

FY 2020 Annual Report of Accomplishments and Results

[Colorado]

[Colorado State University]

I. Report Overview

The NIFA reviewer will refer to the executive summary submitted in your FY 2020 Plan of Work located in the Institutional Profile. Use this space to provide updates if needed.

1. Executive Summary (Optional)

FY 2020 was characterized by community needs arising from the Covid-19 pandemic. Colorado State University Extension responded to emerging needs in a variety of ways, from adapting in-person programming to pivoting the content of our programming.

One of our most innovative and successful responses to the pandemic was our Grow & Give program. Food insecurity in the U.S. was at 10.5% of American households before the pandemic (USDA, 2019), and USDA estimated that Colorado had over 2.4 million families facing hunger regularly. COVID-19 highlighted the issue of food insecurity as food supply chains were disrupted. Furthermore, food-insecurity and food deserts are more likely to impact underserved and underrepresented communities, populations CSU strives to serve and engage through Extension programming statewide. In response, an innovative Extension team launched “Grow & Give: A Modern Victory Garden Project”, uniquely equipped to tackle food insecurity.

The Grow & Give program encouraged average Coloradans to prioritize food gardening in 2020 by growing extra to give locally. Utilizing a broad team approach encompassing horticulture, family consumer science, and community food system specialists, this team worked tirelessly to streamline existing resources, develop new resources and create a one-stop-shop for the food growing and food donating needs of Coloradans, helping to foster gardening success and a connection between gardens and local emergency food providers. There were countless educational videos, recorded presentations, quick guides, live Facebook sessions, recipes, food safety information, website content, a statewide donation map and donation reporting system, and many other resources created surrounding this overall project.

The impact of the program was seen statewide with 584 registered home and community gardens, spanning more than half of Colorado’s counties (39) and donating 47,142 pounds of fresh produce in 2020. There were 1,845 individual donations made to over 100 different donation sites across the state. Of all donations made, approximately 50% went to food banks, food pantries or shelters. In addition to the impact of the donated produce, the Grow & Give Team’s efforts drove over 20,000 unique website views to the main website between April - October and 66 new vegetable gardening videos created for the Grow side of the website. Overall, 84% of participants said they would be interested in participating in future years.

Another highlight of our 2020 programming centered on health. Nearly 6 in 10 adults in Colorado are overweight (BMI of 25-29.9) or obese (BMI of 30 or higher), with 2 out of 10 being obese. In recent years, the percent of people overweight and obese have continued to rise across Colorado, with all of eastern

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Colorado counties between 51 and 65 percent. Overweight and obese people have an increased risk of developing several diseases and conditions, including high blood pressure, type 2 diabetes, cardiovascular disease, gallbladder disease, osteoarthritis, stroke, depression, anxiety, sleep apnea, and several cancers (breast, endometrial, liver, kidney and colon).

The economic costs of overweight and obesity are a significant burden on our health care system and economic output. The annual national obesity-related medical costs have been estimated to be \$147 billion. Estimates of national productivity costs of obesity-related absenteeism range from \$3.38 billion (\$79 per obese individual) to \$6.38 billion (\$132 per obese individual). Medical expenditures attributable to obesity in Colorado are estimated to exceed \$1.6 billion each year, according to a recent report from the Colorado Department of Public Health and Environment.

In response to these challenges, CSU Extension in northeast Colorado developed a 12-week health and fitness challenge to serve as an educational and motivational method to encourage adults to make healthy lifestyle changes. In spite of stay-at-home order which impacted the last four weeks of the program, the 2020 – A Healthier Weigh Program had some very positive impacts to report. 132 people out of 193 enrolled completed the 12-week challenge for a 68.4% completion rate. People completing the program logged over between 97 to 903 miles of steps/physical activity with most participants averaging over 350 miles in the 12 weeks. They lost a collective 1,096 pounds of body weight and lost 311 inches from their waist measurements. Responses to participant evaluations included: “At least 30 minutes of dedicated physical activity 5 days per week” went from 25% to 65%. “Half my daily beverage consumption is water” went from 15% to 77%. “Eating from all food groups daily” went from 32% to 63%. “Include all food groups daily (meals & snacks)” went from 19% to 60%. “Using mindfulness as tool for health and weight management” went from 18% to 40%. And “get 8 hours of sleep every night” went from 17% to 37%.

Key quantitative metrics for CSU Extension’s 2020 programming and Ag. Experiment Station Research are as follows:

Critical Issue	Number of presentations	Number of Consultations	Total Number of Direct Contacts	AES Peer Reviewed Publications
4-H	3,027	19,456	313,173	NA
Community Development	180	1,504	5,016	10
Cropping Systems	155	423	7,877	65
Environmental Horticulture	1,438	16,362	213,742	25
Food Systems	66	308	3,563	11
Individual, Family, and Community Well-Being	212	51	4,248	2
Livestock & Range	405	4,746	9,406	39
Nutrition, Food Safety, & Health	2,430	6,152	65,131	10

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Natural Resources	118	8,072	19,650	28
TOTAL	8,031	57,074	641,806	190

As we conducted programs to help Coloradans grow and donate produce to those in need, manage weight and health in new and impactful ways, and conduct other programming on a wide variety of topics, we also formally embarked on an in-depth statewide community needs assessment. Every county or area Extension office in the state is analyzing secondary data (i.e. county strategic plans, community health assessments, demographic information), conducting key informant interviews, and disseminating a survey to better understand community needs and opportunities for Extension to have impact. This major initiative will inform Extension, our ag experiment stations, other off-campus units, and engaged faculty. Key deliverables will include the production of County Program Plans based on community priorities and a refreshing of statewide Plans of Work for our Critical Issues.

In the meantime, our Plan of Work template for Critical Issues has been refreshed so that each team has identified a set of issues for which they are working toward medium- or long-term change. (These “issues”, along with statewide programs like Master Gardener, are the equivalent of NIFA “projects/programs”.) For each issue, teams have identified any connections between research and extension, planned multistate activities, a goal/problem/target audience, a theory of change, indicators of success, and a high-level evaluation plan. In their plans, individual staff identify their diverse network of stakeholders, the issues they will address in the coming year, and whether any of those issues are covered in “Issue Canvases” from PRUs. Note that we are planning to remove Energy from our list of critical issues and that efforts on that issue have been merged under Natural Resources for this year.

II. Merit and Scientific Peer Review Processes

The NIFA reviewer will refer to your 2020 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 ONLY
1. <u>The Merit Review Process</u>	CSU Extension is the only western state without faculty status for our employees. We expect that the coming year will provide a pathway to faculty status for our staff and a revision of merit/peer-review expectations.
2. <u>The Scientific Peer Review Process</u>	All AES projects are reviewed and approved by the Research Integrity and Compliance Review Office before they are submitted for NIFA's approval on REEport.

