



Arizona Range and Livestock News

ARIZONA COOPERATIVE EXTENSION

June 2023



University of Arizona Cooperative Extension

Dr. Ethan Orr

The Arizona Cooperative Extension is committed to supporting our ranchers. Everyday ranchers in Arizona overcome tough issues ranging from workforce to water, and the University of Arizona Extension will continue to work with state leaders to listen to you and create programs to support your needs. In 2022 the UA Partnered with ranchers and growers, including the Arizona Cattle Growers to fund 10 new range and livestock positions across our state. The Cooperative Extension is currently filling and hiring those positions.

Also, in 2022 the UA launched the Arizona Agriculture Apprenticeship Program. Due to the aging population, the labor exit rate for Arizona Agriculture is 7% annually. We must replace this workforce with a new generation of enthusiastic, talented, and trained workers. Already the UA Apprenticeship program has received over 140 applications and currently has 51 apprentices working on 35 different ranches and farms across the state. In 2023 the Extension received an additional million dollars from the state legislature to work with ranchers and farmers to continue to build the University of Arizona Agriculture Apprentice Program.

The Arizona Agriculture Workforce Development Program Apprenticeship has been a successful program that has been involved in working with farmers and ranchers in many counties in Arizona. The main goal of this program is to help people who are interested in pursuing a career in agriculture and help gain experience with our hosts. The benefit of this program is it supports beginning farmers and ranchers, the host ag producers are eligible for apprenticeship wages reimbursement (up to \$10,000), apprentices will complete at least 130 hours of work and be provided a meaningful work experience and build an apprentice network of ag food producers across Arizona. By starting this program, it has had many impacts on the hosts and apprentices. One of our hosts Gabriel Cruz who owns Cruz Farms mentioned that "By focusing on minority farms, you are addressing a critical need in the agriculture industry, where minority farmers have historically faced significant barriers to success. By providing financial support through the apprenticeship program, you are directly helping to reduce the financial burden on small farmers who are providing the training, making it easier to run our operation. Your dedication to promoting sustainable agriculture and supporting local food systems is inspiring, and I am grateful for both your positive impact on the farming community." The University of Arizona Cooperative Extension will continue to partner with farmers and ranchers to build Arizona one worker, one ranch at a time.

Featured Plant: Apache Plume

(*Fallugia paradoxa*)

Apache plume is a native perennial shrub up to 6 feet tall. The branches are slender with white bark. The flowers consist of five white petals in loose clusters at the end of slender stalks. They bloom from April to October. The fruit is an achene with a long, pink-purple, feathery plume. The small leaves have 3 to 7 lobes and are dark green above and rusty to white woolly beneath.

In Arizona, Apache plume occurs in Navajo, Coconino, and Mohave counties, to Greenlee, Graham, Cochise, and Pima counties from 3,500 to 8,000 feet in elevation. It is a common shrub found in chaparral and semidesert grasslands. It often forms thickets in flats and washes. It is distinguished from *Purshia* (see March 2023 Featured Plant) by having less resinous leaves and pink-purple plumes.

Apache plume is a fairly good browse for cattle, sheep, and wildlife. Native Americans used the plant ceremonially, as a shampoo, in basketry, and several other uses. *Fallugia* is named for the Italian botanist Abbot Virgilio Fallugi (1627-1707), while *paradoxa* means unusual.



Monitoring Minute: Utilization and Residual Measurements Interagency Technical Reference

The Interagency Technical Reference for Utilization and Residual Measurements was written as a joint effort at the national level by the Cooperative Extension Service, U.S. Department of Agriculture's Forest Service and Natural Resource Conservation Service, and the U.S. Department of the Interior Bureau of Land Management. The intent of this technical reference is "to provide the basis for consistent, uniform, and standard utilization studies and residual measurements that are economical, repeatable, statistically reliable, and technically adequate. While this guide is not all inclusive, it does include the primary study methods used across the West."

UTILIZATION STUDIES AND RESIDUAL MEASUREMENTS



The technical reference defines the difference between utilization and residual measurements.

Utilization: measures the percentage of annual herbage production that has been removed. It is generally the percentage of available forage (weight or numbers of plants, twigs, etc.) that has been consumed or destroyed. Basically, it is a measure of something that is no longer there.

