Project Builds Capacity for Blackfeet Farmers

The Blackfeet Tribe, according to Loren BirdRattler, faces exciting and challenging times in terms of achieving food sovereignty through sustainable agriculture practices.

An important undertaking in progress – the Blackfeet Agricultural Resource Management Plan (ARMP) – will change agricultural practices on the Blackfeet Reservation for many years to come, as well as the economic futures of nearly 500 producers and their families.

The ARMP will improve economic conditions and political sovereignty of the Tribe by building the agricultural industry on the Reservation and implementing holistic, food sovereignty projects that connect agriculture with community health.

The planning team previously relied on the short-term hire of outside contract-based professionals. Tribal government lacked the capacity to lead the project as they were understaffed and had limited resources. This situation did not contribute to the professional capacity of existing Tribal employees.

BirdRattler’s Western SARE Professional Development Project will build the necessary internal capacity by further professionalizing the current workforce through classroom and field courses and attendance at professional conferences. The project will support sustainable

See TRIBE, page 8

Training Extension Agents Benefits Micronesia

Western SARE PDP state coordinators and staff are leading efforts to increase awareness of sustainable agriculture practices, train ag professionals, and improve farmer profitability in the Pacific Islands.

In Micronesia alone, 80 agriculture extension agents, farmers, agency staff, and other individuals attended trainings at three sites in 2017, organized by the PDP coordinator, Jackson Phillip. The Food Security, Health, and Family Well-Being trainings were held on Republic of the Marshall Islands; Chuuk, Federated State of Micronesia; and Palau, Republic of Belau. The workshops trainings focused on vegetable and food crop production methods; types of vegetables based on usage and nutritional values of different vegetables; and

See ISLANDS, page 10
Incremental and Transformative Changes Pave the Road Towards Agricultural Sustainability

Sustainable agriculture is multifunctional: shaped by societal goals and needs, it impacts the environmental, biophysical, social, and human well-being bases on which it depends. It produces a variety of planned and unplanned outputs beyond food, fiber, and bioenergy. In this context, developing multifunctional sustainable agricultural systems is a complex task that requires a major paradigm shift in our relationship with the social, economic, and ecosystems services provided by agricultural landscapes. But, how do we implement a research and outreach program that helps agricultural stakeholders identify a pathway towards sustainability?

At our new host institution, Montana State University, Western SARE is committed to advancing innovations that promote environmental stewardship, enhance quality of life, and improve profitability by investing in groundbreaking agricultural research and education. Our overarching goal is to be part of the sustainable transformation of Western agricultural systems by facilitating incremental and transformative changes in knowledge and practices.

Incremental approaches to enhancing agricultural sustainability are supported by disciplinary-based research and education on production, environmental, economic, and social issues. Examples include:

- Maintenance and enhancement of soil and water quality via cropping system diversification, conservation tillage, and adoption of cover crop and green manure practices.
- Water conservation in arid and semi-arid regions.
- Increased awareness of food quality and food safety issues.
- Traditional and modern approaches to animal and plant breeding.
- Conservation of natural resource habitats and biodiversity.
- Replacement of off-farm inputs, such as synthetic fertilizers and pesticides with ecologically-based processes, including biocontrol, pollination with native species, integrated pest management, and soil nutrient dynamics.
- Promotion of farm/rancher worker health and safety.
- Enhancement of animal well-being.
- Increase of producers’ profitability, rural economic growth, and social well-being via diversification of farm enterprises, development of niche markets, and direct sales.

These incremental improvements have resulted in the introduction and adoption of appropriate technologies that have significantly enhanced the sustainability of Western U.S. agriculture. However, responding to the challenges of the 21st century will require an enhanced understanding of the ecological, social, and economic underpinnings of sustainable agriculture systems. This knowledge should, in turn, lead transformative changes in agriculture that integrate technological advancement with environmental and non-technological social factors. These fundamental changes can only be achieved through system-based research and education on production, environmental, economic, and social issues.

A new breed of ranchers is bringing diverse demographics and unique needs to rangeland management in California. These first-generation ranchers are often young, female and less likely to, in fact, own a ranch.

But like more traditional rangeland managers, this new generation holds a deep love for the lifestyle and landscapes that provide a wealth of public benefit to California and the world.

“When first-generation ranchers succeed, we all succeed,” says Kate Munden-Dixon, a Ph.D. student addressing sustainable agriculture issues under the guidance of human ecology professor Ryan Galt. In this rangeland-management project, Munden-Dixon is collaborating with Leslie Roche, Cooperative Extension rangeland specialist with the UC Davis Department of Plant Sciences.