III. Stakeholder Input

The NIFA reviewer will refer to your 2020 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 ONLY
<p>1. Actions taken to seek stakeholder input that encouraged their participation with a brief explanation</p>	<p>Our statewide community needs assessment is moving forward and is scheduled for completion in fall 2021.</p>
<p>2. Methods to identify individuals and groups and brief explanation.</p>	<p>Our statewide community needs assessment has included use of a demographic county profile for every county in the state. County Extension offices will identify key informants based in part on use of this demographic data.</p>
<p>3. Methods for collecting stakeholder input and brief explanation.</p>	<p>Our statewide community needs assessment is utilizing a secondary data analysis, key informant interviews, and a survey to provide use with robust data from a wide array of community members. Also included will be seven non-English language focus groups in six counties. Six of those seven focus groups will be conducted in Spanish, and one will be conducted in Somali for members of that community in Morgan County, CO.</p>
<p>4. A Statement of how the input will be considered and brief explanation of what you learned from your stakeholders.</p>	<p>In the immediate future, results from the statewide community needs assessment will be used to inform the creation of county program plans. These local plans will then inform both statewide Plans of Work (Critical Issues) and individual Plans to Invest.</p>

IV. Critical Issues Table of Contents

No.	Critical Issues in order of appearance in Table V. Activities and Accomplishments
1.	4-H
2.	Community Development
3.	Cropping Systems
4.	Environmental Horticulture
5.	Food Systems
6.	Individual, Family, and Community Well-Being
7.	Livestock & Range
8.	Natural Resources
9.	Nutrition, Food Safety, and Health

V. Activities and Accomplishments

Please provide information for activities that represent the best work of your institution(s). In your outcome or impact statement, please include the following elements (in any order): 1) the issue and its significance (e.g. who cares and why); 2) a brief description of key activities undertaken to achieve the goals and objectives; 3) changes in knowledge, behavior, or condition resulting from the project or program’s activities; 4) who benefited and how. Please weave supporting data into the narrative.

No.	Project or Program Title	Outcome/Impact Statement	Critical Issue Name or No.
1.	Summer "STEMin at Home" kits with the Montrose Library District	<u>Issue</u> The COVID pandemic threatened to decrease educational services to youth without sufficient support from their families and access to technology. In addition, 4-H has historically not included demographically diverse, vulnerable youth. In Montrose County, the Montrose Library could not provide the traditional weekly kids programs or reading mobile bus to our communities because of limitations on in-person programming. Traditional 4-H STEM programs were canceled. It was a challenge to keep socially distant while still providing quality educational programming and reading opportunities to local	4-H

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		<p>youth in our communities, including those who were particularly susceptible to a significant decrease in services.</p> <p><u>Response</u> In early May, we reached out to the Library Youth Services Department about ways we could partner to address this issue. The library had decided to provide book packs to youth via a Grab Bag drop off program. Packs would be pre-assembled at the library by volunteers and delivered to multiple drop off locations in Montrose and Olathe to be passed out to youth ages 5-13. Internally, we had been sharing ideas and instructions for different STEM kits that required simple supplies, would be bagged, and then delivered out to youth who would have everything they needed to do a STEM activity at home. The library was excited to have us provide these fun STEM at Home kits to go with their grab bags.</p> <p>Over the course of June and July, we were able to assemble over 500 STEM kits on topics like Spoon Catapults, Plant Science, Pan Flutes, and Parachutes. We assembled the kits in-house and delivered them to the library who would pass out the kits all over Montrose County. All kits included information about 4-H STEM programs and where kids could find more activities virtually.</p> <p><u>Results</u> This partnership expanded the diversity of youth we could reach all around our community. The kits made it into the hands of many youth that CSU STEM had not traditionally reached. All kits were distributed out and the library was extremely grateful for our partnership and continued commitment to provide quality youth educational programming. As a result of this work and similar STEM work across Colorado, 550 Colorado youth applied STEM knowledge and skills in club, community, and academic projects and programs. 225 Colorado youth learned and practiced STEM knowledge, skills, and abilities. It has been shown that use of research-based curricula and programs such as STEM kits helps to achieve key positive youth developmental outcomes (Arnold, (2018), 4-H Thriving Model).</p> <p>Contact: Stephanie Lamm</p>	
2.	4-H Sew What Club COVID-19 Response	<p><u>Issue</u> In March 2020, a large number of novel coronavirus disease (COVID-19) cases were identified. The severe respiratory syndrome coronavirus has been found to be transmitted via respiratory droplets transmitted between humans. Facemask wearing with proper hand hygiene was considered an effective</p>	4-H

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		<p>measure to prevent the transmission of COVID-19. Therefore, face masks were in high demand especially for healthcare workers. However, a facemask shortage during the COVID-19 outbreak became a concern. The local hospital provided instructions on how to make fabric face masks. Around the middle of March, the County of Eagle went into a shutdown which included 4-H meetings that were unable to meet face-to-face. Because of this, competent volunteers were of critical importance to keep youth engaged.</p> <p><u>Response</u> The Sew What 4-H Club stayed connected to the 4-H members through sewing projects that were made and distributed. One of those projects included sewing fabric face masks for healthcare workers at the local hospital. The club president made up 60 face mask kits for 20 4-H members to sew 3 each. She and her daughter created a YouTube video showing how to sew a face mask according to the instructions provided by the local hospital. Then the club president distributed the kits to each member.</p> <p><u>Results</u> On April 16, 2020, 73 fabric face masks were delivered to Vail Health (the hospital in the Eagle River Valley). 4-H Youth Development volunteers and staff positively influenced the development of youth and continually developed their competencies. 20 youth became caring and contributing members of society through life skill development attained in the 4-H program.</p> <p>Contact: Jenny Leonetti</p>	
<p>3.</p>	<p>Time's Kid of the Year</p>	<p>For 92 years, TIME magazine has named a Person of the Year — an honor that wields influence, makes waves, and serves as a catalyst for global change.</p> <p>This year, TIME named 15-year-old scientist and inventor Gitanjali Rao the first-ever Kid of the Year. Rao was selected from a field of more than 5,000 Americans ages 8 to 16. A resident of Lone Tree, Colorado, Rao is an involved 4-H participant in Douglas County Extension.</p> <p>Rao was selected as TIME's first Kid of the Year for her astonishing work using technology to tackle issues, ranging from contaminated drinking water to opioid addiction to cyberbullying. She researches scientific tools such as artificial intelligence and carbon nanotube sensor technology and applies them to problems she sees in everyday life.</p> <p>Rao also is on a mission to create a global community of young innovators to solve problems around the world. She has created a series of workshops</p>	<p>4-H</p>

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		<p>designed to show other kids how to tap into their curiosity, aspiring to create a generation of innovators.</p> <p>In addition to her work with technology, her involvement with Douglas County 4-H includes serving as a member of the Bighorn Sheep Club for several years.</p> <p>A natural leader, Rao won first place in the “Refining Leadership Skills” Leadership Project category at the 2020 Douglas County Fair. Her win qualified her for the Colorado State Fair, where she earned Grand Champion in the Leadership Project. She also earned the Grand Champion title in 2018 and 2019, with this year marking her third straight win.</p> <p>Gitanjali began 4-H in Nashville when she was in the fourth grade. When she began, her main project was Public Speaking. After moving to Colorado, she took up the Leadership project. She stated, “4-H allowed me to meet diverse students like me who have different skill sets. It taught me the importance of community service, leadership, commitment, and responsibility while competing to improve my skill sets”.</p> <p>Contact: Annie Albrecht</p>	
<p>4.</p>	<p>Family Leadership Training Institute of Colorado 2020 Graduates</p>	<p><u>Issue</u> Civic participation and greater collaboration between individuals, families, institutions, public administrators, and elected officials is critical as citizens seek strategies to respond to emerging social, health, and economic issues in their communities.</p> <p><u>Response</u> The Family Leadership Training Institute (FLTI) program helps to bridge the gap between local residents, partners, and decision-makers. The FLTI training experience empowers Coloradans to be direct and meaningful voices by providing opportunities to build skills, grow social connections, and leverage existing context expertise by forming the partnerships necessary to make extraordinary community impact.</p> <p>FLTI is a free, intensive 20-week training to empower participants to develop leadership skills, develop innovative tools and create opportunities for change to reflect and elevate multiple community voices. Each participant applies their learning to a community-based project that reflects their passion[s]. Class participants emerge as strong leaders and advocates for all children, youth and families in the community. The benefits to Colorado communities are respected and recognized leaders that effect change on local issues.</p>	<p>Community Development</p>

