

# SUSTAINABLE AGRICULTURE SCIENCE SPECTRUM 2018

*A gathering of soil dorks to discuss bettering the world*

MODERATED BY ERIC DILLON

## AGENDA FOR TUESDAY, JUNE 19<sup>TH</sup>, 2018

8:30am – 9:30am	Arrive at Ranch Headquarters	Coffee & light breakfast
9:30am – 9:45am	Introduction of Sandy Arrow Team and Attendees	Eric Dillon Molly Haviland Joe Barta Dave Martin Sandy Arrow Ranch
9:45am – 10:15am	Tour of Indoor Facilities - Lab, Vermicompost, Tea Brewing	
10:15am – 11:00am	Introduction of the Sandy Arrow Project	
11:00am – 11:30am	<b>The First Movers</b> <i>Bud is one of the first organic farmers in Central Montana and one of the original members of the pioneering organic farmers memorialized in the fabulous book "Lentil Underground". Bud is also a founding investor in Timeless Seeds.</i>	Bud Barta Lentil Underground
11:30am – 12:00pm	<b>Growing A Revolution</b> <i>David will piggyback on Bud's discussion as we discuss the findings from his multiple books on soil and sustainable practices around the planet.</i>  <i>Additionally, David will describe his current agenda which is his next novel focused on the fusion of healthy soil, nutrition, and human health.</i>	David Montgomery University of Washington
12:00pm - 1:00pm	Montana Lunch	Square Butte Country Club
1:00pm - 1:30pm	<b>Soil Interrogation Lab</b> <i>Tony teaches soil at Montana State University and is always interested in more effective strategies for broadening and building interest in soils and soil health.</i>  <i>In addition to soil, Tony will touch on aspects of carbon literacy work he is currently involved in and lay out a PhD project being contemplated with Molly on the Sandy Arrow Ranch.</i>	Tony Hartshorn Montana State University
1:30pm – 2:00pm	<b>The Bread Lab</b> <i>Steve will discuss wheat-breeding practices in historical context and will discuss how The Bread Labs scientists will be working on the Sandy Arrow Ranch.</i>  <i>In addition, Steve will introduce the group to his long-term project with perennial wheat, which will be cultivated on the Sandy Arrow Ranch.</i>	Dr. Stephen Jones The Bread Lab

AGENDA FOR TUESDAY, JUNE 19<sup>TH</sup>, 2018 (cont.)

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|------------------------|--|---|
| <b>2:00pm - 2:30pm</b> | <b>The Nature Conservancy – Sustainable Agriculture Agenda</b><br><i>Lou will discuss The Nature Conservancy’s newly introduced sustainable agriculture agenda and specifically talk about some of the issues faced in Idaho.</i>  | <b>Lou Lunte</b><br><i>The Nature Conservancy</i>   |
| <b>2:30pm – 3:00pm</b> | <b>Tour of Compost Yard and Facilities</b>   | <b>Eric Dillon</b><br><b>Molly Haviland</b><br><b>Joe Barta</b><br><b>Dave Martin</b><br><i>Sandy Arrow Ranch</i> |
| <b>3:00pm – 3:30pm</b> | <b>Phone, Email and Coffee Break</b>   |   |
| <b>3:30pm – 4:00pm</b> | <b>Progressive Stewardship Through Sustainable Grazing</b><br><i>Zach will discuss the practices utilized on the ranches he manages in Montana. These practices are based upon the Savory Institute’s research focused on the ecological restoration of grasslands.</i><br><br><i>One of the cornerstones of this approach is the implementation of holistic grazing which mimics the predator/prey relationships in nature to manage livestock.</i> | <b>Zachary Jones</b><br><i>Twodot Land &amp; Livestock</i>  |
| <b>4:00pm – 4:30pm</b> | <b>Mineral Supplements as Part of the Solution</b><br><i>Ben will discuss his work which has been built on providing mineral supplements to compromised soil.</i>  | <b>Ben Ice</b><br><i>Ices Soil Restoration</i>  |
| <b>4:30pm – 5:00pm</b> | <b>Break</b>   |   |
| <b>5:00pm – 7:00pm</b> | <b>Enjoy a scenic tour of the Arrow Creek Breaks and their unique sandstone “hoodoos” as we make our way to the Warming Cabin</b>  |   |
| <b>7:00pm</b>          | <b>Wild Elk Burgers at the Warming Cabin</b><br><i>All participants will spend the night at the Warming Cabin</i>  |   |

