2019 Annual Report of Accomplishments and Results

Idaho
University of Idaho

I. Report Overview

The NIFA reviewer will refer to the executive summary submitted in your Plan of Work. Use this space to provide updates to your state or institutions as needed.

1. Executive Summary (Optional)

No updates

Successful projects:

- Stockmanship School participants estimated at least $63,000 per year in savings because of adoption of the practices they learned from program.
- Beginning Farmer and Rancher program participants estimated they will save an average of $58.18 per acre (farmers) and $23.33 per head (ranchers) because of changes they are planning to make in their financial goals.
- Cooking school participants reported they changed practices based on program and saved $760 per week in food dollars.
- Approximately 92% of participants of the Logger Education to Advance Professionalism program reported that they will improve their forest-management practices.
- Storage Management for Gem Russet Potatoes research found a 5% decrease in rejected Idaho potatoes because of system-wide demonstrations of better methods of harvest, saving approximately $500,000 per year for Idaho potato growers.
- PNWPestAlert.net survey shows growers put approximately 85,500 fewer gallons of chemicals into the environment saving about $5,504,173 because of their subscription to the network.

II. Merit and Scientific Peer Review Processes

The NIFA reviewer will refer to your Plan of Work. Use this space to provide updates as needed or activities that you would like to bring to NIFA's attention.

Process	Updates
1. The Merit Review Process	No updates
2. The Scientific Peer Review Process	No updates

III. Stakeholder Input

The NIFA reviewer will refer to your Plan of Work. Use this space to provide updates as needed or activities that you would like to bring to NIFA's attention.

Stakeholder Input Aspects	Updates
1. Actions taken to seek stakeholder input that encouraged their participation with a brief explanation	No updates
2. Methods to identify individuals and groups and brief explanation.	No updates
3. Methods for collecting stakeholder input and brief explanation.	No updates
4. A Statement of how the input will be considered and brief explanation of what you learned from your stakeholders.	No updates

IV. Planned Program Table of Contents

V. Planned Program Activities and Accomplishments

Please provide information for activities that represent the best work of your institution(s). See Section V of the Guidance for information on what to include in the qualitative outcomes or impact statements. Add additional rows to convey additional accomplishments. You may expand each row as needed.

No.	Title or Activity Description	Outcome/Impact Statement	Planned Program Name
1.	Stockmanship School	Beef consumers urged the beef industry they prefer to purchase beef products coming from animals handled and cared for in a humane manner, referred to as low-stress livestock handling. Yet a recent study by Merck Animal Health indicated animal handling as the animal welfare topic where producers need the most training, ranking even higher than treating sick animals. To give local beef producers instruction and hands-on experience, UI Extension organized and hosted a three-day comprehensive Low-Stress Livestock Handling School. Eleven participants from Idaho and Utah learned low-stress livestock handling principles and techniques. They also learned how to have the proper mindset and positive attitude while reading, working, and preparing animals. We coached participants through hands-on sessions using the classroom lessons in our feedlot pens and grazing paddocks. Even though the target audience was seasoned beef producers with an average of 25 years' experience, participants were quite surprised by what they learned and indicated they would put many new skills and principles into practice. Four participants reported owning a total of 3,175 head of cattle and estimated a savings and/or earnings of approximately $20 per head through implementation of practices they learned during the clinic. This would result in total savings/earnings of $63,500 per year.	Sustainable Energy: Land and Livestock

		https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/Extension/admin/Impacts/2019/30-19-lnunn-stockmanship.pdf?la=en&hash=9B721A84C91B3957FD989BE218E7A346F51EE23E	
2.	Grazing Systems	Livestock is one of Idaho's largest industries, and Idaho's vast pastures and rangelands provide its cheapest feed source. However, winter slows down the grazing season on pastureland, making winter feeding costs producers' largest expense. In order to extend the grazing season and reduce feed expenses, we offered pasture management workshops discussing skills to maintain healthier grazing systems, such as pasture renovation, grazing management, weed management and grazing-plan development. Our target audience of pasture managers included male and female Idaho producers who collectively managed 24,311 acres. All participants indicated on the end-of-workshop evaluation a significant increase in knowledge for the topics listed above. Participants also reported they planned to implement many management practices including integrated pest management, applying herbicides using the right chemical at the right time at the right rate, selecting grass and legume varieties to achieve management goals, testing soils to identify limiting nutrients, using rotational grazing, increasing stock density and subdividing pastures with electric fences. As they implement these practices, they will maximize pasture production on the acres they operate. https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/Extension/admin/Impacts/2019/22-19-jhatch-grazing-systems.pdf?la=en&hash=1423DABF9B472B724ABF5AF6A03B41FA8AE58982	Global Food Security and Hunger: Cereals
3.	Urban Agriculture Outreach to Military Veterans	Military veterans acutely miss feeling connected to fellow soldiers or communities after returning from duty. They also miss feeling a sense of productivity and service. Many find their lack of civilian job skills challenging, and they face difficulties in job security and food security. This population needs care and	Commercial and Consumer Horticulture