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		<p>In 2020, five cohorts that began in 2019 completed their programs (Aurora, Morgan, SW Denver, Montelores youth, and Boulder County - Lafayette). An additional five cohorts began in 2020 (Eagle, Jefferson, Larimer, Saguache, and SW Denver2), of which 4 were able to complete due to the digital divide experienced in the Saguache community that prevented them from completing their cohorts. In Aurora, Eagle, Jefferson, and Larimer sites - face to face classes that had been in place prior to the COVID-19 outbreak were interrupted for several months. However, site coordinators kept their classes in contact with regular check-ins while classes were on pause. All but one of these communities were able to restart their classes with virtual classes in the Fall of 2020. Eagle County was actually able to reconvene face to face classes in September, though their last two classes had to be held virtually. SW Denver's 2nd 2020 cohort was the first in the nation to operate entirely virtually, from application to graduation. Because we were unable to hold our usual Day at the Capitol event in the height of lock-down, FLTI of Colorado offered 3 Democracy in Action webinars that were well attended and regarded.</p> <p><u>Results</u> In total, FLTI of Colorado had 124 graduates from diverse demographics and perspectives from 9 cohorts in 8 communities in 2020. Many more who started dropped the classes as COVID took hold of these communities. FLTI is used to receiving praise for our programming, and 2020 feedback was even more positive than usual, given the extended time some of the cohorts were in contact with each other. 124 community members increased knowledge of community development, collaboration, planning and action, engaged in dialogue about diversity, equity and inclusion issues, increased links to resources and community assets, increased knowledge of leadership skills such as public speaking, problem solving, team building, etc., engaged in dialogue about social justice and the institutional policies and practices that hinder or promote it, and increased engagement in community and/or organization through new leadership opportunities.</p> <p>Contact: Heather Meyer</p>	
5.	Courageous Conversations about Race Workshops for POS/BoCo Management Team	<p><u>Issue</u> The Management Team of Boulder County Parks & Open Space is 90% white, but responsible for leading their staff, program development and policy efforts to equitably serve diverse staff and community members. Most of the management team has had little to no experience discussing race and racism, much less leading the County's effort to address racism. The County</p>	Community Development

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		<p>Commissioners have charged all leaders with implementing a "racial equity lens" in everything from hiring to educational programming to signage for the public, but leadership has not felt knowledgeable enough or equipped to tackle this challenge.</p> <p><u>Response</u> Extension was asked to design and co-facilitate a workshop series for eight managers using the Courageous Conversations about Race model and workbook. We met over a month's time to develop and plan the workshop series. To date, we have facilitated six workshops with the Management Team, addressing topics such as white privilege and how it impacts our roles as leaders, and what it means and looks like to use a racial equity lens in leadership decisions, designing policies, etc.</p> <p><u>Results</u> Participants have been engaged and thoughtful in their discussions. All participants have given positive feedback to each of the workshops, evidenced by a debrief at the end of each session. Each of the eight community members have engaged in dialogue about diversity, equity and inclusion issues.</p> <p>Contact: Laura Larson</p>	
6.	Determining irrigation run times with drip tape on specialty crops	<p><u>Issue</u> Colorado crop producers have traditionally been reluctant to adopt new practices that might enhance the long-term sustainability of their operations. Drip irrigation is one of these practices that can have long-term benefits but that requires upfront investment and that can be confusing for even experienced vegetable crop irrigators. (For example, while irrigation water lost and gained from the soil and plant system is expressed in inches, drip tape is rated in gallons per hour.)</p> <p><u>Response</u> A webinar was held to outline soil moisture assessment and to help producers calculate the right application of water via a drip irrigation system.</p> <p><u>Results</u> Of the 20 responding in a webinar poll, all indicated knowledge gained and intent to use knowledge gained. In applying this knowledge, participants will use research-based techniques to improve soil health, protect and efficiently use water resources, manage crop nutrients, and enhance plant yields and quality in their farm fields.</p>	Cropping Systems

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		Contact: Adrian Card	
7.	Basic Ag Marketing School	<p><u>Issue</u> The 2012 USDA Census of Agriculture estimated the value of all agriculture products produced in Colorado to be more than \$7.7 billion dollars. At the same time, many agricultural producers don't feel confident in their abilities to market the commodities they produce. Assisting producers in improving their marketing skills could also boost the value of agriculture's contribution to the Colorado economy. In today's agricultural business environment of low commodity markets, high input costs and slim or non-existent margins, marketing skills are essential.</p> <p><u>Response</u> In an effort to help farmers and ranchers improve their marketing skills, CSU Extension offered a series of ag marketing webinars in February 2020. The Basic Ag Marketing Lunch and Learn webinar series was intended to be an introductory course covering the mechanics of cash, futures, and options markets. This webinar was designed to meet the needs of agriculture producers who are new to commodity marketing and are looking for techniques to improve the prices they receive for their crops and livestock.</p> <p><u>Results</u> Average attendance was 30 over the four-week program. Program evaluations were positive with over 93% of the respondents indicating that they would recommend the program to a friend. 20 participants increased knowledge of research-based techniques for improving soil health, protect and efficiently use water resources, manage crop nutrients, and/or enhance plant yields and quality in their farm fields.</p> <p>Contact: Brent Young</p>	Cropping Systems
8.	Soil Moisture Sensing Technologies for Smart Farming Practices in an Internet-of-Ag-Things World	<p><u>Issue</u> Soil water content affects almost every ecological, agricultural, and hydrological process at the land-atmosphere interface. Colorado and many other western states are experience prolonged drought conditions. Thus, improved irrigation management is paramount for the sustainability of many cropping systems. Unfortunately, commercial sensors that provide automated, continuous soil water measurements and send data to the internet are too expensive to be widely used. Commercial sensors and dataloggers cannot be economically deployed in large enough numbers for practical irrigation</p>	Cropping Systems