AGENDA FOR WEDNESDAY, JUNE 20<sup>TH</sup>, 2018

**8:30am – 9:00am**    **Breakfast at Ranch Headquarters**

**9:00am – 10:00am**    **Carbon, Carbon, Carbon**

*Sequestering carbon through sustainable agricultural practices that increase soil organic matter could be the “tipping point” catalyst that propels sustainable agriculture.*

*Jane, Dan, and Michelle will lead a discussion on how both practices and policies are developing in this sector.*

**Jane Zelikova**

*Center for Carbon Removal*

**Daniel Kane**

**Michelle Downey**  
*Yale School of Forestry & Environments Studies*

**10:00am – 10:30am**    **Incorporating Wildlife into Sustainable Ranching**

*Laura and Daniel will discuss the American Prairie Reserve’s core agenda (privately funded national park) as well as Wild Sky, a for profit company that supports wildlife-friendly ranching (the Sandy Arrow Ranch is a “Wild Sky” ranch).*

*Wild Sky’s conservation goals are primarily focused on wildlife but these goals work hand-in-hand with the Sandy Arrow’s broader sustainability goals.*

**Laura Huggins**

**Dr. Daniel Kinka**  
*American Prairie Reserve*

**10:30am – 11:30am**    **“Git Yur Hands Dirty”**

*All aspects of the Sandy Arrows biological agendas will be in motion.*

*Watch and help us make compost tea, turn compost windrows and apply compost tea to fields. In addition, we will have a “compare and contrast” of our fields with nearby conventional agricultural practices.*

**Molly Haviland**

**Joe Barta**  
**Dave Martin**  
*Sandy Arrow Ranch*

**11:30am – 12:30pm**    **Geek out on our Microbes**

*Molly will take us on a microbial journey of the project’s soils, inoculants, composts, teas, vermicomposting, etc.*

**Molly Haviland**

*Sandy Arrow Ranch*

**12:30pm - 1:30pm**    **Lunch & End of Formal Session**

## BIOGRAPHIES OF PARTICIPANTS

### ERIC DILLON

#### **Owner, Sandy Arrow Ranch**

Eric is the owner of the Sandy Arrow Ranch. He has a deep interest in environmental issues and cares passionately about preserving America's wild places. Eric is involved with The Nature Conservancy and is a longtime supporter of other environmental causes. Eric founded Silver Creek Capital Management which is a Seattle based alternative investment firm that specializes in hedge fund and real asset investments. Eric purchased the Sandy Arrow Ranch in late 2013. The compromised soil and sheer volume of chemicals applied in conventional farming were the catalyst to Eric's "there has to be a better way" agenda. The Sandy Arrow's mission statement is to create a sustainable farming/ranching model that improves the health of humans and the planet.

### MOLLY HAVILAND

#### **Soil Scientist, Sandy Arrow Ranch**

The Great Sand Dunes National Park in Southern Colorado was home to Molly's family for many years. She and her sisters enjoyed a backyard of pinion pine tree covered mountains and clean streams to play in. They didn't know how lucky they were. Years later, she would pursue a B.S. in Sustainable Living in one of the most land-altered regions in the U.S., the Midwest. Iowa is notorious for being the most man-manipulated state in the U.S. and it was while living there that she witnessed soil loss, food, land and water degradation that would be the catalyst for a paradigm shift in her life. Under the direction of her mentor, Dr. Elaine Ingham and the support of the Maharishi University of Management, she started The Living Soil Compost Lab. She and her team made the highest quality compost with diverse microbial life. They did applications throughout the community and trained others to do it for themselves. Molly is now the director of Haviland Earth Regeneration (HER). She has had the pleasure and honor of working with farmers, composting operations, universities, and government organizations throughout the world in education for soil building techniques.

### DAVE MARTIN

#### **Ranch Manager, Sandy Arrow Ranch**

Dave manages the Sandy Arrow Ranch, which is a big responsibility given the combination of agriculture and cattle. Dave, with help from his family, does all the farming on the 2,500 acres that we crop and he tends to 500 cow-calf pairs which, given the ranches 20,000 acres of rugged grazing land, keeps him busy. The other wild animals don't speak to us often but the prolific herds of deer and elk on the ranch love what we are doing! Dave grew up in the area and his family managed the ranch prior to Eric purchasing it. Like all the farming locals, Dave thinks many of Eric's ideas are in the wild category but he is "all in" on the concepts our ideas are based on and Dave will be driving the green equipment that does most of the actual execution.

### BUD BARTA

#### **Neighbor & Co-Founder of Timeless Seeds**

Bud owns a neighboring farm to the Sandy Arrow Ranch and he was one of the first organic farmers in Central Montana. Bud was one of the founders of Timeless Seeds which is an organic grain distribution company. Bud and his co-founders of Timeless Seeds were memorialized in the fabulous book "The Lentil Underground."