		attention to help them transition into civilian life; yet in Idaho, veteran needs are still underserved, and there are limited opportunities for them to learn about new employment opportunities or learn to be more self-sufficient for themselves and their families. Therefore, we launched the Harvest Heroes Program to provide outreach relating to home and community food production and small farms to a target audience of US military veterans and their families. Participants spent 9 weeks in class and an entire growing season in planning, planting, and managing a large community garden. Over the 10-month course, participants harvested over 1200 pounds of fresh produce for their families, the local rescue mission and community food boxes. During course evaluations, all participants agreed course information met their needs; they appreciated being surrounded by other veterans and military families, and they felt greater connection to the community and the natural world. All participants felt they gained skills to assess their families' produce needs, and 94% prepared to create a food-garden plan. All respondents to our evaluation indicated they increased their knowledge and skills related to sustainable vegetable production. About 86% reported a change in behavior by applying their new skills to their home garden or community garden plot, and 71% increased their consumption of fresh vegetables.	
4.	Career Walking Tour	Youth in rural Idaho do not have a broad access to post high school opportunities. Career fairs are traditionally used to expose youth to these opportunities, yet many rural schools don't organize these events or can't get community participation, and many rural students are not exposed to post high school options through their school. In order to give youth better ideas about potential career options and inspire them to make a plan for their future, we hosted an all-high-school walking career fair. We assigned 280 youth to career tracks that fit their job skills and personality, and they walked to 30 businesses meeting local professionals who shared education, skills and background necessary to obtain their position.	Community Development

		The businesses were open to having youth visit to discuss the business and what employers needed in employees regarding training and education. The businesses felt it was a much better use of their time rather than spending an entire day at a career fair. For the youth, they were able to see and experience the work environment at each business. Of the participating students, 186 responded to an end-of-session survey. All respondents reported they have a better understanding of opportunities available to them after graduation. Approximately 53.6% were aware or somewhat aware of more local job opportunities after the walk; 76.9% reported it was very helpful or somewhat useful to visit the job locations; 56.4% of respondents reported they already had plans for what to do after high school, and 52.7% of respondents stated they would be very likely or somewhat likely to follow up with the professionals they met about an internship, job shadowing and other opportunities. https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/Extension/admin/Impacts/2020/6-20-khoffman-career-fair.pdf?la=en&hash=AEE65253EC7150690C4AD4B6EC8A0A312096511C	
5.	Zeolite filters	Ammonia emissions and odors are two significant concerns related to dairy production and air quality in Idaho. Ammonia deposits overpromote growth of nitrogen, which can hurt ecosystems, and odors are the most cited issue in conflicts between livestock facilities and neighboring communities. Yet viable emission reduction has yet to be developed. To reduce ammonia and odor emissions, we built a research and demonstration filter on a working dairy and tested zeolite (a crystalline solid) as a filter medium. We offered two field days demonstrating the technology to our target audiences of dairy producers and operators, communities surrounding Idaho dairies, as well as state and federal agencies. Tests found that at maximum capacity, the filter reduced 92% of ammonia	Global Food Security and Hunger: Dairy

		emissions as well as reducing odor concentration at 45%. Over the course of 60 days, emission reduction decreased to 43%. However, we found the filter could be cleaned and reused. Depending on the needs of the dairy, these filters can be upscaled to handle higher loads and can be used on any covered or enclosed structure where the manure air can be redirected through the filter. This technology now adds an important new tool to dairy producers' manure-management. Incorporating zeolite filtration as developed in this study can help producers achieve compliance with ammonia and odor emissions, reduce environmental impact, avoid fines and improve community relationships. https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/Extension/admin/Impacts/2019/25-19-mdeharomarti-zeolite-filter.pdf?la=en&hash=81F959B0349E460A893C07D5F24543B7E199BBF5	
6.	Money Coaching	Regarding finances, people struggle to understand the unconscious beliefs and patterns that create stress, anxiety and fear. These unconscious challenges erect roadblocks to financial understanding and wealth potential. However, knowing how we view money, our money history and money behavior can transform our relationship with money and increase financial potential. To help Idahoans better understand their personal money habits and mental barriers, we offered certified money therapy to individuals, couples and groups. We used financial research and psychological principles to help participants reframe their relationships with money. Participants explored patterns, behaviors, and beliefs about money in sessions tailored to their needs and experience in order to alter their money paradigms. They completed assignments in four core areas: money biographies, inherited thought patterns, financial archetypes and skills assessments. Of the 19 participants, 18 indicated increase in knowledge of their financial patterns and shared changes in behavior that were unique to them. Some participants changed jobs; others returned to school, retired, invested in property, re-evaluated financial dreams, and recommended the program to loved ones. Participants also indicated they fast-tracked retirement, built budgets, and taught	Family Finance