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		<p>management. New low-cost soil moisture sensors and electronics developed in this project will be used by farmers, crop consultants, researchers, and citizen scientists for irrigation management and a wide range of other applications</p> <p><u>Response</u> The goal of this project is to develop new measurement technologies, “smart farming” that increase efficiency, save water, and protect the environment. Driving this revolution is the Internet of Things (IoT), an ever-growing network of sensors and devices with internet and machine-to-machine (M2M) connectivity. Data collected by these technologies is immediately uploaded to the internet “cloud” (i.e., a network of servers) where results can be viewed and combined with broader information in a data analytics and decision support framework. Internet-of-Ag-Things (IoAgT) extends this technology to the farm. For example, soil moisture data could be combined with weather forecasts and satellite imagery of crop stress to better manage the timing and amount of irrigation - perhaps via automated control. The IoT project team designed and tested low-cost soil moisture sensors that use a capacitance-based approach (measures dielectric permittivity) to detect changes in soil moisture. Each sensor costs less than \$5 and readily interface with low cost dataloggers and microcontrollers.</p> <p><u>Results</u> The IoAgT team built and tested four different prototype soil sensors for measuring soil moisture and temperature. The IoT carrier board was also refined so it can operate on very low power (run for years on a small battery). They perfected the electrical circuits, electrode configurations, fabrication methods and solved an array of hardware challenges. The IoAgT also tested the prototype carrier boards and new sensors in three commercial golf courses, a city park, and municipal building landscapes. The team also conducted tests at multiple agricultural sites, including: irrigated corn and grass filter strips used to reduce nutrient runoff. In each of these deployments, they compared the IoAgT system to research-grade sensors made by Metergroup and others. Gravimetric soil samples were used at weekly intervals for comparison to constructed sensors.</p> <p>Results showed that the IoT sensors could track soil moisture accurately. Furthermore, irrigation managers could see soil moisture data real time on their phones – providing key information on the best time to schedule an irrigation. Also, sensors showed the wetting front depth (i.e., how deep the water moved) after each irrigation. Many irrigators found this data to be the most useful aspect of using the technology. They often found that they were applying</p>	
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		<p>inadequate water and only wetting the top of the root zone. Others found they overirrigated, wasting water and potentially leaching nutrients downward toward ground water. Using sensor data allowed producers to “dial in” the correct amount of water to apply for each irrigation for different soils and crops. Improved sensor-based irrigation could improve yield, save water, and help protect water quality by reducing nitrogen losses from the root zone.</p> <p>Contact: Dr. Jay Ham</p>	
<p>9.</p>	<p>Combating Herbicide Weed Resistance Utilizing Genomics and Smart Management Strategies</p>	<p><u>Issue</u> In the face of uncertain natural precipitation and stored water supplies in the western US, high levels of weed competition for water in semi-arid cropping systems may someday curtail crop yields and redefine the crops grown. The continual growth in the number of herbicide resistant weeds (in the face of fewer new herbicides) both world-wide and in Colorado, dictates that we must develop "smart" weed management strategies before key products are rendered of marginal utility because resistant weeds dominate weed community dynamics. Year on year, weed management often remains the major pest problem faced by Colorado growers. Herbicide resistance exaggerates the problem of controlling problem weeds and threatens the use of no-till and other conservation practices and its associated benefits in water conservation and soil health. Colorado dryland farmers are reporting increased reversion to tillage in order to manage herbicide resistant weeds like kochia (a form of the weed referred to as tumbleweed).</p> <p>At a global level, the situation is equally dire. According to the International Survey of Herbicide Resistant Weeds. Currently there are 521 unique cases (species x site of action) of herbicide resistant weeds globally. Weeds have evolved resistance to 23 of the 26 known herbicide sites of action and to 167 different herbicides. Herbicide resistant weeds have been reported in 94 crops in 71 countries. (Source: http://www.weedscience.org/Home.aspx). One of the most problematic of these herbicide resistant weeds is <i>Kochia scoparia</i> or Kochia. This very mobile pest is rapidly expanding its range across the western US literally leaving a trail of management problems to control.</p> <p><u>Response</u> A team of weed scientists (Dr. Phil Westra, Dr. Todd Gaines, Dr. Franck Dayan, and Dr. Scott Nissen) are working to develop unquestioned global preeminence in the functional weed genomics of several key global weeds. There is now an International Weed Genomics Consortium directed by Dr. Todd Gaines of the CSU weed science team that is conducting a multi-year genome assembly of several major global weeds (www.weedgenomics.org).</p>	<p>Cropping Systems</p>

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		<p>This team is identifying and exploiting the genomics successful cold, heat, drought, and salt tolerance genes from Kochia for the commercial purpose of improving major global food crop productivity. Discovery and cloning of key genes could be used to improve crop abiotic stress tolerance via direct insertion or perhaps as guides for CRISPR/Cas9 gene editing technology. By applying tools from genomics and molecular biology to advance weed science, the stress tolerance weeds are famous for, could possibly be applied to crops, and traditional management strategies could be reduced or retired.</p> <p><u>Results</u> The war against herbicide resistance in weeds continues, but the science of weed genomics is turning the tide in the battle with Kochia. The genomics team has assembled and published a draft genome of <i>Kochia scoparia</i>. They use this draft to map individual genes to chromosomes of the genome of this important, problematic weed. Additionally, they discovered whether the resistant plants are inferior to the original in the absence of herbicide associated with dicamba herbicide resistance in kochia. That is due to a first ever molecular discovery of a double base pair kochia mutation providing resistance to a plant regulator herbicide (published in the Proceedings of the national academy of Sciences). As a result of this mutation, dicamba-resistant kochia does not perceive the herbicide dicamba, but it also is impaired in its perception of the plant growth hormone auxin. As a result, the resistant plants have slower growth and reduced seed production. The potential application is that if dicamba is not used for a period of time, the resistance trait may decrease in frequency in populations as it will be outcompeted by susceptible genotypes.</p> <p>While herbicide resistance and genomics is a complicated science to communicate, a partnership with C.G.P. Gray, a famous YouTuber, resulted in an amazing outreach success. Gray created a 2020 entertaining and educational video on tumbleweeds that now has over 4,700,000 views, (https://www.youtube.com/watch?v=hsWr_JWTZss). This outreach video was done in conjunction with the weed science research and extension team at Colorado State University during a day-long discussion and working session on tumbleweeds.</p> <p>Contact: Dr. Phil Westra</p>	
<p>10.</p>	<p>Grow & Give: A Modern Victory Garden Project</p>	<p><u>Issue</u> The global pandemic of COVID-19 has highlighted and created food supply chain disruptions and inequities. Food insecurity in the U.S. was at 10.5% of American households <i>before</i> the pandemic (USDA, 2019). Hunger is now</p>	<p>Environmental Horticulture</p>

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		<p>estimated to be double that, with one in four U.S. households uncertain about where their next meal will come from (Northwestern University, 2020). Prior to the pandemic, the USDA estimated that Colorado had over 2.4 million families facing hunger regularly. Furthermore, food-insecurity and food deserts are more likely to impact underserved and underrepresented communities, populations CSU strives to serve and engage through Extension programming statewide.</p> <p><u>Response</u> The problem and hurdles identified were daunting; yet we saw an opportunity to pivot, collaborate, and act through a niche project connecting Colorado gardeners with resources to grow and give locally. Just as the stay-at-home orders were realized across the state, this innovative team launched Grow & Give: A Modern Victory Garden Project uniquely equipped to tackle food insecurity.</p> <p>The Grow & Give program encouraged average Coloradans to prioritize food gardening in 2020 by growing extra to give locally. Utilizing a broad team approach encompassing horticulture, family consumer science, and community food system specialists, this team worked tirelessly to streamline existing resources, develop new resources and create a one-stop-shop for Coloradoan's food growing and food donating needs, helping to foster gardening success and a connection between gardens and local emergency food providers. In addition to the impressive internal CSU Extension Grow & Give team, we also collaborated with a number of CSU and Colorado partners.</p> <p>Staff and specialists working on the Grow & Give project did so in many different roles. There were 3 sub-committees formed (Administration, Grow, and Give) to help move along the many resources created to make the program viable. There were countless educational videos, recorded presentations, quick guides, live Facebook sessions, recipes, food safety information, website content, a statewide donation map and donation reporting system, and many other resources created surrounding this overall project.</p> <p>Additional resources included a Colorado Vegetable Guide, a free online Vegetables course through CSU Online, and several pieces of marketing were created along with lawn signs and produce labels (distributed across the state to registered gardens). Several counties also chose to create seed starting kits, raised bed equipment, and even free seedlings to provide their communities with the tools to be successful.</p> <p><u>Results</u></p>	
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		<p>The impact of the program was seen statewide with 584 registered home and community gardens, spanning more than half of Colorado's counties (39) and donating 47,142 pounds of fresh produce in 2020. There were 1,845 individual donations made to over 100 different donation sites across the state. Of all donations made, approximately 50% went to food banks, food pantries or shelters. In addition to the impact of the donated produce, the Grow & Give Team's efforts drove over 20,000 unique website views to the main website between April - October and 66 new vegetable gardening videos created for the Grow side of the website. Overall, 84% of participants said they would be interested in participating in future years.</p> <p>Contact: Alison O'Connor</p>	
<p>11.</p>	<p>Fall Garden Webinars from CSU Extension</p>	<p><u>Issue</u> Home gardeners and green industry professionals who don't use informed plant species/cultivar selection and best management practices (BMPs) may use excessive amounts of water, fertilizer, and pesticides in the management of urban landscapes. Mismanagement can be more expensive than necessary and can contribute to water pollution, climate change problems, and non-target injury to wildlife and pollinators.</p> <p><u>Response</u> Due to the COVID-19 guidelines to reduce in-person meetings, horticulture agents and specialists from CSU Extension offered weekly gardening webinars in an effort to teach the public about landscaping and gardening in Colorado. We had overwhelming support and interest from the community from previous webinar series that led us to create this Fall Gardening Series with topics ranging from edible landscaping to seed saving to lawn care tips. Overall, there were a total of 1,593 participating contacts in the live/online classes. The classes were recorded and posted for future viewing on YouTube. Each class was followed up by an email to all registrants (whether they were in attendance or not) with additional information on each topic, links to resources and a class evaluation, and in some cases, a copy of the class slides. Classes included Bulbs for Fall Planting, Edible Native Plants, Fall Lawn Care Tips, Seed Saving, and more.</p> <p><u>Results</u> Overall, as seen in the evaluation survey results, the series was very well received. Out of 172 participants from across all webinars taught by all presenters during this series, 147 strongly agreed and 24 agreed that class content was presented in an understandable format. 135 strongly agreed and 36 agreed that the instructor's presentation generated enthusiasm for the topic.</p>	<p>Environmental Horticulture</p>

