A native of Mali, Thierno Diallo takes great pride in his Fulani heritage. The West African ethnic group is well known for its tradition of raising livestock. Diallo’s family didn’t own cattle, but being immersed in the Fulani people’s pastoral ways made him long for a life in agriculture.

That’s precisely the life Diallo pursued. He studied agronomy for six years in Russia (an experience about which he wrote and published a book) and interned on three farms in Normandy, France, before working for 12 years at three dairies in Wisconsin. In 2007, he took on his current role as a corn researcher with professor Joe Lauer in the CALS Department of Agronomy and decided shortly after that he wanted to use his skills and knowledge to give
back to the agricultural community in Mali. To that end, in 2012, just outside Mali’s capital city of Bamako, he founded Gamou Organic Farms.

According to Diallo, you can learn about farming from books and lectures, but you can’t truly appreciate it until you’ve done the manual labor. Gamou Farms tries to bridge this gap between knowledge and experience for Malian students by immersing them in both the research and day-to-day operations associated with agriculture.

“When I worked on farms, you would get up and do just about the same thing every day,” Diallo says. “So even if you don’t want to learn, something is going to stick. And if you really want to, and you love what you’re doing, there’s no limit to how much you can learn.”

Diallo manages Gamou Farms largely from abroad and returns to Mali for a month every summer. At any given time, local students can be found on the farm driving tractors, feeding cows, repairing fences, and administering vaccines to livestock, among other tasks. Also, by serving as a platform for Diallo’s research with the agronomy department, the farm provides scientific training for students while advancing agriculture in Mali.

Today, Gamou Farms is pursuing two major projects. The first involves fonio (Digitaria exilis), a common West African grain crop that is adapted to dry areas and resistant to weeds. Fonio is drought tolerant, doesn’t require much fertilizer, and is one of the world’s fastest growing cereals, so it could play a vital role in enhancing food security and nutrition in Mali. However, at the end of the season, the seeds shatter, causing a 30–50 percent yield loss.

Sara Patterson PhD’98, a professor in the CALS Department of Horticulture, is working with researchers from the University of Bamako, the Institut d’Economie Rurale Cinzana, and the University of Georgia to find a solution to the seed shattering. Their aim is to develop better fonio varieties that won’t bend at the stem (lodge) and will retain seeds at maturity. The resulting bump in yield would mean an enhanced food source for West African people and more income for fonio producers.

Gamou Farms provides a place for crossbreeding and selection among the collected samples, followed by the multiplication and dissemination of the new and better varieties to the local population. Diallo has extracted DNA samples in Mali and brought them to a CALS lab for further study. Students assist with DNA extraction, sequencing, and field data collection.

The farms’ second project focuses on dairy. The goal is to create a new breed of cattle by crossbreeding local, disease-resistant N’Dama with “super milker” Holsteins. For that purpose, Diallo took 13 Holstein embryos with him on his July 2018 trip to the farm.

“When those embryos get transferred into my cattle back home, many vets, technicians, and students will be involved, so they can see and learn about this technology,” Diallo says. “Gamou Farms is like an incubator, a place where students will come to learn and transfer technologies I’ve learned throughout my career and all that I have available to me here in the U.S. today. These students are future leaders, farmers, researchers, and decision makers. If we consistently train many of them each and every year, we will raise the production level across the board.”

Taken from https://grow.cals.wisc.edu/departments/field-notes/mali-cals-researcher-offers-hands-on-training-at-gamou-farms
Seed Oat Processor Helps Potato Growers

By Joe Kertzman, managing editor, Badger CommonTater

What was once a quaint seed oat cleaning operation owned and operated by a lone potato farmer in Antigo, Wisconsin, has evolved to become a sizable rotational crop specialist for almost every potato farm in Langlade County.

Schumitsch Seed Inc., situated on the southwest outskirts of Antigo, has survived through three generations and continues to grow and partner with potato farmers in helping them succeed with their rotational crops, specifically oats.

