

MAURICIO TEJERA
Department of Agronomy
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EDUCATION

PhD Crop Production and Physiology, Iowa State University, USA 2014 – present
Graduate Research Assistant, GPA: 4.00
Areas of study: Perennial grasses, bioenergy, experimental design, plant development, plant aging

MSc Plant Science, Universidad de la República, Agronomy Department, Uruguay 2011 – 2014
Graduate Research Assistant, GPA: 3.4
Dissertation: Inclusion of perennial warm season grasses in conventional pastures: effects on biomass production, weed invasion and temporal stability

BSc Ecology, Universidad de la República, School of Sciences, Uruguay 2007 – 2011
Undergraduate Research Assistant, GPA: 3.2
Dissertation: Inclusion of perennial warm season grasses in conventional pastures and their impact on ecosystem services

ACHIEVEMENTS & AWARDS

Brown Graduate Fellowship – Iowa State University 2018

Vernon C. Miller Scholarship – Iowa State University – Department of Agronomy 2017

Awarded Professional Advancement Grant – Iowa State University –
Graduate and Professional Student Senate 2017

Elected Vice-President Agronomy Graduate Student Club 2016 – 2017

Elected President Agronomy Graduate Student Club 2015 – 2016

Leading the Bioeconomy Fellowship – Bioeconomy Institute - Iowa State University 2014

Masters Fellowship – National Agency of Research and Innovation - Uruguay 2012-2014

Junior Research Fellowship – National Agency of Research and Innovation - Uruguay 2011

Research Assistant in Plant Biology Department - Universidad de la República -
Uruguay 2010 – 2011

SCIENTIFIC INTERESTS

My scientific interests cover a wide range of issues related to plant growth and physiology. I am interested in the physiological responses of plants to environmental changes. I am particularly interested in the cross-talk between these changes and photosynthesis; how different environmental conditions impact photosynthesis and how plants modify the photosynthetic process to adapt to them. Therefore, my areas of interest include carbon assimilation, photosynthetic limitations and photosynthetic regulation and optimization.

My other scientific interests are related to data analysis and linear and nonlinear models. I use statistical tools to validate findings, model complex responses and increase the scope of experimental results.

PRIOR RESEARCH

My research focuses on plant responses to different environmental conditions. At the community level, I studied how different combinations of species impact pasture yield and stability (Tejera et al, 2016; Halty et al, 2017; Bresciano et al, 2018), now, at the population level, I study how different levels of nitrogen (N) fertilization impact growth and longevity of perennial grasses. To make these results comparable across species we developed a morphological characterization for perennial grasses (Tejera & Heaton, 2017). Field experiments on perennial research usually confound growing season and age effect. Using a novel experimental design, our findings suggest that repeated planting year is a useful method to separately estimate these effects (Tejera et al, in prep.¹).

Using a mechanistic approach, my research focuses on the physiological and phenological base behind nutrient response, aging and potential interactions between them (Tejera & Heaton, in prep.²). Our results suggest that while older stands are more efficient at intercepting and converting light into biomass, their growth rates and leaf-level photosynthetic rates decrease as they age (Tejera et al, in prep.³). Whether this is a consequence of nutrient dilution in older and bigger plants, an evolutionary strategy, or sink-source limitation on photosynthesis remains unknown. A deeper understanding of the photosynthetic process, its limitations and potential optimization is essential to strengthen my understanding of the growth and development of perennial plants.

PUBLICATIONS

Bresciano, D., Del Pino, A., Borges, A., **Tejera, M.**, Speranza, P., Astigarraga, L. and Picasso, V. (2018) Perennial C4 grasses increase root biomass and carbon in sown temperate pastures. *New Zeal J Agr Res*, 1-11

Tejera, M., and Heaton, E. A. (2017). Description and Codification of *Miscanthus × giganteus* Growth Stages for Phenological Assessment. *Front. Plant Sci.* 8. doi:10.3389/fpls.2017.01726.

Halty, V., Valdés, M., **Tejera, M.**, Picasso, V., and Fort, H. (2017). Modeling plant interspecific interactions from experiments with perennial crop mixtures to predict optimal combinations. *Ecol. Appl.* doi:10.1002/eap.1605.

Piñeyro, M., Cabrera, J., Quintans, F., **Tejera, M.**, and Chalar, G. (2016). Effects of hydraulic residence time in experimental constructed wetlands on wastewater treatment of a fish factory. *Panam. J. Aquat. Sci.* 11, 93–102.

Tejera, M., Speranza, P., Astigarraga, L., and Picasso, V. (2016). Forage biomass, soil cover, stability and competition in perennial grass-legume pastures with different *Paspalum* species. *Grass Forage Sci.* 71, 575–583. doi:10.1111/gfs.12208.

- Boersma, N., **Tejera, M.**, and Heaton, E. (2017). Long-Term Assessment of Miscanthus Productivity and Sustainability Long-Term Assessment of Miscanthus. *Farm Prog. Rep.* 2016, 28–31.
- Tejera, M.**, and Heaton, E. A. (2017). “What is Happening with Perennial Biomass Crops in Iowa?,” in *Getting Into Soil and Water 2017*, eds. L. Brown, H. Corey, and L. Ellensohn (Ames, IA: Iowa Water Center), 10–11
- Tejera, M.**, Boersma, N., Miguez, F., Archontoulis S., Dixon, P., and Heaton, E. A. Repeated planting year (REPLAY) designs for the study of perennials; an overlooked approach for elucidating *Miscanthus × giganteus* nitrogen response. (In prep. ¹).
- Tejera, M.**, and Heaton, E. A. Does Nitrogen Fertilization Make *Miscanthus x giganteus* Grow Faster Or Bigger? (In prep. ²).
- Tejera, M.**, Boersma, N., Miguez, F., Archontoulis S., Dixon, P., and Heaton, E. A. (2019). Lower leaf-level A in older plants: a function of age or dilution? (In prep.³)
- Del Campo, B., **Tejera, M.**, Brumm, T. J., Sauer, T. and Koziel, J. A. (2018) Assessment of greenhouse gas emissions in three Nicaraguan farms with an alternative and inexpensive measuring approach. (In prep)