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		<p>21 participants had a low level of knowledge about this subject prior to training, and after training only 1 did. After the training, 80 participants reported a 4/5 as their level of knowledge (as opposed to 41 prior), and 67 reported a 5/5 as their level of knowledge (as opposed to 9 prior). Many participants left positive comments when asked if they liked the training.</p> <p>147 participants reported an increase in awareness, knowledge, skills or understanding needed for the best management practices of landscape plants (turf, woody, fruit, vegetable, ornamental). 147 participants reported using or intention to use new technologies and/or intention to adopt or adoption of best management practices and/or policies promoting best management practices in their landscapes, businesses and/or communities.</p> <p>Contact: Carol O'Meara</p>	
<p>12.</p>	<p>Sowing a Chile Culture in Southern Colorado</p>	<p><u>Issue</u> In Southern Colorado, a relatively small, but culturally and economically important crop brings together people of diverse backgrounds. The successful breeding and marketing programs for the "Pueblo Chile" symbolizes interwoven community threads, and aid in the survival of family farms in the Arkansas Valley east of Pueblo, Colorado. Farmers in this area grow about 1,000 acres of chiles, which is less than other commercial fruits and vegetables, or approximately 90,000 acres of specialty crops across the state. However, the chile stands out for its market potential as a high-value crop, in part because of its community and cultural connections. Making the local brand stand out for value-added marketing was required to make the Pueblo Chile a success.</p> <p><u>Response</u> In 2015, a handful of well-established chile farmers, with the assistance of Colorado State University Research Scientist Mike Bartolo, formed the Pueblo Chile association. Since then, the chile visibility has flared, as scientists, farmers, food purveyors, and community leaders have joined forces to more broadly market distinctive, locally developed pepper varieties branded as "Pueblo Chile." It's a hot take on economic development – connecting a small but potent crop to surging interest in locally grown food and the power of place in its marketing. In the five years since it formed, the growers association has focused on propelling sales in Metro Denver and across Colorado, using existing resources and an array of new communication efforts. The group trademarked its logo. Farmers have led harvest-season tours. And they persuaded the Colorado General Assembly to approve a vehicle license plate touting Pueblo chile. The association also has worked with Colorado food</p>	<p>Environmental Horticulture</p>

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		<p>processors – makers of cheese, hot sauce, salsa, sausage, spirits, tortillas – to use Pueblo Chile.</p> <p>That enjoyment of chile starts with chile seed. And that, in turn, starts with research scientist Mike Bartolo. For 30 years, Bartolo has cultivated and analyzed chile at CSU’s Arkansas Valley Research Center (AVRC) in Rocky Ford, east of Pueblo and has shared his findings with area farmers. Chile has been his passion project, a sideline to countless studies of irrigation efficiency, pest management, soil health, and other issues central to sustainable farming practices. Breeding chiles is a labor-intensive approach to plant breeding: Sow chile seeds in farm ground, observe the plants and fruit produced, identify thick-walled peppers with superior flavor and heat, collect the seeds from those peppers. Repeat. Over the decades, Bartolo has made some 400 selections using this process.</p> <p><u>Results</u></p> <p>The breeding work at the AVRC has yielded three distinct chile varieties grown by area farmers – now branded and marketed as Pueblo Chile. Tops among them is the Mosco chile, a hot, meaty pepper that is the most widely grown cultivar in the Arkansas Valley. The chile breeding program also has produced the Giadone cultivar, a pungent pepper named for the late Pete Giadone, a well-known Pueblo farmer and chile advocate; and the Pueblo Popper, a round novelty chile that works well for stuffed pepper recipes. The strains grew from a landrace called Mirasol, Spanish for “look to the sun,” which refers to the fruit’s upward growth habit.</p> <p>A major outcome of these breeding efforts is a project of the Greater Pueblo Chamber of Commerce, the Pueblo harvest festival started in 1994 as a downtown farmers market, an early effort to promote Pueblo Chile. It has blossomed into an annual community celebration and an economically vital event – awarded as an outstanding community initiative during the 2019 Colorado Governor’s Tourism Conference. The festival attracts some 150,000 people each September for roasted green chile, pinto beans, and fresh produce from local farmers. “Chile brings people together around the dinner table, but on a macro level it brings the community together. It shows who we are as a people, who we are as a culture. It’s part of our identity,” said Steven Trujillo, the president and CEO of the city’s Latino Chamber of Commerce.</p>	
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		<p>Another result is a notable uptick in fresh chile sales through the three main outlets growers rely on: restaurants and food processors, grocers, and direct-to-consumer farm stands. The association estimates that visitation to local farm stands has recently increased by about 30 percent as more people arrive seeking Pueblo Chile, Kitzman said. Additionally, some Whole Foods stores in the Rocky Mountain region started seasonal sales of Pueblo Chile.</p> <p>Contact: Dr. Mike Bartolo</p>	
<p>13.</p>	<p>Community Alliance For Education and Hunger Relief</p>	<p><u>Issue</u> According to Hunger Free Colorado, "almost 40% of Coloradoans are food insecure, meaning they lack reliable access to nutritious food." We aim to address this community need by providing educational programming focused on increasing the access to and consumption of healthy foods, with an emphasis on fresh fruits and vegetables.</p> <p><u>Response</u> The Community Alliance for Education and Hunger Relief is a program of Colorado State University. Based in Western Colorado, we form partnerships unified under the goal of increasing the consumption of fresh fruits and vegetables. To this end, we increase community access to fruits and vegetables through our farm-to-foodbank program; change knowledge of and attitudes towards fresh produce by providing hands-on learning on our farm and in our teaching kitchen; and grow healthy communities by providing opportunities for civic service and supporting initiatives that work to decrease hunger and food insecurity.</p> <p><u>Results</u> In 2020, Over 78,645 pounds of fruits and vegetables donated. 2 Farm-interns trained. Directly supported (through donation) 12 community partners, but food also went into the Denver Food Bank of the Rockies which has the potential to reach 32 counties. There were 97 unique volunteers, 540 volunteer hours, 247 volunteer visits. Programming during 2020 and COVID provided us with the opportunity to focus on food production and training. We were also able to expand partnerships to support community-based nutrition education by providing badly needed fresh produce and by having time to develop future programming initiatives.</p> <p>Contact: Ann Duncan</p>	<p>Food Systems</p>