Schumitsch Seed Inc. has survived difficult growing years and has tried several other rotational crops. Each crop brought with it its own set of issues, and the company kept coming back to oats.

As the fourth generation, Jay Schumitsch, takes over the day-to-day operations of the mill, the third generation and Jay’s father, Scott Schumitsch, is involved in other activities. Scott and the University of Wisconsin are working together to develop better oat genetics. Plant breeders have focused on high-yield oat varieties, but they haven’t really focused on test weight, the weight of the groat (the hulled kernel). The groat holds the nutrition and feed value.

Lucia Gutierrez is a newer addition to the plant breeding/agronomy staff at the University, and she is enthusiastic about bringing better varieties to Wisconsin farmers. Lucia understands the lack of good high-quality Wisconsin oat genetics and is working diligently to fix the issue.

To read this article in its entirety and the source of this article, please visit https://wisconsinpotatoes.com/admin/wp-content/uploads/2018/11/11118.Seed-Oat-Processor-feature.pdf

Upcoming Events

The 4th International Kernza Conference is July 1-2, 2019, in Madison, Wisconsin. This is a recognition for the research on Kernza that is done in Wisconsin.

A one-week study abroad program called UW Linking Agriculture and Nutrition will take place in Mexico. Students will experience a week of lectures, discussions, and site visits. They will visit farms in the surrounding area and help plant community gardens. Visit http://istudyabroad.wisc.edu/MexicoAgNutrition for more information.

Submitted by Valentin Picasso.
Fifth grade students from Kromrey Middle School (KMS) in Middleton, WI, attended a field trip hosted by the Cereals Breeding and Quantitative Genetics (CBQG) team. During this trip students learned about barley, set up an experiment and made some early selections on their very own barley variety. This trip was part of a larger, multi-state collaborative called the "Naked Barley Project," which is part of a USDA project with $2 million in funding. Naked, or hulless barley has all the nutritional benefits of regular barley, without the hard hull surrounding it. Hulled barley must have the hull removed in a process known as pearling. This makes the grain ineligible for whole grain status. The naked grain does not require the same processing after harvest and, as a result, it maintains its whole grain status. The overarching goal of this project is to improve on and expand the naked barley varieties available to farmers in organic agriculture. There is a large emphasis on stakeholder engagement, and the team regularly gets to meet with farmers, bakers and brewers. The students at KMS are another important group of stakeholders. Through continued outreach programs such as the recent field trip, the CBQG team can inform the students not just about naked barley, but organic agriculture as a whole. It was also a lot of fun working with the kids and singing “la bella polenta” to teach them about the life cycle and uses of barley.

Submitted by Chris Massman.
News from the Jackson Lab

Submitted by Randy Jackson and Gary Oates.

A survey of soil microbial communities in native tallgrass prairie, restored tallgrass prairie, and agriculture on former prairie across Wisconsin, Iowa, and Kansas showed consistent similarities and differences. In particular, more microbial biomass was found in native tallgrass prairie than agricultural soils.


Perhaps related to microbial communities or maybe not, establishment of bioenergy cropping systems at Arlington ARS resulted in a preferential loss of older soil carbon over 5 years.


Finally, when assessing emissions of the greenhouse gas nitrous oxide from bioenergy cropping systems, the main environmental drivers of these emissions were different across crops, which has important ramifications for simulation modeling of these agroecosystems.


Our recently published paper shows that growing cover crops in maize can improve the carbon balance of the agroecosystem when the maize is harvested for grain, but not silage.


Subsequently, we published a mini-review addressing our current understanding of cover crop efficacy in the upper Midwest. Rather than focusing on the carbon balance to help stabilize climate, we should be using cover crops to reduce soil erosion and retain nutrients.