		their children money-saving principles. https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/Extension/admin/Impacts/2019/41-19-krichel-money-coaching.pdf?la=en&hash=26AB99F779F1C7F9BD8AB983436653C0113BF2B5	
7.	Beginning Farmer and Ranchers	Many beginning farmers and ranchers struggle because of money issues. They face adversity in the commodity markets; market prices have been steadily low while land prices have been high; loss of crops or livestock occur unexpectedly. Yet, farmers and ranchers have limited financial understanding or skills to navigate these challenges. For example, livestock producers have little experience with livestock insurance to protect against stock loss, and less than 10% of pastureland acres is insured. Therefore, we offered financial planning classes to beginning farmers and ranchers to improve their financial management skills. We partnered with FSA to offer education credit for taking our class, meeting requirements to receive a loan. In collaboration with beef schools, we held a presentation on livestock insurance, as well as offered farm family-succession planning classes. Fifty participants expressed change in their financial goals from participating in the farm and ranch financial management course. Respondents to our survey estimated they'd save and/or earn an average of $58.18 per acre for farmers and $23.33 per head for ranchers. Eleven out of thirteen respondents stated they now have skills to handle their farm business' finances because of the class. Additionally, two livestock producers enrolled into RI-PRF insurance, which will help protect their profits in the event of livestock loss.	Farm and Ranch Management
8.	Cooking School	According to the US Census Bureau, as of 2016 Americans spend more money eating out than on groceries. However, purchased meals are typically more caloric and less nutritious than home-made meals. Therefore, UI Extension educators developed a cooking school program teaching how to prepare quicker, healthier and cheaper meals at home through expanding participants' cooking skills and knowledge of safely using an electric pressure cooker.	Food Safety

		The program targeted a broad audience--Idahoans in many of the state's regions. The audience was those with access to electric pressure cookers or who were interested in exploring pressure cookers' safe use. Making cheaper, healthier meals appealed to many of Idaho's residents as well. To identify results from this program, we surveyed participants with an end-of-session evaluation and a six-month-follow-up. Results from the end-of-session show that the 294 respondents indicated a significant, positive change in knowledge of topics of budgeting, healthier meals, electric pressure cooker skills, and food-safety practices. In the follow-up survey, 84 respondents reported that they changed practices and adopted skills based on the program. These practices include properly cleaning and maintaining the pressure cooker and making meals with cheaper cuts of meat. Respondents reported a total savings in food dollars of $760 per week (an average of $11.69 per week per family). This translates to a total of $39, 520 savings per year in food dollars since program participation. https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/Extension/admin/Impacts/2020/3-20-bhutchings-cooking-home.pdf?la=en&hash=F3FB0CE8D261E996DDC84264BD5FACF5267A2C31 https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/Extension/admin/Impacts/2019/15-19-arobertson-webinar.pdf?la=en&hash=EB74D92C76639CB8F11C6B79931B3BF43BC8E0C1	
9.	Logger Education to Advance Professionalism (LEAP)	In forest management, loggers are a critical link between landowners and foresters. But if communication between landowners, loggers, or foresters is inadequate, the resulting timber or biomass harvests may not meet expectations. We offer the Logger Education to Advance Professionalism (LEAP) to a target audience of loggers to meet forest certification requirements, to improve communication, and to help Idaho forest product companies maintain or increase Idaho's share of global markets for certified wood products.	Climate Change: Forest Management

