into the genetic basis of photosynthetic responses to low-temperature stress in spring barley. *Front. Plant Sci.* 14:1159016. doi: 10.3389/fpls.2023.
- Capo-chichi, L.J.A.**, A. Elakhdar, T. Kubo, J. Nyachiro, P. Juskiw, F. Capettini, J. J. Slaski, G. Hernandez Ramirez, A. D. Beattie. (2023). Genetic diversity and population structure assessment of Western Canadian barley cooperative trials. *Frontiers in Plant Sciences – Section Biotechnology*
- Elakhdar A. T., Solanki, S., Kubo, T., Abed, A., Elakhdar I., Khedr R., Hamwieh, A., **Capo-chichi, L.J.A.**, Abdelsattar, M., Franckowiak, J.D., Qualset, C.O. 2022. Barley with improved drought tolerance: Challenges and perspectives. *Environmental and Experimental Botany*. 201: 104965.
- Capo-chichi, L.J.A.**; Eldridge, S.; Elakhdar, A.; Kubo, T.; Brueggeman, R.; Anyia, A.O. 2021. QTL Mapping and Phenotypic Variation for Seedling Vigour Traits in Barley (*Hordeum vulgare* L.). *Plants*, 10, 1149. <https://doi.org/10.3390/plants10061149>
- Elakhdar, A., T. Kumamaru. C. O. Qualset. R. S. Brueggeman. K. Amer. **L. J. A. Capo-chichi**. Assessment of genetic diversity in Egyptian barley (*Hordeum vulgare* L.) genotypes using SSR and SNP markers. 2018. *Genetic Resources and Crop Evolution*. 65:1937–195
- Elakhdar, A., T. Kumamaru, K. P. Smith, R. S. Brueggeman, **L. J.A. Capo-chichi**, S. Solanki. 2017. Genotype by environment interactions (GEIs) for barley grain yield under salt stress condition. *Journal of Crop Science and Biotechnology*. 20 (3): 193 - 204.
- Runion, G. Brett, Stephen A. Prior, **Ludovic J.A. Capo-chichi**, H. Allen Torbert, Edzard van Santen. 2016. Varied growth response of cogongrass ecotypes to elevated CO₂. *Frontier in Plant Science*. <http://dx.doi.org/10.3389/fpls.2015.01182>
- Capo-chichi, L.A.J.**, K. Kenward, J. Nyachiro, and A. Anyia. 2012. *Nud* locus and the effects on seedling vigour related traits for genetic improvement of hulless barley. *Journal of Plant Sciences and Molecular Breeding*.
- Capo-chichi, L.J.A.**, W. H. Faircloth, A.G. Williamsom, M. G. Patterson, J.H. Miller, and Edzard van Santen. 2008. Invasion dynamics of cogongrass (*Imperata* sp) at the point of initial introduction in the southeastern United States. *Invasive Plant Science and Management* 133-141.
- Capo-chichi, L.J.A.**, J.M. Goatley Jr., W. Philley, J. Krans, D. Davis, A. Kato, and Edzard van Santen. 2005. Dinitroaniline-Induced Genetic Changes in Bermudagrass. *Crop Science* 45:1504-1510.
- Capo-chichi, L.J.A.**, C.M Morton and D.B. Weaver. 2004. An intraspecific genetic map of velvetbean (*Mucuna* sp.) based on AFLP markers. *Theoretical and Applied Genetics* 108:814-821

- Capo-chichi, L.J.A.,** M Eilitta, R.J. Carsky, R.A. Gilbert, and B. Maasdorp. 2003. Effect of genotype and environment on L-Dopa concentration in Mucuna's (Mucuna sp.) seeds. *Tropical and Subtropical Agroecosystems*, 1: 319-328.
- Capo-chichi, L.J.A.,** D.B. Weaver. C.M. Morton. 2003. The use of molecular markers to study genetic diversity of velvetbean (Mucuna sp.). *Tropical and Subtropical Agroecosystems*, 1: 309-318.
- Eilitta. M., R.J. Carsky, J. Mureithi, N. Szabo, R. Bressani, R. Myhrman, C. Sandoval, R. Muinga, L.B. Carew, **L.J.A. Capo-chichi,** and A. Teixeira. 2003. Future agenda for Mucuna research and promotion. *Tropical and Subtropical Agroecosystems*. 1:329-343
- Capo-chichi L.J.A,** D.B. Weaver, and C.M Morton. 2001. AFLP Assessment of Genetic Variability of Velvetbean (Mucuna sp.) Accessions. *Theoretical and Applied Genetics* 103(8):1180-1188.

