



# Action in Agroforestry

November 2018 Vol. 9, No.11 Michael Gold and Hannah Hemmelgarn, editors

## Fermina Zarate Visits from Oaxaca to Share Indigenous Agriculture Efforts for Sustainability

Sustainable farm and agroforestry systems vary in method and culture around the world; learning what works in ecosystems and communities requires a recognition of the diversity of experiences and knowledge that exist.

On October 31, MU was privileged to host Fermina Zarate, an indigenous Mixteca farmer from Oaxaca,

Mexico. Fermina has been part of the technical team of the Center for Integral Small Farmer Development in the Mixteca (CEDICAM) for over 14 years.



With an interpreter at her side, Fermina provided the context of her organization's work: a region rich with agricultural, mineral and energy resources that primarily still belong to the many indigenous groups in the area. Yet the indigenous communities do not always benefit from nor have full control over their lands.

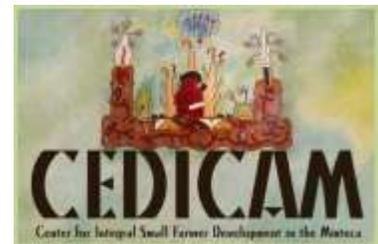
CEDICAM uses an extension model that includes a small group of facilitators who train a larger group of promoters. Each promoter then works with a small group of farmers to train and implement best practices. The model is represented in the shape of a circle with looping lines connecting and reconnecting the different members. Using this model, the organization has used native trees to reclaim and reforest lands that had been misused and eroded. They have

implemented soil conservation activities and built reservoirs to collect rainwater to ensure families have water during the dry season. CEDICAM seeks to conserve local food culture and heritage with diverse maize varieties, and active practice of traditional intercropping systems known as the milpa system with the three sisters (maize, squash, and beans).

Fermina's presentation was one of encouragement. Despite threats to land and food sovereignty in her region, the communities have worked together to both conserve tradition and implement science-based techniques. It is a community-based approach to land management that has shown great progress and many lessons for sustainability.

Fermina's talk was sponsored by MU Voz Latina and the MU Cambio Center, and was part of the regional speakers' tour organized by Witness for Peace.

*Lindsey Saunders, MU Cambio Center*



### New Documentary Film Released -- Living Soil

<https://livingsoilfilm.com/>

Living Soil tells the story of farmers, scientists, and policymakers working to incorporate agricultural practices to benefit soil health for years to come. Living Soil takes you on a journey from lush landscapes in Oregon, the sun-baked fields of California, the vast green acres of the Midwest, to the waterfront farming and fishing communities in and around the Chesapeake Bay. Each farmer shares a story as unique as the soil they manage with a shared theme that resonates throughout the film: Our soil is a special resource we should all cherish and strive to protect.

# KUDOS

Congratulations to **Danh Vu**, advised by Dr. Chung-Ho Lin, who received the 2018 Outstanding Thesis Award from the School of Natural Resources (received by Dr. Lin, right). Danh Vu joined the SNR Agroforestry Program in 2015 and completed his MS in the summer of 2018. His MS thesis “Determination of Potential Health-Promoting Compounds in Black Walnuts (*Juglans nigra* L.)” described a novel approach to identify and characterize a wide range of health-promoting compounds among 12 black walnut varieties. This study integrated advanced mass spectrometry, chromatography, metabolomics algorithm, and computation capacity at MU and The Scripps Research Institute (San Diego, California) for the global identification of bioactive compounds in the kernels of 12 black walnut varieties. Five manuscripts were generated from Danh Vu’s MS thesis. In addition, he served as lead author or co-author on other 5 manuscripts generated from other collaborative projects. Due to his remarkably productive scientific endeavors, Danh received awards from several organizations including the International Phytotechnology Society (PhytoScholars Program), Ozark-Prairie Society of Environmental Toxicology and Chemistry, Phytochemical Society of North America, and MU Graduate Professional Council. He recently took the position offered by Proteomics and Metabolomics Core Facility, with the Center for Biotechnology at the University of Nebraska-Lincoln.



Congratulations to Center for Agroforestry Research Professor **Dr. Ranjith Udawatta**, who received the 2108 SNR Outstanding Research Faculty Award which recognizes faculty for excellence in scholarship, research, or creativity. Dr. Udawatta has established an outstanding research program that reflects the multidisciplinary nature of UMCA and SNR missions. His agroforestry research encompasses areas water quality and non-point source pollution mitigation including aspects related to soil physics, soil hydrology, conservation, soil

biology and soil health as well as cover crop management. He has published over 80 refereed research papers, a majority of which appear in upper tier journals, and several book chapters. Dr. Udawatta has mentored numerous graduate students, teaches a core course in the online agroforestry master’s degree program and collaborates with many Missouri landowners to conduct research under real world conditions with valuable practical applications.