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<p>14.</p>	<p>Colorado's Food Summit: Leveraging Extension to Build Bridges Across Diverse Audiences</p>	<p><u>Issue</u> North America has more than 300 food policy councils, many of which include members who are appointed by elected officials to assist in providing food policy recommendations. Many of these councils focus policy recommendations on institutional procurement, working to leverage the buying power of municipalities to address issues including environmental sustainability and food access.</p> <p>Denver, Colorado, for example, has a mayoral-appointed council, the Denver Sustainable Food Policy Council. Like many cities across the U.S., it is considering recommending an institutional purchasing policy called the Good Food Purchasing Program (GFPP). GFPP is a food system rating metric that integrates a set of well-established, third-party sustainability, food justice, economic, labor and nutrition standards.</p> <p>However, the majority of these food policy councils are located in urban areas, and most food is grown in rural places. Yet, farmers and other rural stakeholders are often not included in the councils or the policy making process, which can serve to increase ill-will among stakeholder groups and result in less optimal policies.</p> <p><u>Response</u> To help support Denver in making sure its food policies meet urban goals, as well as support farmers, ranchers, and rural communities, we planned and executed the state's first Colorado Food Summit in January 2020. The Summit coalesced over 35 community partners and funders. Over 310 people registered and the event sold out over 6 weeks in advance. We received \$5,500 from a funder to support 64 scholarships so that a broader set of participants to attend the event. Scholarship recipients included: beginning farmers or producers (18), women, people of color, or from underserved communities (41), located more than two hours from Denver (10), students (23), and nonprofit orgs (7).</p> <p>The event was carefully curated to showcase diverse perspectives, with the goal of demonstrating the nuances and tradeoffs inherent to food policies. As an example, in the opening plenary CSU researchers explained tradeoffs between organic production and no-till in dryland farming systems: thus highlighting that environmental standards need to take into account the specific place in which standards were being applied.</p> <p>To evaluate the event, our Extension team worked with CSU researchers to conduct a pre-post social network survey of over 200 attendees. The goal was</p>	<p>Food Systems</p>
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		<p>to characterize the network and describe how it changed or stayed the same as a result of the event.</p> <p><u>Results</u> Results from our pre/post evaluation show significant new relationships and collaborations formed as part of the Summit. Further, we find that most participants are either very or extremely likely to take new action as a result of the Summit, and over 90% of participants would recommend the Summit to a friend.</p> <p>In large part due to our Extension team's work with the Colorado Food Summit, as well as pre-planning work with the City and County of Denver's Food Policy team, there have been some significant changes to the Council's recommendations to the mayor regarding institutional procurement. Perhaps most importantly, rural producers are now included in the City's institutional procurement meetings. They are regularly asked to weigh in on issues and share their experiences. As a result of producer involvement, the GFPP standards to be used in Denver have been adapted to better suit Colorado's food system.</p> <p>Contact: Becca Jablonski</p>	
15.	All My Money Training	<p><u>Issue</u> The COVID-19 pandemic has not only highlighted but enhanced the ongoing family financial instability across the U.S. Although the median household income in Colorado is well above the national average, there is a large disparity in income as well as a heavy debt burden for Colorado residents. Prior to 2020, there were five team members doing programming in the family resource management area. During 2020, and largely because of the economic impacts of COVID, several more county staff have requested financial curriculum training to help them address local needs.</p> <p><u>Response</u> With a grant, we purchased the evidence-based financial education curriculum from Illinois Extension: "All My Money: Change for the Better". This curriculum is a financial management program for persons working with limited-resource audiences. It is designed so educators can teach financial literacy topics, even if they do not personally have expertise in financial management content. The curriculum consists of eight lessons, a guide to "What Makes a Good Facilitator?," a pre and post program evaluation, and a Resource Box of activity materials. Each lesson includes a lesson overview, facilitator instructions, answer keys, discussion guides, and a lesson evaluation. Hands-on activities</p>	Individual, Family and Community Well-Being

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		<p>encourage participants to learn from each other and from the activities. <i>Lessons include: 1. Who Am I With Money?; 2. Tracking Spending; 3. Savings; 4. Spending Plans; 5. Money Services; 6. Choosing Credit; 7. What Happens If I Don't Pay?; and 8. Credit History and Score.</i></p> <p><u>Results</u> Twenty-one Extension Agents across the state participated in the two-day training in early December. A post-survey All My Money Evaluation was conducted with 21 participants taking the Qualtrics survey. The results indicated there was a significant increase in awareness of personal financial management. At course completion, 77% strongly agreed they were aware of personal finance, up from 27% before training. Many Extension Agents plan to use the All My Money Curriculum in their communities with various partner organizations. Some of those organizations include local libraries, home school groups, Head Start families, Human Services, and 4-H youth and families. 86% percent of attendees anticipate using the curriculum with both lower and moderate income audiences. An overwhelming 95% agreed or strongly agreed the hands-on activities were useful.</p> <p>Contact: Glenda Wentworth</p>	
<p>16.</p>	<p>Larimer County Extension Wellness Classes</p>	<p><u>Issue</u> With the Covid-19 pandemic, new forms of stress and anxiety have arisen, making our stress resilience and self-care strategies more important than ever.</p> <p><u>Response</u> A range of wellness and mindfulness classes offered by CSU Extension were adapted to an online format in March to ensure that residents across the state were supported with tools and techniques for managing stress once COVID hit. This work helps to build community as it brings together older adults at Senior Centers for regular classes and mindfulness workshops, supports staff at non-profit organizations in preventing burnout and developing skills to support their clients, and offers skill-based training for CSU teams and Larimer County departments. Now, as the pandemic has spreads the classes have migrated to Zoom and opened to support the public.</p> <p><u>Results</u> In 2020, a total of 69 classes were taught to 1853 participants. The classes included: <i>Tame your Stress, Positive Brain Change, Compassion in Action, Authentic Connection, Emotional Resilience, Mindfulness for Families, Morning Meditation, Intro to Mindfulness (series), and Self-care Planning Workshop.</i> After completing programming related to health and wellness, participants have</p>	<p>Individual, Family and Community Well-Being</p>

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		<p>indicated that they will apply one or more best practices and that they have increased their knowledge.</p> <p>Contact: Sue Schneider</p>	
17.	Legacy Ranch Project	<p><u>Issue</u> In the late 1990s, the City of Steamboat Springs acquired a 130-acre hay meadow as part of a larger land preservation/conservation project that saved ranchland and forever preserves the south entrance of the city as open ranchland. Since that time, it has been leased to area ranchers to put up hay. In the past ~10 years, a number of issues have arisen that have made the leasing of the property more challenging, including reduced irrigation water due to the changing climate, additional traffic around the property, and the nesting of a regionally-rare bird species. Due to these factors, when the lease was put out to bid in the past few years, the city didn't get the many proposals it had in the past.</p> <p>At the same time, many area ranchers said we needed to be doing more mountain meadow research, including looking at forage crops that would do better in an ever-drying, hotter climate. When the lessee who had the Legacy Ranch wanted to give up the lease and when the city only got one response to their Legacy Ranch RFP, they reached out to see if Routt County CSU Extension could take on the lease and potentially create a new vision for the property.</p> <p><u>Response</u> In response, we created a new License Agreement between the City of Steamboat Springs and the local Extension office. We then organized multiple site visits with city staff to evaluate irrigation infrastructure, irrigation improvements, and create compliance with Colorado Division of Water Resources orders. We also conducted multiple site visits with city staff and city volunteers to research ground-nesting bird habits on the site.</p> <p>We addressed the irrigation of the hay meadow, repair of fences that have not been maintained in many years, and the creation of a sub-lease to permit cattle grazing on the site when lack of irrigation/ground-nesting bird situation made hay production untenable. There has now been more active management of the site than has been seen in nearly a decade.</p> <p><u>Results</u> A local cattle rancher was thrilled to have an area to graze cattle in a year where forage was in short-supply. We made improvements to irrigation</p>	Livestock & Range