HIGHLIGHTS OF RECENT PRESENTATIONS

- Determining the critical traits associated with lodging and approaches to mitigate the risks of lodging in the Canadian barley varieties and elite breeding lines. 23rd North American Barley Researchers Workshop and 43rd Barley Improvement Conference, UC Davis, California, September 2-2 - 24, 2022.
- Abiotic Stress Tolerance in Spring Barley: Cases of Drought and Cold Tolerance. 8th Canadian Barley Symposium and 22nd North American Barley Researchers Workshop, Winnipeg, Canada. <https://www.barleycanada.com/canadian-barley-symposium>, 2017.
- Improving drought tolerance and nitrogen use efficiency in barley and wheat using reliable techniques for root traits. Edmonton, Canada, 2017.
- Abiotic Stress Screening at InnoTech Alberta: Improving drought tolerance and nitrogen use efficiency using rapid and reliable techniques for root traits in wheat. Wheat Science and Business Workshop, Saskatoon, Canada, 2017.
- Association of SNP markers and chlorophyll fluorescence parameters with low temperature tolerance in spring barley. In: 12th International Barley Genetic Symposium, University of Minnesota, St Paul, USA. https://wheat.pw.usda.gov/ggpages/barley_boulevard/IBGS_2016_wholeUpdated.pdf, 2016.
- Water use efficiency and barley production on the Canadian Prairies. University of Alberta, Edmonton, Canada, 2016.
- Low temperature tolerance of spring barley for improvement of early crop establishment. Edmonton, Canada. <http://2015.botanyconference.org>, 2015.
- Association of SNP markers and chlorophyll fluorescence parameters with low temperature tolerance in multiple Brassica species. The 14th International Rapeseed Congress (IRC 2015) Saskatoon, Canada.
- <https://www.agwest.sk.ca/blog/posts/International-Rapeseed-Congress-in-Saskatoon.html>, 2015.
- QTL for early seedling vigor and water-soluble carbohydrate of barley. The 7th Canadian Barley Symposium. Calgary, Canada. 7th Canadian Barley Symposium, 2012.

- Variability and relationship among seedling vigour traits in barley recombinant inbred lines., 6th Canadian Barley Symposium. Saskatoon, Canada, 2010.
- Molecular analysis of seedling-related traits contributing to variation in early vigor in barley. Joint Annual Meeting of the Canadian Society of Agronomy, Canadian Society of Soil Science, Canadian Society of Agricultural and Forest Meteorology. Guelph, Canada, <https://agronomycanada.com/joint-annual-meeting-2009>.
- Physiological relationship of seed vigor to seedling vigor in barley. Canadian Society of Plant Physiologists. Simon Fraser University, Burnaby, Canada. <http://www.cspb-scbv.ca/documents/proceedings/AM2009.pdf>.

PROFESSIONAL MEMBERSHIPS

- Full Member, Prairie Recommending Committee for Oat and Barley (PRCOB)
- Member, Canadian Seed Growers Association
- Designated Member, Alberta Institute of Agrologists
- Member, Canadian Society of Agronomy
- Member, American Society of Agronomy
- Member, Crop Science Society of America

HONORS, AWARDS & RECOGNITION RECEIVED:

- Corporates Award: Contribution to Community, Alberta Innovates – Technology Futures
- Award for Academic Excellence: Outstanding Doctorate Candidate (Auburn University, USA)
- Award for Outstanding Achievement: The Gamma Sigma Delta, Honor Society of Agriculture (USA)
- Award for Research Presentation, the American Society of Agronomy
- Award for Research Grant, the Rockefeller Foundation
- Invitation to speak (Kenya Agricultural Research Institute and the International Institute of Tropical Agriculture)
- Person resource in the briefing notes to accompany BBC Correspondent Program (June 10th 2001)