		LEAP features over 20 hours of training designed to increase loggers' understanding and skills related to forest ecology, silviculture, and water quality. LEAP Update is an annual program where loggers learn about current forestry issues and meet Idaho Pro-Logger program annual credit requirements. From 2018-2019, we provided 2,002 continuing education hours for 274 Idaho panhandle loggers. As of 2019, a total of 598 loggers enrolled in the Idaho Pro-Logger program. During the end-of-session evaluations, participants indicated they would likely or very likely change behaviors: 92% will likely improve their forest-management practices; 88% will likely monitor for forest insects and disease; and 94% will likely better protect forest water quality. Participants indicated they would pass this knowledge to landowners, thus increasing wood and biomass to support Idaho's economy, while maintaining water quality, improving forest health, and enhancing biological diversity. https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/Extension/admin/Impacts/2018/56-18-cschnepf-loggers.pdf?la=en&hash=7ADEFA190E1BD08E9B7D47DBE46A63645E4E2458	
10.	Eat Smart Idaho	Limited access to food has been linked to obesity -- diets low in fruit and vegetable intake and lower rates of physical activity. Yet the effects of limited food access don't stop there. These factors in turn increase chronic disease risk and healthcare costs. Eat Smart Idaho provided direct nutrition education and physical-activity classes to low-resource adults to help them manage healthy behaviors despite their limited food access. Participants completed our before-and-after questionnaire following the Eating Smart and Moving More class series. A total of 5,501 youth and 1,546 adults participated in the program. Graduates reported improvements in overall diet, nutritional practices or knowledge (84%), knowledge or use of food resource-management practices (59%), food-safety practices or knowledge (59%), daily physical activity (53%), and food security	Global Food Security and Hunger: Health & Human Nutrition

		(44%). Of the 1,546 adults, 741 completed a pre/post questionnaire. Participants reported improvement in dietary intake following the class series, with 81% reporting increased daily intake of fruits and/or vegetables, and/or increased weekly intake of red and orange vegetables and/or dark green vegetables. Approximately 91% of adults showed improvement in one or more diet-quality indicators (i.e., eating fruits, vegetables, red and orange vegetables, dark green vegetables, drinking less regular soda (not diet), drinking less fruit punch, fruit drinks, sweet tea, or sports drinks, and cooking dinner at home). Nearly 74% of adults showed improvements in one or more physical activity behaviors (i.e., exercising for at least 30 minutes, doing workouts to build and strengthen muscles, or making small changes to be more active). About 81% of adults showed improvement in one or more food safety practices (i.e., washing hands before preparing food, washing all items and surfaces after cutting raw meat or seafood, not thawing frozen foods at room temperature, or using a meat thermometer). About 45% of adults showed improvement in one or more food-security indicators (i.e., not eating less than you wanted so there was more food for your family or having enough money to get food for your family). Nearly 74% of adults showed improvement in one or more food resource-management practices (i.e., cook dinner at home, compare food prices, plan meals before shopping, look in refrigerator or cupboard before shopping, or make a list before shopping.	
11.	LESA installation with BPMs	Idaho growers rely on irrigation water to produce their forages, row crops and cereals. Water-use rates for forages such as alfalfa or corn are among the highest for crops grown in southern Idaho. However, with irrigation-water supply more uncertain due to weather and other factors, producers must use the limited water more efficiently. Therefore, there is a need for irrigation-system designs with higher efficiency, such as LESA (low elevation spray application). When the water supply is reduced, these designs will deliver more of the available water to the soil for crop use and will lower energy costs. With a target audience of both producers and state and federal agencies, we provided our research to the USDA-NRCS to develop best management practices for LESA to increase irrigation efficiency. The USDA-NRCS provided cost-share funding to retrofit conventional sprinkler packages to the LESA design.	Climate Change: Soil, Water, Waste and Air Management

		Idaho producers retrofit over 70 pivots in 2018-2019 with NRCS funding and a significant number without NRCS funding. Additionally, producers installed LESA pivots in Utah, Nevada, California, and Montana. Producers in Washington and Oregon installed LESA machines based on the work of our multi-state team (Idaho Extension, WSU and OSU). Cumulative research suggests that LESA will reduce water applied by 15-20% on cereals and 20-25% on forage crops. This means during a low water-supply year, crop yield will be affected less than if producers used traditional sprinkler arrangements.	
12.	Storage Management Gem Russet Potatoes	Ensuring the quality of fresh market potatoes from harvest to table is necessary to successfully maintain Idaho's reputation as the US' premier region for production. Yet potato-quality degradation still occurs in the supply chain. Recent requests and questions from major retailers regarding quality issues have prompted the need to establish a system-wide approach to better understanding where degradation occurs and how to lower it. To aid producers and retailers in maintaining potato quality, we worked with a major retailer to assess Idaho potato quality after delivery to its final destination. We also delivered multiple presentations, newsletters, website postings, videos in both Spanish and English on harvester and windrower operations, and bi-lingual equipment stickers to our target audience of Idaho producers, demonstrating better methods of harvest. We assessed potatoes before and after reaching final retail destinations to better understand the impact of transport on quality. We found there was a 5% decrease in the volume of Idaho potatoes rejected by a major retailer after delivering this program for one year. This was equivalent to $ 1 million in savings. The retailer indicated half of this reduction was directly due to the educational programming targeted to quality maintenance. This would be equivalent to approximately $500,000 savings per year to our Idaho potato growers due to the educational program.	Global Food Security and Hunger: Potatoes
13.	Cultivating Success Expansion	Small farmers and ranchers are critical to the resiliency, economy and food security of rural areas and necessary for local food access in urban areas. However, the average age of U.S. farmers is nearing retirement age, and there are only a few	Global Food Security and Hunger: Small Acreages