PRESENTATIONS

- Tejera, M.**, Boersma, N., Miguez, F., Archontoulis S., Dixon, P., and Heaton, E. A. (2018). Lower leaf-level A in older plants: a function of age or dilution? ISPR conference, Montreal, Canada.
- Tejera M.**, Boersma M, Vanlooche M, Archontoulis S, Dixon P, Miguez F, Heaton H (2018) Not Another *Miscanthus × giganteus* Nitrogen Trial. It is a REPLAY. ASPB Midwest annual meeting, Ames, IA
- Heaton E.A., Brandes E., McNunn, G., **Tejera M.**, VanLooche A., & Schulte L.A. (2017) Perennial solutions to annual problems. Argonne National Laboratory, Lemont, IL
- Heaton E.A., Brandes E., McNunn, G., **Tejera M.**, VanLooche A., & Schulte L.A. (2017) Perennial solutions to annual problems. American Institute of Chemical Engineers Annual meeting (plenary session), Minneapolis, MN
- Heaton E.A., Brandes E., McNunn, G., **Tejera M.**, VanLooche A., & Schulte L.A. (2017) Perennial solutions to annual problems. Association for the Advancement of Industrial Crops, Ames, IA
- Tejera, M.**, and Heaton E. A. Nitrogen fertilization makes *Miscanthus × giganteus* grow faster but not bigger: A closer look at phenology. ASA, CSSA, SSSA Annual Meeting, Tampa, FL, Oct. 2017.
- Tejera, M.**, and Heaton E. A. *Miscanthus x giganteus* light efficiencies under Nitrogen fertilization: the fate of a photon. Graduate & Professional Student Research Symposium, Ames, IA, Apr. 2017.
- Tejera, M.**, Boersma, N., VanLooche, A., and Heaton E. A. *Miscanthus x giganteus* photosynthesis and senescence: Nitrogen fertilization and stand age effects. Interdepartmental Plant Biology Seminar, Ames, IA, Feb. 2017.
- Tejera, M.**, Boersma, N., Archontoulis, S., VanLooche, A., and Heaton E. A. *Miscanthus x giganteus* response to Nitrogen fertilization across 3 sites in Iowa. ASA, CSSA, SSSA Annual Meeting, Phoenix, AZ, Nov. 2016.

EXTENSION & OUTREACH

- Tejera, M.**, Boersma, N., and Heaton E. A. Nitrogen fertilization effects on *M. × giganteus*. LAMPS advisory meeting, Boone, IA, Sep. 2017. (oral presentation and field day)
- Boersma, N., **Tejera, M.**, and Heaton E. A. *Miscanthus x giganteus* for bioenergy. Association of Education and Research Greenhouse Curators Conference, Ames, IA, Jul. 2017. (oral presentation)
- Tejera, M.**, and Aller D. M. New-Clear Energy. Earth Day at Greater Des Moines Botanical Garden, Des Moines, IA, Apr. 2016. (Stand Display)
- Tejera, M.**, and Martinez-Feria, R. Environment and Sustainability. World Food Price Youth Institute, Ames, IA, Apr. 2016. (Oral presentation and field day)
- Tejera, M.**, Boersma, N., and Heaton E. A. Nitrogen application and planting year effect on *M. × giganteus*. Miscanthus producer meeting, Cedar Rapids, IA, Jan. 2017. (oral presentation)
- Tejera, M.**, Boersma, N., and Heaton E. A. Nitrogen application and planting year effect on *M. × giganteus*. Miscanthus producer meeting, Cedar Rapids, IA, Jan. 2017. (oral presentation)
- Tejera, M.**, and Miguez, F. Miscanthus research for Argentinian farmers, Ames, IA, Aug. 2016. (Field Day)
- Tejera, M.**, Boersma, N., and Heaton E. A. South East Research Farm field day, Crawfordsville, IA, Jun. 2016. (Field Day)
- Tejera, M.**, Boersma, N., and Heaton E. A. Miscanthus producer meeting, Iowa city, IA, Mar. 2016. (oral presentation)
- Heaton E. A. and **Tejera, M.** *M. × giganteus* for bioenergy. Bioneregy Field Tour, Iowa city, IA, Sep. 2015. (Field day)

TEACHING

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| Guest speaker AGRON 183 Basic Skills for Agronomists | Fall 2017 |
| Guest speaker AGRON 180 Global Agriculture in a Changing World | Fall 2017 |
| Guest speaker AGRON 594 M.Sc. distance program | Summer 2017 |
| Teaching Assistant AGRON 212L: Field Application and Problem solving in Crop Production | Fall 2016 |
| Guest speaker AGRON 594 M.Sc. distance program | Summer 2016 |
| Guest speaker Visiting students from University of Costa Rica | Summer 2016 |
| Teaching Assistant AGRON 212L: Field Application and Problem solving in Crop Production | Spring 2016 |

REFERENCES

- Dr. Emily Heaton.** Associate Professor, Extension Biomass Crop Specialist. Iowa State University, Department of Agronomy. (515) 294-1310. heaton@iastate.edu

Dr. Andy VanLoocke. Assistant Professor. Iowa State University, Department of Agronomy.
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