Munden-Dixon and Roche recently discovered that many new livestock managers aren’t plugged into information networks such as UC Cooperative Extension and rancher coalitions that provide science and strategies for making sustainable rangeland management decisions. This lack of connection can make first-generation ranchers more vulnerable when dealing with challenges like drought and climate variability, according to their study findings, which was recently published in Rangeland Journal.

To help bridge the gap, Munden-Dixon landed a $25,000 Graduate Student Grant from Western Sustainable Agriculture Research and Education to reach out to new ranchers and rangeland managers.

Why rangelands matter

More than one half of California—38 million acres—is rangeland that provides open space, healthy watersheds, carbon storage, food, fiber and habitat for diverse plants and wildlife. New UC Davis research indicates grasslands and rangeland have become more resilient to sequestering or consuming carbon dioxide pollution than forests in California. A new breed of rancher brings a different perspective and an enhanced understanding of the multifunctional aspects of rangeland that are essential for the sustainability of Western agriculture.
Nominate Sustainability Stars for Pioneer Award

Many in the Western region’s agricultural community have made tremendous efforts toward advancing sustainability.

To bring increased awareness to sustainable agriculture leaders and their work, Western SARE announces its 2019 Western Sustainability Pioneer Award.

Nominations for this award are due January 11, 2019 and the Administrative Council will choose the winner during their February 2019 meeting.

This award gives tribute to our agricultural leaders and their vision for sustainability and stewardship.

Read about the first Western Sustainability Pioneer Award that was given to Bob Heil in our winter 2017 newsletter: westernsare.org/News-from-the-West/ Western-SARE-Newsletter/Winter-2017-Simply-Sustainable

Award nominations may be made by anyone. The selection criteria used by the Administrative Council that should be addressed in the nominating letter include:

- Leadership and contributions toward agricultural sustainability, locally and regionally, which may include, but are not limited to, using innovative farming/ranching practices leading to increased sustainability, teaching principles of sustainable agriculture to producers and ag professionals, and service to local or regional sustainable agriculture organizations.

- Service to Western SARE and/or National SARE, which may include, but is not limited to, serving as a grant reviewer, representing SARE in public forums, and leading an outstanding funded project.

Nominations should be sent to wsare-outreach@gmail.com containing:

- Contact information for the nominee

- A brief biography (no more than 100 words)

- A short description of their contribution and impact to agricultural sustainability in the Western region (no more than 500 words)

Western SARE staff will forward up to three nominations to the Administrative Council for its review and selection. Only one award per year will be made. Former Western SARE staff, state coordinators, and Administrative Council Members are eligible provided that they have been separated from Western SARE for at least five years. Nominations will be kept on file for three years and may be eligible in subsequent years.

Contact Stacie Clary at wsareoutreach@gmail.com with questions.

COORDINATOR: Achieving change (continued from page 2)

(participatory information transfer. Examples of transformative research and education include:

- Increase adoption of agricultural systems that improve multiple domains (e.g., health, environment, social impacts, and economic outputs) and dimensions (e.g., quantity, quality, distribution, and resiliency) of production.

- Integration of crop and livestock production towards the design of multifunctional agroecosystems.

- Construction of local and regional networks of producers and producer organizations, researchers and extension specialists, federal and state agencies, agribusiness, as well as non-governmental and community-based organizations aimed at facilitating research problem identification and knowledge transfer.

- Integrated research on environmental, economic, and social resiliency of rural communities through adaptive management.

- Cooperative relationships between urban populations and rural communities.

- Development of new and alternative markets that embody a social vision of agricultural sustainability with high-quality products that support energy and food sovereignty, as well as human health.

- Facilitation of the growth of rural communities and inter-generational farms to keep families and rural communities viable through agriculture.

This year, Western SARE will allocate more than $4 million to support research and education on both transformative and transformative programs. Visit our website (www.westernsare.org) to learn more about our six competitive grant programs: Research and Education, Professional + Producer, Farmer/Rancher, Graduate Student, Research to Grassroots, and Professional Development.

We are excited to be part of the transformation of our sustainable agricultural systems!

