

Curriculum Vitae

Mladen Čučak

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Contact Information

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Summary

The focus of my work is on understanding and quantifying the relationship between the pest, host, environment and human interaction in diverse agronomic pathosystems, in order to turn it into a practical integrated pest management decision making advice. I am combining statistical and mathematical computational approaches and applied field/lab methods to simplify and understand these relationships.

Education

- **PhD in Plant Pathology/Epidemiology**, Maynooth University and Teagasc, Ireland, 2016-2020
- **MSc in Biomolecular Techniques and Plant Protection**, University of Maribor, Slovenia, 2012-2015
- **BSc in Plant Production/Plant Protection**, University of Banja Luka, Bosnia & Herzegovina, 2006-2011

Areas of Expertise

- | | | |
|----------------------------------|---------------------------|--------------------------|
| - Crop Protection | - Statistical analysis | - Data Science |
| - General plant pathology | - Experimental design | - Generative AI |
| - Integrated Pest Management | - Statistical programming | - Collaborative research |
| - Epidemiology of Plant Diseases | - R language | - Agrometeorology |

Professional Experience

Data Scientist, Product Development

Global Predictive Analytics, R&D, Syngenta, Basel, CH, December 2022 – Present

- Working on the development of a digital field trialing pipeline and advanced predictive analytics to enhance product development efficiency and accuracy.
- Collaboration with scientific institutions to enhance the analytical pipeline.

Postdoctoral Researcher

Department of Plant Pathology and Environmental Microbiology, Pennsylvania State University, USA, March 2021 – Present

- Pioneered development and validation of advanced decision support tools for field crops, incorporating big data and machine learning.
- Managed group operations, supervised postgraduate student projects, and facilitated significant domestic and international collaborations.

Doctoral Researcher

Teagasc, Crops Research Centre, Oak Park, Carlow R93 XE12, Republic of Ireland, February 2016 – May 2020

- Led the development of potato late blight risk prediction models, conducting both analytic and field evaluations, and integrated these into Ireland’s crop disease management strategy.
- Designed, implemented, and analyzed crop protection experiments, both in vivo and in vitro, covering all aspects from planting to storage.
- Managed the collection, curation, and analysis of databases with historical and forecasted hourly weather observations to develop and implement an automated decision support system for pesticide application guidance.
- Conducted detailed pathogen analysis through sampling and molecular characterization of *Phytophthora infestans*.
- Presented IPM trial outcomes to producers and at national and international meetings across disciplines such as agronomy, plant pathology, epidemiology, and meteorology.
- Initiated a data analysis and R programming community within the institute to enhance research collaboration.
- Engaged in extensive collaboration with European and international groups.

Senior Research Technician

Plant Pathology Department, NIBIO, Norway, December 2014 – December 2015

- Assisted in project management, monitored agricultural pest and disease trends, and bolstered Norway-Balkans international collaborations.

Teaching Experience

- Teaching Assistant for Plant Disease Epidemiology course, 2021 and 2022
- Tutor, GY310B – Guided a group of 16 students through their Bachelor thesis projects, 2018-2019
- Workshop Instructor, “Intro to Data Visualisation with R” at APS and “Intro to R” workshop for institute colleagues, 2019 & 2021

Grants

- **Total: \$58,986.38**
- **2022**
Seed grant for development of soybean crop data pipelines (\$22,500).
- **2021-22**
Optimizing the management of mummy berry using an online decision support tool. Washington Blueberry Commission (\$20,766).
- **2020**
Potato yield survey for the Republic of Ireland in 2021 (€7,000).

- **2019**
Research visit for a three-month research stay at UC Davis. Teagasc Travel Fellowship (€5,000).
- **2011**
Online plant disease compendium. Ministry of Agriculture of Serb Republic (Bosnia) (€1,000).

Awards and Scholarships

- **Total: \$96,000**
- **2016**
Student travel award for participation on EAPR Pathology and Pests section meeting (€500)
- **2016 - 2020**
Doctoral fellowship at Maynooth University and Teagasc (€48,000)
- **2014**
EEA grant for an internship at Norwegian Institute for Bioeconomy Research (€3,000)
- **2012 - 2014**
Erasmus Mundus scholarship for Master studies (€28,000)

Service to Profession

Synergistic Activities

- Early career associate editor: *Phytopathology* (APS)
- Reviewer for:
 - *Communications Biology* (Nature)
 - *Plant Disease* and *Phytopathology* (APS)
 - *Plant Pathology* (BSPP)
 - *Climate Services* (Elsevier)
 - *Agronomy* (MDPI)

Membership in Professional Associations

- The American Phytopathological Society (APS)
- EuroBlight group
- Open Plant Pathology