		new farmers taking their place. This results in agriculture facing a future labor and food supply crisis. We need appropriate education, strong farmer-to-farmer networks and access to trustworthy resources to inspire more people to become small farmers. While we've offered the sustainable small-farm education program - Cultivating Success Idaho - for 20 years, the program has only reached limited regions of the state. Therefore, we expanded it into a state-wide, three-year comprehensive program (2016-2018), with the help from USDA-NIFA, to provide education to new farmers, facilitate access to land, capital and decision-making tools and strengthen farmer-to-farmer mentoring. We launched in-person workshops, webinars and a website (Idaho Farm Link) to discuss topics like farm law, wholesale marketing, farmer-mentor training, financial education, cover crops and access to capital and funding for farmers. Our audience included landowners, beginning farmers, and seasoned farmers as mentors. In surveys, 49 of these participants reported starting a farm-based business, 51% respondents in 2016 and 2017 increased their profits due to courses or workshops, and 331 respondents from all three years made improvements to their farming operations. Over 90% indicated knowledge gain in every course offered with most participants planning to put at least one new practice into place. https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/Extension/admin/Impacts/2019/6-19-imayes-small-farms.pdf?la=en&hash=7B74CF6C0C288331BDC760C6BF35984BDB7FB0FF	and Community Food Systems
14.	PNWPestAlert.net	Pesticide expenses range from 18% to 39% of the operating costs of high-value crops in Idaho (alfalfa seed, onions, potatoes, and sugar beets). Yet producers over-apply pesticides; they mistime when pesticides should be applied for maximum efficiency due to weather, or the overuse inadvertently encourages, rather than mitigates, infestations. This means producers pay increased operating	Global Food Security and Hunger: Sugar Beets & Minor Crops

		costs when they could be paying less. Therefore, we developed the PNWPestAlert.net network to disseminate integrated pest management practices as well as increase communication about local pest outbreaks. For our target audiences of agriculture producers, urban or suburban landscapers, homeowners and green-industry professionals, this means they receive information on when to best spray crops to minimize risk of pest resistance and over-application. Survey results in 2018-2019 show that 36% of respondents reduced the number of sprays to their crops; they applied pesticides more effective and in a timely fashion 53% of the time; and 40% of subscribers increased the use of field scouting to document pest levels. Website subscribers apply 5.72% less pesticides on their crops than they applied previous to using the pest alert network. If we calculate this decrease in chemical use for just onions, (USA Onions, 2016) potatoes (USDA, 2015) and sugar beets (USDA, ERS, 2017) in the area impacted by the network, it currently means growers put approximately 85,500 fewer gallons of chemicals into the environment saving about $5,504,173. https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/Extension/admin/Impacts/2018/29-18-rhirnyck-pest-alert.pdf?la=en&hash=A4D663630C2E913BD9716F065B2D513BB9F74D1F https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/Extension/admin/Impacts/2019/50-19-nusabel-pest-alerts.pdf?la=en&hash=10032D59D4A0BDE1EDA91B56E68879E06124E874	
15.	Fort Hall 4-H healthy youth program	Tribal youth have high obesity and diabetes rates, but they lack access to education teaching them how to select nutrient rich foods and beverages. To improve their ability to make healthy living choices, we offered approximately	Childhood Obesity: 4-H Youth Development

		125 healthy cooking and lifestyle classes through the Fort Hall 4-H healthy youth program. With a target audience of tribal youth, this program included lessons on healthy breakfasts, healthy lunches, healthy beverages and gardening. Each lesson was hands-on and averaged 25 participants. Evaluation results of the 1,500 Fort Hall youth who participated in the program show all participants gained an increase in knowledge of agriculture, science, gardening, nutrition, healthy cooking and eating, leadership, and teamwork. About 80% indicated a change in behavior, reporting they now make better eating choices by selecting healthier foods and beverages for their daily diets.	