Fabian Menalled

Protecting At-Risk Cattle through Nutrition

When a local rancher came to Kara Thornton-Kurth, Assistant Professor at Utah State University, about a nutrient deficiency problem he was experiencing with his cattle, she realized that her department couldn’t provide the answers. The rancher himself had a master’s degree in nutrition and had searched multiple sources. Local producers then partnered with Dr. Thornton-Kurth to apply for a Western SARE grant to determine the best practices for addressing at-risk cattle into their operations. Success with this project will result in both improved cattle health and the economic viability of producers.

“This is an exciting project to be part of. It is significant that the idea was given to us by producers and the project is very producer-driven,” says Thornton-Kurth.

There is limited forage production in the West’s arid rangelands, along with seasonal and yearly extremes in forage quality. Lack of adequate forage results in more high-risk cattle from the West due to mineral deficiencies. Trace minerals are required for proper immune cell function and are especially important in stressed or disease challenged animals, such as newly received feedlot cattle.

A recent article in the Journal of Agricultural and Resource Economics (53:233-250) states that high risk cattle cause more economic drain than originally thought, with an estimate of high risk cattle receiving treatment, taking money to treat, and they still don’t perform well after treatment.

Currently, there are no standard protocols available to help producers successfully receive cattle that are at-risk for having a mineral deficiency.

This project aims to 1) address this shortcoming by clarifying the effects of different receiving strategies designed to mitigate mineral deficiency on subsequent cattle performance while in the feedlot, and 2) evaluate how the mineral status of receiving cattle influences their ability to respond to vaccination.

Western cow-calf producers, feedlot producers, and researchers and extension personnel will all see benefits from the project results through a communication network facilitated by the producer-USU partnership.

Along with field days and extension bulletins, the project team will be creating educational materials for a “train-the-trainer” program for extension staff in multiple states.

On-line learning modules on how different mineral supplementation strategies at receiving can impact subsequent cattle performance and the economics of the operation will be accessible to the public around the country.

Consumers could also benefit from an increased meat supply and high quality meat as healthier cattle produce more meat with less feed.

Learn more at projects.sare.org/sare-project/sw18-058/
Two Projects Look at the Benefits Owls Brings to Growers and the Land

Studying Barn Owls to Help Growers

Simply Sustainable
Checking development of an adult barn owl.

"Barn owls are rodent-killing machines," said Sara Kross, an Assistant Professor in environmental studies at Sacramento State University. "They are natural predators of gophers and voles which can be really damaging pests for agriculture."

But as good as the owls can be at controlling rodents on farms, growers may still need rodenticides to control the population explosions that can happen with any small rodent species. And because rodenticides don’t kill immediately, barn owls can eat exposed voles, mice and rats, and get exposed themselves, which may limit their ability to hunt and control pests.

It’s an example of one pest-control tactic affecting another method, and something Kross and a team of students from the University of California, Davis and Sacramento State are studying at five different California farms. They’re looking specifically at the frequency barn owls are being exposed to rodenticides and whether or not that affects the pest-control services that farmers get from the owls as a result.

“We’re looking to figure out ways farmers can use all the tools in their IPM tool chests,” Kross said. “Rodenticides are tools that are sometimes necessary, and barn owls can be really effective tools as well. We want to figure out a way they can be used harmoniously without impacting the barn owls negatively.”

Barn Owl Backpacks

There are several elements of Kross’s study, which is being funded by a grant from the Western Sustainable Agricultural Research and Education program.

The first is to look at the frequency and level at which owls on the farms are being exposed to rodenticides, through analysis of their pellets, droppings and blood. Then they’ll look for the effects of that rodenticide exposure on the owls. “Very little is known about the sublethal effects of rodenticides on barn owls,” Kross explained. “Lethal exposure levels obviously kills the owls and removes them from the landscape, but the sublethal effects can be varied. We’re looking to see if we find things like lethargic behavior or if they’re more likely to have infections or parasites on them. Really importantly, we’re looking to see if it affects the growth rate of the chicks, because if an owlet doesn’t grow fast enough, it may not be healthy enough to survive when it leaves the nest.”

The survival rate of the owl chicks is one of the big questions being looked at in the three-year study. How many make it to adulthood, and do they stay in the area? Does rodenticide exposure impact that, and at what levels?

Kross’s team checks owl boxes daily, recording where leg-banded adults are found, and weighing and measuring chicks to correlate rodenticide levels with growth rate. At Matchbook Wine Company’s vineyards north of Sacramento one June Thursday, the team found a breeding pair of adults in one box, and sets of four and five chicks in two other boxes.

Matchbook’s Greg Giguiere got to hold four and five chicks in two other boxes. “Right now, every box that’s being occupied has between three and seven and those chicks are being fed multiple rodents every day,” Kross said. “Sometimes we come across boxes where adults have slashed a half-dozen gophers to be able to feed to the chicks later.”