And finally, one last article on lignocellulosic feedstocks and ethanol yields, co-authored in part by Gary Oates, Dustin Eilert, and Gregg Sanford:

**WELCOME!**

**Felipe Faleco**, MS student in Agronomy, advised by Rodrigo Werle and Dave Stoltenberg.

**Emma Matcham**, MS student in Agronomy, advised by Shawn Conley.

**Lexie Baker**, MS student in Plant Breeding Plant Genetics (PBPG), advised by Bill Tracy.

**Elizabeth Berg**, MS/PhD student in Environment & Resources, advised by Chris Kucharik.

**Sarah Bullock**, MS student in PBPG, advised by Lucia Gutierrez and Valentin Picasso.

**Reagan Hoeftler, Chris Massman, Rafael Nalin, and Ines Berro**, PhD students in PBPG, advised by Lucia Gutierrez.

**Brooke Bembeneck**, MS student in Agroecology, advised by Randy Jackson.

**Emily Marrs** is a new research intern in Chris Kucharik’s lab.

**Maria Mora Lamas, Pablo Sandro, and Caitlyn Emrick** are new researchers in Lucia Gutierrez’s lab.*

**Leo Roth** is a new outreach specialist in Mark Renz’s lab.

**Abdul Mannan** is a visiting scientist in Valentin Picasso’s lab. He is currently a PhD student from the University of the Punjab in Lahore, Pakistan. His work focuses on heat stress in alternative crops and his thesis research evaluates the thermo-tolerance potential and it's potential in Mung beans. Here, Abdul will be working on the intercropping of legumes with the perennial grain crop, Kernza (R), and working as a TA in Valentin's class, Farming Systems of the Tropics.

**Jaris Veneros** is another visiting scientist in the Picasso lab. Jaris is a lecturer at the National University Toribio Rodríguez de Mendoza, Chachapoyas, Amazonas, Peru, at the school of Agronomy and Environmental Engineering. Here, he will be analyzing the global distribution of two crops: *Thinopyrum intermedium* (Host) Barkworth & D.R. Dewey and *Triticum aestivum* L. under current climate conditions and in a climate change scenario using GPS.

**Madhav Bhatta** is a post-doc with Lucia Gutierrez. His research involves the development, optimization, and utilization of genomic selection models, characterization of complex quantitative traits and associated genes, and deployment of advanced experimental design in cereals breeding programs. Here are highlights of his PhD research: [https://wheat.org/madhav-bhatta-identifies-new-unique-genes-for-the-use-of-synthetics-in-wheat-breeding/](https://wheat.org/madhav-bhatta-identifies-new-unique-genes-for-the-use-of-synthetics-in-wheat-breeding/) *

**Jose Airton** is another post-doc in Lucia’s lab. His research project is entitled "Optimization of experimental designs for evaluating partial diallel crosses in plant breeding." The aim of this study will be to evaluate the implications of the inclusion of genetic relationship in the choice of crosses, and in obtaining block designs under suitable optimality criteria for partial diallels.*

* Submitted by Maria Mora Lamas.
Congratulations!

**Mark Renz**, left, Extension Weed Specialist, was recently promoted to full professor! Mark also recently received funding from the National Alfalfa Checkoff for his regional project "Sustainable Management of Waterhemp in Established Alfalfa for Dairy Systems." Alfalfa fields with moderate to high populations of waterhemp will be located in Minnesota, Michigan, Pennsylvania, and Wisconsin.

*Photo source: https://fyi.extension.wisc.edu/weedsci/mark-renz/*

**Shawn Kaeppler**, Professor of Agronomy, has been awarded the National Association of Plant Breeders Lifetime Achievement Award. This award honors "distinguished long-term service to the plant breeding discipline through research, teaching, outreach, and leadership."


*Photo source: https://energy.wisc.edu/about/energy-experts/shawn-kaeppler*

**Ken Albrecht**, right, Professor of Agronomy, received the Recognition Award for Research for making outstanding contributions to the Agricultural Research Stations Program.