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		<p>structures on the property, weed management on the property, and protected ground-nesting birds The City of Steamboat Springs was pleased and lease arrangements for 2021 are currently in the works. City staff and elected council members have expressed appreciation for the management provided this year. Local non-profit partners excited for the opportunities this new situation can/will create.</p> <p>Contact: Todd Hagenbuch</p>	
<p>18.</p>	<p>Total Ranch Analysis for Colorado</p>	<p><u>Issue</u> Given the increasing volatility in commodity and cattle markets and variance in climatic conditions, Colorado beef producers are exposed to a great deal of production and financial risk. Historically, net returns in the cow-calf business have been relatively low. A 2018 Colorado Beef Producer Needs Assessment showed nearly 70% of producers indicated financial situation as the greatest barrier to success. A large percentage of producers (40-80% depending on individual performance measure) indicated they routinely collect performance and financial data (i.e. percent calf crop, weaning weight, pregnancy rate, feed costs, cow inventory, etc.). However, over 65% of those same producers did not know their breakeven with \$0.10/lb, which suggests there is an opportunity and a need to improve ranch financial management awareness and skills. Currently, limited opportunities exist for Colorado producers to accurately benchmark their operations. Benchmarking can help producers focus limited management time on the critical areas of the beef cow business. Ranch management is complex and ranchers need access to effective holistic data and metrics to assist in effective decision making.</p> <p><u>Response</u> T.R.A.C. - Total Ranch Analysis for Colorado was developed as a statewide collaborative partnership in extension program involving campus faculty, extension personnel, cattlemen's associations, and beef producers. Participant ranches completed an in-depth financial, production, and management analysis of the ranch, using a standardized methodology. Herd production, land and feed resource, cattle marketing, and financial data were collected from geographically diverse cow-calf operations. We enrolled (10) new ranches into the program in 2020, as well as continue ongoing working with (20) participating ranches. T.R.A.C. team members make on-site ranch visits to meet with producers, listen to their unique successes and challenges, and collect an array of production and financial data. To gain better insight into the ranch involved, a pre and post survey is sent to each producer who participates. Data collected is analyzed to determine critical production, financial and integrated measures. An individual T.R.A.C. report is then given</p>	<p>Livestock & Range</p>

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		<p>to the ranch which provides a unique opportunity for each ranch to identify areas to reduce cost of production and improve production and marketing efficiency.</p> <p><u>Results</u> Ranchers with access to timely and accurate information about their land and business are able to make more effective decisions and be more profitable. By working holistically with ranches, T.R.A.C. provides essential longitudinal data in an accessible format. Results have strengthened producer and educator knowledge of production and financial targets and increased the value of cow-calf management recommendations in Colorado. These new benchmarks have provided opportunities for cow-calf producers in Colorado to reduce cost of production and improve production and marketing efficiency.</p> <p>Contact: Ryan Rhoades</p>	
19.	2020 Western Slope Beef Cow Symposium	<p><u>Issue</u> Many Colorado farmers and ranchers do not develop and analyze financial statements when making important business decisions regarding the sustainability (short term profits and long term increases in wealth) of their farm/ranches. This results in suboptimal decision making and can negatively impact agricultural profitability/wealth generation, as well as rural economic development in general.</p> <p><u>Response</u> Extension hosted a 2020 Western Slope Beef Cow Symposium. This day long symposium featured industry-leading speakers from Colorado State University, IMI Global, Superior Livestock Auction, the Livestock Marketing Information Center, and more. Educational topics touched on agricultural business decisions, managing calf health, beef quality assurance, financial decision tools, a cattle market outlook, and more.</p> <p><u>Results</u> The symposium was made up of 81 producers, 20 sponsor representatives and 6 speakers. Attendees were able to listen to 5 different presentations, get their questions answered by industry leaders, and participate in a marketing focused panel discussion. Along with gaining knowledge, producers also had the chance to make connections with local ag based businesses at the trade show. According to the post event survey results, 42% of participants said the workshop was extremely useful and 53% of participants said the workshop was very useful. 65% of participants said the likelihood the workshop will affect how they approach/conduct their work is extremely likely and 34% of participants</p>	Livestock & Range

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		<p>said the likelihood the workshop will affect how they approach/conduct their work is somewhat likely.</p> <p>Contact: Jenny Beierman</p>	
<p>20.</p>	<p>A Healthier Weigh 2020</p>	<p><u>Issue</u> Nearly 6 in 10 adults in Colorado are overweight (BMI of 25-29.9) or obese (BMI of 30 or higher), with 2 out of 10 being obese. In 2014, the state obesity rate was 21.3%, with the northeast and southeast Colorado counties averaging 29.3 and 29.5% respectively. Counting the people who are in the Overweight category adds another 25-30%. Body weights begin increasing in the 25-44 age group, while the percentages are highest for adults 45-64 years of age. Ethnic minorities and people with lower education have a higher prevalence of obesity. More than 1 in 4 adults with Medicaid are obese. Nearly 1 in 5 high school students in Colorado is overweight or obese and more than 1 in 4 children in Colorado is overweight or obese.</p> <p>In recent years, the percent of people overweight and obese have continued to rise across Colorado, with all of eastern Colorado counties between 51 and 65 percent. Overweight and obese people have an increased risk of developing several diseases and conditions, including high blood pressure, type 2 diabetes, cardiovascular disease, gallbladder disease, osteoarthritis, stroke, depression, anxiety, sleep apnea, and several cancers (breast, endometrial, liver, kidney and colon).</p> <p>The economic costs of overweight and obesity are a significant burden on our health care system and economic output. The annual national obesity-related medical costs have been estimated to be \$147 billion. Estimates of national productivity costs of obesity-related absenteeism range from \$3.38 billion (\$79 per obese individual) to \$6.38 billion (\$132 per obese individual). Medical expenditures attributable to obesity in Colorado are estimated to exceed \$1.6 billion each year, according to a recent report from the Colorado Department of Public Health and Environment.</p> <p>Tackling obesity is one of Colorado's 10 Winnable Battles and an initiative within the Governor's 2013 "State of Health Report." In addition, healthy eating, active living, and obesity prevention have been designated as a flagship priority in the plan, "Shaping a State of Health" (2015-2019). Three goals come from this framework:</p> <ol style="list-style-type: none"> 1. Reverse the upward obesity trend by aligning efforts to develop a culture of health. 	<p>Nutrition, Food Safety & Health</p>