Ultimately, the study data may help growers place barn owl boxes in the locations that will do them the most good, and place rodenticide bait stations in the periods and places that cause the owls the least harm.

And that is very attractive to Giguiere. “A big part of farming is being connected to the land,” he said. “So a lot of what we do goes to that. I’ve been interested in reducing chemical inputs into our system and moving away from a monoculture and having more biodiversity. So it’s a very exciting program and we’re definitely on board and moving forward, and want to do even more habitats for hawks and other predators.”

Learn more at projects.sare.org/sare_project/sw18-063/

Pueo are Much More Than Pest-Management in Hawaii

If you can encourage a threatened native species, help control non-native pests, benefit the state’s farmers and preserve a culturally important icon, you’ve hit an ecological grand slam.

That’s exactly what the University of Hawaii’s Melissa Price is trying to do with the island’s pueo owls. The striking, dark birds are a species of short-eared, ground-dwelling owl.

“Pueo are the only native raptor that breeds on all the Hawaiian islands,” Price said. “Ospreys visit. Peregrine falcons visit. But as far as breeding here, it’s the short-eared owls.”

Beyond their important place in the island’s natural systems, pueo also have an important place in the islands’ spiritual life. They are seen as a common form taken by “aumakua,” or ancestor spirits.

Pueo are listed as threatened on Oahu, but exact numbers are hard to come by. Getting a better idea of the population and distribution of pueo is one of the objectives of Price’s new grant with the Western Sustainable Agricultural Research and Education program, which builds on work supported by the State of Hawaii and the U.S. Navy.

“Owls are tricky,” she explained. “They only get active about 20 minutes before it’s completely dark, at least on Oahu. There are reports they may be more active during the day on other islands.”

In fact, the owls are so hard to count, some people told Price her team would be lucky to find any pueo at all. However, her team found a nest in Oahu’s wetlands in just two weeks, and made 11 sightings. Price has documented the birds nest in wetlands, at higher elevations and in native forests under ferns.

“Our initial estimate is that there are probably around 800 pueo on Oahu, but that range could be 12 to 1,700,” she said. “You expect raptors to be at low densities, but how do you know with an apex predator at the top of the food pyramid what the numbers should be?”

Another objective of the research is to document what pueo eat by examining the pellets of undigested bones and fur owl regurgitate. The initial results there look encouraging.

“In the lowland areas, their diet contains a lot of non-native birds and most of those are pest species,” Price said. “Controlling avian pests is really expensive and difficult, so having a raptor targeting those birds is a nice solution.”

Her research will document the seasonal use of agricultural lands by pueo, and develop recommendations for producers on how to conserve or create pueo habitat for their pest-management benefits.

“A lot of people are interested in how pueo can be managed,” she said. “Hopefully we’ll be able to answer some of those questions and help our pueo do their job as raptors all around the state.”

Learn more at projects.sare.org/sare_project/owl18-017/

Background photo by Tom Kualli

A pueo owl.
Agrotourism Creates Opportunities

Agrotourism is growing in California, along with sales and production of much of the world’s fruits, vegetables and nuts. More and more people are paying to enjoy the bounty and beauty of California’s farms and ranches by touring peach and cherry farms near Fresno, taking classes in beekeeping, attending festivals devoted to strawberries or attending a host of other activities offered by farmers and ranchers throughout the state.

Many farmers could benefit from agrotourism and the added value it brings, but developing successful agrotourism operations can be tricky. Experts at the Agricultural Sustainability Institute (ASI) at UC Davis are helping farmers and others in the agricultural community understand the regulations, permits, insurance, marketing and other considerations needed to succeed.

“Agrotourism operations are more successful when they’re part of a supportive community of tourism professionals, county regulators, agriculture regulations and others,” says Gail Feenstra, ASI’s food and society coordinator. Feenstra and her team recently received a $73,000 grant from Western SARE to develop training, resources and peer support for farmers and ranchers considering agrotourism. Feenstra is working with Penny Leff, ASI statewide agrotourism coordinator and team project manager.

Leff led previous efforts that offered agri-tourism education to groups of farmers, ranchers and others involved in California agrotourism. In this new project, Leff is providing comprehensive training to smaller, more targeted groups that will then offer training to others in their community.