For full article, source, and photo source, please visit https://ecals.cals.wisc.edu/2019/01/25/congrats-to-ars-award-winners-ken-albrecht-scott-chapman-and-nancy-esser/

**Valentin Picasso** was also awarded a grant from NIFA for his collaborative project entitled "Resilience of Alfalfa Cultivars to Variable Environments." The project seeks to develop methods to measure and understand the resilience of alfalfa cultivars to abiotic stresses. You can read more information here:

https://cris.nifa.usda.gov/cgi-bin/starfinder/0?path=fastlink1.txt&id=ancr&pass=&search=R=80705&format=WEBLINK

*Photo source: https://agronomy.wisc.edu/valentin-picasso/*
Sarah Striegel, right, received the Graduate Student Travel Award during the 2018 North Central Weed Science Society Meetings. Sarah is a graduate student with Rodrigo Werle.

Lindsay Chamberlain, right, earned 2nd place in the American Seed Trade Association poster competition at the ASTA CSS 2018 Seed Expo in Chicago. Lindsay is a PhD candidate with Shawn Conley and Jean-Michel Ane.

Photo source: https://agronomy.wisc.edu/people/gradstudents/

Sarah Striegel

Lindsay Chamberlain

Agronomy professor Bill Tracy has been elected Fellow of the Crop Science Society of America (CSSA), an honor bestowed on only 0.3% of the society’s active and emeritus members for “professional achievements and meritorious service.”

For full article, source, and photo source, please visit https://casf.cals.wisc.edu/2018/12/14/bill-tracy-named-fellow-of-crop-science-society-of-america/

Derek Potratz earned 1st place in the MS oral speaking competition for the Applied Soybean Research Division of American Society of Agronomy at the society’s annual meeting in Baltimore. Derek is an MS candidate with Shawn Conley.

Valentin Picasso and Ken Albrecht were awarded a Crop Science Outstanding Paper Award for their collaborative effort on "Accelerating Silphium Domestication: An Opportunity to Develop New Crop Ideotypes and Breeding Strategies Informed by Multiple Disciplines." This article was published in June 2017 and can be found here: https://dl.sciencesocieties.org/publications/cs/articles/57/3/1274

Lucia Gutierrez, Assistant Professor of Agronomy, has been named Vilas Associate. This highly competitive award recognizes new and on-going research of the highest quality and significance.

Photo source: https://agronomy.wisc.edu/lucia-gutierrez/
Q & A with the Department Staff

This edition interviews Dr. Molly Jahn, Professor of Agronomy and with other appointments in the Center for Sustainability and the Global Environment (SAGE), and the Global Health Institute. She is also an adjunct senior research scientist at Columbia University and a guest scientist at Los Alamos National Laboratory.

What is your favorite film? Harold and Maude

What is your favorite hobby? I am a butterfly enthusiast and I volunteer at the Madison Vet Center, a free counseling center on the east side for combat veterans.

What drew you to agronomy? I loved genetics and I wanted a field that would allow me to do both basic research and to have a positive impact on rural communities in the U.S. and around the world, and the environment. I loved the creativity of plant breeding and the fact that I can see my success in supermarket aisles and farmers’ markets.

What do you feel is your biggest accomplishment? Raising my children and having > 60 commercial licenses from my plant breeding programs.

What is your latest research project? A report on impacts of climate change on the U.S. Army with collaborators at the U.S. Army War College due out later this year and a study of risk in agricultural and food supply chains for Lloyd’s of London.


Who is your biggest mentor? Henry Munger and Mike Dickson, my PhD advisors at Cornell; Frank Solomon, my MS advisor at MIT, and John B. Jenkins, my genetics professor at Swarthmore College.

What research has you most excited right now? I serve as director of strategic outreach for the NASA Harvest Consortium on Food Security. We are in year 2 of a five year award that supports the use of earth imagery to improve and support within season crop forecasting.

I also love teaching Agron 375 Systems Thinking, soon to have a new permanent course number.

Questions, in part, came from a past issue of SeedWorld.

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