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		<p>2. Intensify effort to create conditions to achieve healthy weight across the lifespan.</p> <p>3. Increase statewide capacity for coordinated obesity surveillance.</p> <p><u>Response</u> CSU Extension in northeast Colorado developed a 12-week health and fitness challenge to serve as an educational and motivational method to encourage adults to make healthy lifestyle changes. 2020 marks the fourteenth year of the program, which is implemented in seven counties in eastern Colorado at the beginning of each New Year. People are generally motivated to make personal behavior resolutions, and the winter months often work against their pledges to eat healthy and increase physical activity. So, the team challenge was created to provide incentive, motivation, support, and education to increase the success rate for healthier lifestyle habits.</p> <p>The primary goal for participants is weight loss. However, the program is promoted to focus on holistic health, not just on body weight. Other popular goals included eating better or healthier; increase exercise/activity; improve fitness; and increase flexibility, muscle, stamina, tone; and reduce knee and joint pain. Some people just want to feel better, reduce blood pressure, learn more about nutrition, and others wanted to improve routines for an active life and eating healthy.</p> <p>The lesson topics for 2020 included: Basics of Nutrition & Exercise, Basal Metabolic Rate & Eating Plan, Body Image, Effects of Stress on Health & Weight, Exercise Activity & Intensity, Hydration and Drink Choices, Importance of Sleep & Breakfast, Inflammation affects Health & Weight, Popular Diets and Portion Size and Control.</p> <p><u>Results</u> The 2020 – A Healthier Weigh Program has some very positive impacts to report, in spite of the COVID-19 pandemic stay at home orders impacting the last 4 weeks of the challenge. An overview of the program by the numbers, shows 132 people, out of 193 enrolled, completed the 12-week challenge for a 68.4% completion rate. People completing the program logged over between 97 to 903 miles of steps/physical activity with most participants averaging over 350 miles in the 12 weeks. They lost a collective 1095.56 pounds of body weight and lost 310.9 inches from their waist measurements.</p> <p>Healthy Lifestyle Behaviors: Participants also completed a Pre and Post Assessment to track changes in twelve healthy lifestyle behaviors. Real gains were reported in all categories. Some of the most notable in the "Always or</p>	
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		<p>Most of the Time” responses include: At least 30 minutes of dedicated physical activity 5 days per week went from 25% to 65%. Half my daily beverage consumption is water went from 15% to 77%. Eating from all food groups daily went from 32% to 63%. Include all food groups daily (meals & snacks) went from 19% to 60%. Using mindfulness as tool for health and weight management went from 18% to 40%. Get 8 hours of sleep every night went from 17% to 37%.</p> <p>Behavior Changes: Participants reported many behavior changes as a result of their participation in A Healthier Weigh. The most prevalent behavior change was an increase in physical activity through increased exercise and walking/steps throughout the day. Other reported changed behaviors related to physical activity included increased stretching, more strength training, more cardio training, and focus on whole body fitness and health. In terms of food and nutrition behaviors, the most prevalent change was drinking more water, followed closely by use of portion control. Many people increased their fruit and vegetable consumption, and consumed less sugar.</p> <p>Greatest Benefits: Participants reported dozens of benefits of the program. The most common benefits were the team support and relationships, followed by a pair of categories: lifestyle changes, and motivation and accountability. Many others thought the best benefit to them was the actual weight loss and working towards health goals.</p> <p>Health Changes: When asked if participants noticed any changes in their overall health, the most common statement was feel better and have more energy, better sleep, weight loss, and more mindfulness of health/lifestyle. Additional responses included: decreased stress, better eating habits, more exercise, more active lifestyle, less joint/muscle pain, improved blood pressure, better mood and improved blood glucose.</p> <p>Contact: Gisele Jefferson</p>	
21.	Wildfire Wednesdays Speaker Series	<p><u>Issue</u></p> <p>More people are moving into the Wildland Urban Interface (WUI) in Colorado. Colorado has seen more intense, large, destructive wildfires (including the two largest wildfires in state history in 2020) and many who live in these areas are unaware of how to prepare for and what to do in the event their home is threatened by a wildfire.</p> <p><u>Response</u></p>	Natural Resources

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		<p>Extension organized a free webinar series every Wednesday evening in October, 2020, highlighting a relevant topic related to wildfire. The topics included fire behavior and ecology, home hardening and defensible space, fire resistant landscaping, and evacuation planning for homeowners and livestock. Speakers were experts in their field from CSU, Colorado State Forest Service, and Colorado State University Extension. The webinar series was advertised throughout Colorado. The goal of these webinars was to provide information on wildfire behavior, how to prepare an individual or family for a wildfire, and how to manage a property to provide the best chance for limiting damage.</p> <p><u>Results</u> There were 751 people who registered for the series. 168 attended Fire Ecology and Behavior. 148 attended Defensible Space and Home Hardening. 97 attended Fire Resistant Landscaping. 142 attended Evacuation Preparedness and Animal Evacuation. An evaluation was sent to all who registered. 91 people completed the evaluation, indicating their knowledge before and after each webinar. When asked what actions respondents plan to take following the webinar series, 85% indicated they would continue ongoing property maintenance, 70% would update and properly store documents and valuables, 69% would create a home inventory, 56% would create a "grab" list, 48% would create a disaster kit, and 47% would create a family emergency evacuation and communication plan. Respondents to the evaluation represented 13 counties in Colorado and one out-of-state attendee.</p> <p>The numbers that registered reflect the need to get this type of information out to the public. During the month of October when the wildfire series was offered, Colorado had four major wildfires burning throughout the state. Over 600,000 acres burned in Colorado in 2020. Not only was the smoke a visible indicator of the impact wildfires had on the state, but the news carried stories of major wildfires in other parts of the country, stressing the importance of wildfire preparedness for anyone living in the Wildland Urban Interface.</p> <p>Contact: Karen Crumbaker</p>	
22.	Master Irrigator	<p><u>Issue</u> Water resources are declining within the Ogallala Aquifer region and an interstate compact has the potential to reduce irrigated acres. The impact of improved knowledge on irrigation/cropping systems management will increase the management of water within the basin as well as potentially reduce water use without negatively impacting yields.</p> <p><u>Response</u></p>	Natural Resources

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		<p>Over the course of 2019, a committee of local producers, agencies, and CSU began the development of a course called Master Irrigator. It was delivered in 2020 as an intensive 4 day course (32 hours) which had presentations and discussions by the University, local producers, and agencies to talk about water issues and management to create a more sustainable system. Presenters from four states (Nebraska, Kansas, Oklahoma and Colorado) were utilized to help producers with issues relating from technology, water management, irrigation design and local implications of water management to help them make better decisions on their farms.</p> <p><u>Results</u> At the end of the program, the attendees indicated that they had significant gain in knowledge from the program. Several producers made immediate changes to their management from previous years. Many of the producers would increase the utilization of technology to manage their water. Several producers also were going to do more system evaluations to make sure their irrigation water was going to be applied uniformly and energy efficiency was maximized. One of the highlighted attendees indicated at the end of the 2020 growing season that he applied the same or less water in 2020 which was a drought year and that his crops looked as good or better than previous years. Another producer made significant changes to an irrigation system which resulted in better uniformity of the water. His comment was that the crops under these systems were the most uniform he has seen under these systems. He will be making more changes to his other irrigation systems in the coming year.</p> <p>Many of the attendees did like the program and have become involved in improving this program into the future. These attendees will be tracked on their water management changes as part of the grant. All 23 participants reported implementation or intent to implement actions relating to water quality and quantity issues. All 23 participants increased knowledge of research-based techniques for improving soil health, protect and efficiently use water resources, manage crop nutrients, and/or enhance plant yields and quality in their farm fields.</p> <p>Contact: Joel Schneekloth</p>	
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Commented [BM 1]: CSU did an outstanding job in responding to the COVID pandemic. Coloradans were positively impacted by those efforts. The innovations introduced will likely have the result of creating more sense of community among CSU stakeholders