“We’re helping farmers and ranchers assess their agrotourism potential, whether it be U-pick farming, dinners on the farm, classes or even overnight lodging,” Leff says. “We help navigate everything from zoning ordinances to marketing plans.”

The project’s ultimate goal is to develop at least 24 clusters of vibrant agrotourism operations in California that sustain producers, educate visitors and support the economic health of the entire community.

As Leff notes, “Agrotourism is an exciting opportunity for farmers, and also for visitors who can learn about and enjoy what farm living has to offer.”

Learn more at projects.sare.org/sare_project/ew17-012.

Farmer and Rancher Research in the West

Making changes on the farm or ranch involves taking risks. One or two years spent experimenting can lead to a financial hit too difficult to recover from.

That’s where Western SARE’s Farmer/Rancher and Professional + Producer grants help out. Grantees come up with the possible solution to a problem, propose a way to research the idea, and then Western SARE provides the critical support needed to experiment. The projects explore sustainable solutions through on-farm research, demonstration, and education. It is expected that the results are shared with other producers.

This new report highlights a few of the creative projects these grants programs have funded.

Download the 12-page report at: westernsare.org/Learning-Center/Fact-Sheets/Farmer-and-Rancher-Research
Cultivating Climate Resilience on Farms and Ranches describes the changing regional climate patterns throughout the United States and the risks that these changes present to crop and livestock production. The 28-page publication also outlines how to evaluate the climate risk operation faces and how to identify practices that can reduce those risks and improve resilience.

The Prices, for example, responded to hotter, drier conditions in Texas by adopting planting and grazing to restore degraded soils and native tallgrass prairies, reducing herd size, leasing more land and experimenting with mixed cover crops. This appropriation of a key aspect of climate risk management as outlined in Cultivating Climate Resilience on Farms and Ranches. Rather than trying to rely on a single solution to threats posed by changing climate conditions, your farm or ranch becomes more resilient when you start thinking holistically about how to manage your land and business in the face of uncertainty.

More than 170 people attended these meetings and demonstrations, with half of them stating that they intend to use what they learned.

Future Learning Opportunities

The PDP state coordinators will hold their annual meeting in Guam in May 2019, with a day of touring local farms and ag businesses. Staff and Administrative Council (AC) members will join them. After the meeting, at least 25 state coordinators, AC members, and staff will “fan out” to Micronesia (Chuuk, Pohnpei, and Yap), the Marshall Islands, and Saipan to provide trainings requested by the local ag communities and leadership. The workshops will likely cover topics such as beginning and youth farmers, grant writing, cover crops, direct marketing, IPM, pesticide safety, livestock systems, soil health, and water issues, among others.

The workshops will likely cover topics such as beginning and youth farmers, grant writing, cover crops, direct marketing, IPM, pesticide safety, livestock systems, soil health, and water issues, among others.

Download or order a free print copy at sare.org/Learning-Center/Bulletins/Cultivating-Climate-Resilience-on-Farms-and-Ranches or call (301) 779-1007.

Meet the New Host Institution Staff

On September 1, Montana State University became Western SARE’s Host Institution under the leadership of Regional Coordinator Dr. Fabian Menalled. Menalled has assembled a stellar team at MSU to serve current grantees, ensure well-run proposal submission processes, manage contracts, develop programs, and ensure that Western SARE and the program’s research results are known throughout all of Western agriculture.

Welcome to Irene Grimberg, Deputy Regional Coordinator; Allison Milodragovich, Project Manager; Jen von Sellen, Fiscal Manager; Sherry Heis, Accounting Associate; and Kristen Burr, Administrative Associate.

The PDP program continues to be hosted at the University of Wyoming, with staff in Wyoming and Montana. The Communications team is still located in California.

Contact information and biographies can be found at westernsare.org/About-Us/SARE-Staff. If you have questions or suggestions, we want to hear them.
Oilseed Processing for Small-Scale Producers

There are many varieties of seeds and nuts that can produce oils for food, nutraceuticals, skincare products, aromatherapies, fuels, and industrial lubricants. This updated ATTRA publication, Oilseed Processing for Small Scale Producers, describes the basic processes involved in oil processing, including seed cleaning, extraction, clarification, packaging, and storage.

Recently revised by NCAT Agriculture Specialist and Western SARE PDP Associate Training Coordinator Al Kurki, this is a great resource that includes an extensive case study of an integrated oilseed-producing, refining, retailing, and reclaiming operation. It also has References and Resources sections for more information and equipment.

Download the free PDF at: attra.ncat.org/attra-pub-summaries/?pub=102