**Eddie Maxwell**, a second year Biochemistry major (pre-medicine) at MU recently joined Dr. Chung-Ho Lin’s group in collaboration with Dr. Hsin-Yeh Hsieh at Bond Life Sciences Center. He is working on enzyme productions and enzyme immobilization platforms for blood type conversion and bioremediation.

## Publications

Khanh-Van Ho, Zhentian Lei , Lloyd Sumner , Mark V. Coggeshall , Hsin-Yeh Hsieh , George C. Stewart , Chung-Ho Lin. 2018. Identifying antibacterial compounds in black walnuts (*Juglans nigra*) using a metabolomics approach. *Metabolites* 8(4): 58-76 <https://doi.org/10.3390/metabo8040058>

Zhen Cai, Michael Gold and Robert Brannan. 2018. An exploratory analysis of US consumer preferences for North American pawpaw. *Agroforestry Systems*. DOI: 10.1007/s10457-018-0296-5

## Grants funded

Paternal residential exposure to unconventional oil and natural gas extraction (UOG). PI: Erma Drobni, PhD, Director, Andrology Laboratory, Obstetrics, Gynecology and Women's Health. Co-PIs: Chung-Ho Lin, PhD, Associate Professor, UM Center for Agroforestry; and Susan C. Nagel, PhD, Associate Professor, Director, Research Success Center, Obstetrics, Gynecology and Women's Health. Funding Agency: Pilot Grant Supporting Research and Scholarly Works, MU School of Medicine \$25,000 (2019-2020)

# UPCOMING EVENTS

## **Exploring Factors Determining Smallholder Levels of Resilience to Water Scarcity**

*November 16, 2018 / 4:00pm – 5:00pm CST / 210 ABNR Bldg. MU Campus in Columbia, MO*

Dienda Hendrawan (advisors: Dr. Francisco Aguilar and Dr. Zhen Cai) will present her research on factors determining smallholder farmers' levels of resilience to water scarcity.

## **Nutshell Discussion with Eric Wolske: Black Currant Production in the Mid-West**

*November 20, 2018 / 6:00pm CST / Online event from the Savanna Institute*

Black currant production has historically been concentrated in Europe, where it is largely used to supply the juice industry. As the US market continues to look for healthier food and drink options, the black currant provides an incredible healthy, machine-harvested product to meet these consumer demands. Register for this free webinar discussion at <http://www.savannainstitute.org/events.html>

## **Nutshell Discussion with Mark Shepard: Designing a Hog Silvopasture Polyculture**

*December 4, 2018 / 6:00pm CST / Online event from the Savanna Institute*

For more than 20 years, Mark Shepard has been raising grass-fed and chestnut finished hogs in a diverse polyculture system that includes perennial forages available from May to October. From currants, mulberries and cherries, to hazelnuts and apples, these hogs enjoy a diverse diet finished with hearty chestnuts. Register for this free webinar discussion at <http://www.savannainstitute.org/events.html>

## **Benefits of Agroforestry in Transitioning and Organic Systems**

*December 4, 2018 / 2:00pm CST / Live webinar at [www.conservationwebinars.net](http://www.conservationwebinars.net)*

This webinar presented by USDA Natural Resources Conservation Service, will feature Bart Lawrence, USDA Forester, and Richard Straight, USDA National Agroforestry Center Technology Transfer Leader, who will share how trees and shrubs can provide benefits for organic systems.

## **6th Annual Perennial Farm Gathering**

*December 7-8, 2018 / Savanna Institute / Lussier Family Heritage Center, Madison, Wisconsin*

If you're interested in perennial crops and pastured livestock, come learn what farmers, scientists, and others are discovering - what's working and what needs more work. More information and registration at <http://www.savannainstitute.org/perennial-farm-gathering.html>

## **Woodland Management in Missouri**

*December 11, 2018 / Center for Agroforestry / Wurdack Research Center, Cook Station, MO*

This training will cover how to find information about property, basic woodland and wildlife management, woodland health, how to sell timber, and agroforestry opportunities for small farms. The event is free of charge to agriculture and natural resource educators and service providers. Sarah Havens and Hank Stelzer, state forestry extension specialists, will facilitate the training. To register, contact Gregory Ormsby-Mori [ormsbyg@missouri.edu](mailto:ormsbyg@missouri.edu) or (573)882-9866.



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