### JOE BARTA

#### **Neighbor & Sustainability Manager, Sandy Arrow Ranch**

Joe is Bud's son and to say that he gets his love of sustainable farming naturally is an understatement. The Barta Farm was one of the first operations in the Northern Plains to challenge the industrial food complex and its chemically focused practices. After school, Joe farmed for a few years on the family farm. His first business was construction related and his construction company is named "Son of a Barta." Joe's farming background, when combined with his "jack of all trades" construction skills, are paying big dividends on the Sandy Arrow Ranch. Although he has left his construction company to join the Sandy Arrow Ranch team, he is still building homes, only now they are for the microbes. Like his father before him, Joe has passion and commitment that has driven him to the Sandy Arrow Ranch for he is completely behind our mission of redefining health for future generations. Joe Barta has many roles at the Sandy Arrow Ranch and we are very thankful for his ability to serve as a Joe-fix-it since the ranch is a long ways away from any mechanic. His primary role on the ranch today is "Sustainability Manager," which means he drives the cultivation and application of the premium aerobic thermal composts and teas produced to rebuild soil in the fields and pastures of the Sandy Arrow Ranch.

**DAVID MONTGOMERY****Author & Professor**

David R. Montgomery studies the evolution of topography and the influence of geomorphological processes on ecological systems and human societies. He received his B.S. in geology at Stanford University (1984) and his Ph.D. in geomorphology from UC Berkeley (1991). His published work includes studies of the evolution and near-extirpation of salmon, fluvial and hillslope processes in mountain drainage basins, the evolution of mountain ranges (Cascades, Andes, and Himalaya), and the analysis of digital topography. Current research includes field projects in eastern Tibet and the Pacific Northwest of North America.

**TONY HARTSHORN, PHD****Assistant Professor at Montana State University & Soil Interrogation Lab**

Tony Hartshorn grew up in Costa Rica, got his undergrad degree in Geography in New England, and then spent five years as an environmental consultant based out of Anchorage, Alaska. That was enough time for him to decide he wanted to learn more about soils, so he started a PhD based out of the University of California Davis: one PhD, two postdocs, and one teaching job at James Madison University later, he is now at Montana State University, where he is setting up his Soil Interrogation Lab. The Soil Interrogation Lab at Montana State University studies soils and soil processes from a variety of perspectives. Current research interests include carbon cycling, soil (root + microbe) respiration, soil remediation, and the impact of environmental forces (lithology, climate, and fires) on soils.

**DR. STEPHEN JONES****Director, The Bread Lab**

Stephen Jones is a wheat breeder and the Director of The Bread Lab. Stephen has a PhD in Genetics from the University of California at Davis and teaches graduate courses in advanced classical genetics and in the history and ethics of genetics. His first wheat crop was on five acres at Chico State University's student farm in 1977. Together with his graduate students, he breeds wheat and other grains for local uses to be grown on small farms in the coastal West, the upper Northeast, and other regions of the country. The Bread Lab is a combination "think tank" and baking laboratory where scientists, bakers, chefs, farmers, maltsters, brewers, distillers and millers experiment with improved flavor, nutrition and functionality of regional and obscure wheats, barley, other small grains and beans.

**LOU LUNTE****Deputy State Director, The Nature Conservancy**

Lou has 25 years of experience with the Idaho Chapter, including positions as preserve manager, land steward, field representative and director of conservation programs. In his current position as Associate State Director, Lou works with Conservancy staff as well as public and private partners to conserve critical landscapes throughout Idaho. He enjoys working for the Conservancy because of the organization's non-confrontational, collaborative approach to finding common sense solutions to preserving Idaho's special places and diverse wildlife. Lou has a bachelor's degree in microbiology from the University of Idaho. He currently lives in Boise with his wife and two daughters. Lou and his family enjoy camping, hiking, fishing and exploring Idaho's abundant outdoors. When they can't get out of town, then bike riding the Boise Greenbelt or walking in the Boise foothills is a favorite family outing.

**ZACHARY JONES****Founder & Co-Owner, Twodot Land & Livestock**

Zachary Jones was raised on his family's Twodot Land and Livestock Ranch outside of Harlowton, MT. Zach is involved with a number of large ranches including the Diamond Cross Ranch, which covers 119,500 acres in South Central Montana. The Diamond Cross Ranch is owned by Armonia - a company funded to make "innovative sustainable impact investments". Zach's father is one of the co-founders of the Savory Institute which is named after Allan Savory, a Zimbabwe emigrant, who encouraged grazing practices that simulate how wild animals move across the plains. Zach practices sustainable grazing across the ranches he manages. In addition, Zach's family founded Yellowstone Grassfed Beef.

**BEN ICE****Owner, Ices Soil Restoration**

Ben Ice is the owner of Ices Soil Restoration. He's been in the soil restoration business for 20 years. Ben grew up on a farm. After owning a bread company, he began to train under Neal Kinsey, a student of Dr. Albrecht, in the importance of mineral balancing in AG systems. Most of his work is in the Midwest and the Dakotas. He also works in the south, MO, MS. Most of his farmers are conventional, however, a large number of the farmers Ben works with have compost operations and tea brewing systems.

**JANE ZELIKOVA, PHD****Center for Carbon Removal**

Jane's experience includes two years as an AAAS Science and Technology Policy Fellow at the Department of Energy, where she worked on climate change policy. Jane received her doctorate from the University of Colorado, worked at the USGS for several years at the interface of climate change and carbon science, and is currently a research scientist at the University of Wyoming. Jane also co-founded 500 Women Scientists, a grassroots organization that advocates for #womeninSTEM, and Hey Girl Productions, a production company that brings science stories to life.

**DANIEL KANE****PhD. Candidate, Yale School of Forestry & Environments Studies**

Dan Kane is a soil scientist and ecologist interested in agroecology, soil carbon and nitrogen cycles, conservation and organic agriculture, and the links between agriculture and climate change. He is currently working towards his PhD at Yale University's School of Forestry and Environmental Studies studying the application of open-source tools for rapid soil carbon quantification, how soil carbon may foster climate change resilience in agriculture, and how carbon is stabilized in soils. Dan is passionate about implementing good ideas agricultural research to improve the management of agricultural systems and protect natural resources while benefiting farmers. He views improving agricultural sustainability as a key component of 21st century land stewardship and our response to climate change. Dan is experienced in the design and management of field and lab research, statistical computing in R, data management and analysis, writing, and farming. Dan has a MS in Crop and Soil Science from Michigan State University and a BA, cum laude, in Biology from Middlebury College.

**MICHELLE DOWNEY****Assistant Director, Yale School of Forestry & Environments Studies**

Michelle has spent more than 8 years in the West working on a variety wildlife and rangeland issues, and she now serves as assistant director for the Ucross High Plains Stewardship Initiative. In this role, Michelle connects students to applied projects in western states, assists students develop project deliverables for partners, and conducts research to address land management issues. Michelle also works to expand the Ucross influence by developing new partnerships across the West and the Yale campus. Michelle's prior work in wildlife research and conservation has afforded her the opportunity to work in 7 states across a diversity of organizations, ecosystems, and species. Many of these experiences took place in the sagebrush-steppe and involved working with federal and state agencies as well as ranchers and farmers. When Michelle isn't taking time to smell the sagebrush, she enjoys camping and hiking with her dog, a mixed-setter named Penny.

**LAURA HUGGINS****Director of Corporate Partnerships, American Prairie Reserve & CEO, Montana Prairie Holdings**

Laura works with a number of visionary partners, including Constellation Brands, Stio outdoor apparel, Strauss Brands, Parks Project, Backcountry, and Grip6 to raise both awareness and financial support for American Prairie Reserve. Laura also serves as CEO of Montana Prairie Holdings, a for-profit company owned by American Prairie Reserve. This endeavor helps support wildlife-friendly ranching through its Wild Sky® brand. A key plank of American Prairie Reserve's mission is providing economic benefit to its neighbors. Wild Sky is doing just that by incentivizing ranchers to implement wildlife-friendly practices and by selling grass-fed beef products across the country. Laura is also a research fellow at PERC and a former fellow at the Hoover Institution at Stanford University. She has published several books including *Environmental Entrepreneurship: Markets Meet the Environment in Unexpected Places*.

**DR. DANIEL KINKA****Wildlife Restoration Manager, American Prairie Reserve**

Daniel's primary responsibilities are restoring and monitoring wildlife on Wild Sky Ranches and the Reserve, as well as acting as a liaison to neighbors, NGOs, government agencies, and other external entities. He joined American Prairie Reserve after completing his doctoral degree in ecology at Utah State University where he studied the use of livestock guardian dogs to promote coexistence between large North American carnivores and ranchers. Originally from Florida and the Washington DC area, Daniel has enjoyed living "out west" since 2010. In addition to research and conservation, he harbors an interest in science communication, having worked as a science reporter for Utah Public Radio and publishing in High Country News. He believes that emphasizing shared values of stewardship and love of the land is the best way to foster lasting conservation.