Residual: the determination of herbage material or stubble height left behind.

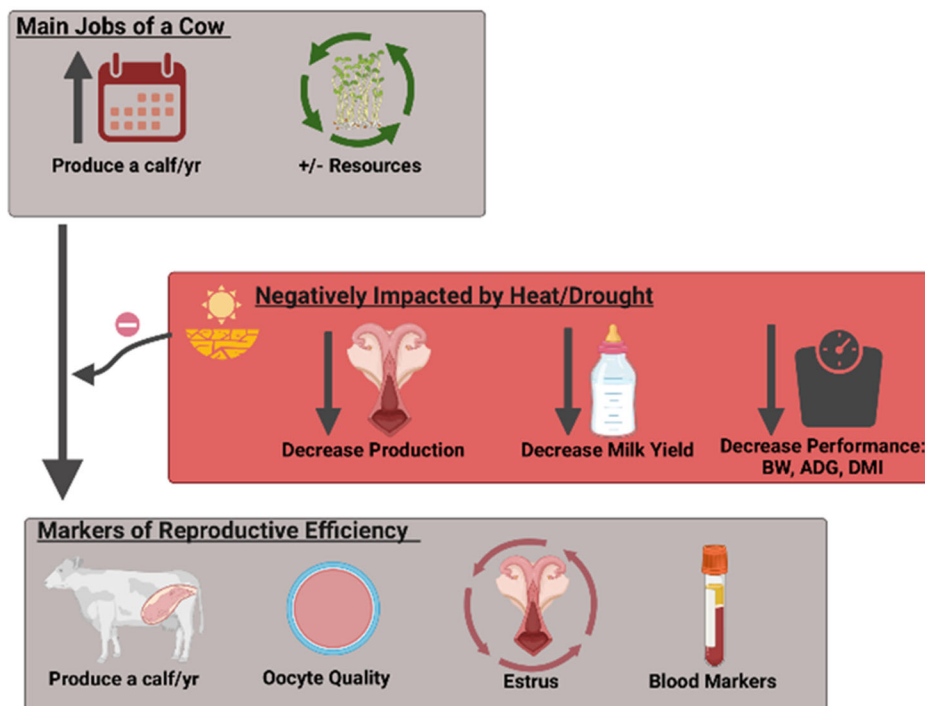
The document outlines study designs and different methods that can be used for both measurements. The appendices include monitoring forms with examples and illustrations. The technical reference can be found at: <https://www.nrcs.usda.gov/sites/default/files/2022-09/stelprdb1044249.pdf>.



Quantifying the Ovarian Dynamic in Heat Stressed Developing Heifers

By: Daniela Rodriguez Rios and Dr. Joslyn Beard

Heat stress is one of the major environmental factors that impacts the beef industry worldwide. Not only impacting animals' health negatively but also, having a tremendous effect on the economic aspect of the industry. It is estimated that production losses from heat stress are predicted to be \$39.94 billion per year by the end of 2080. Raising concern among producers about the estimated decrease in meat production, paired with the increasing demand for beef meat products. With such challenges, producers are shifting focus to management decisions to better select replacement heifers for more adaptable animals for heat conditions. Replacement heifers can experience tremendous changes in metabolism after weaning throughout their developmental growth period to achieve puberty prior to breeding. This critical growth period can be compromised due to environmental challenges, such as high temperatures and high humidity levels, which negatively alter heifer metabolism. However, understanding the physiological processes associated with efficient, productive females during this developmental stage under environmental stress is still not well defined in the beef industry. The objective of our study is to identify reproductive mechanisms of the ovarian environment influenced by heat stress conditions in developing young beef heifers. The long-term goal is to identify how certain mechanisms alter reproduction function in metabolically challenged grazing beef cows. By uncovering these mechanisms, we will identify markers of adaptation and pathways that can be manipulated to improve reproductive function. Ultimately, helping producers make better management decisions by creating a selection tool to create more robust females in the future cow herd. Therefore, aiming to increase longevity within the herd and decrease cost for the producer. Any questions about the research can be directed to Dr. Joslyn Beard at 520-626-9532 or by email at joslynbeard@arizona.edu.

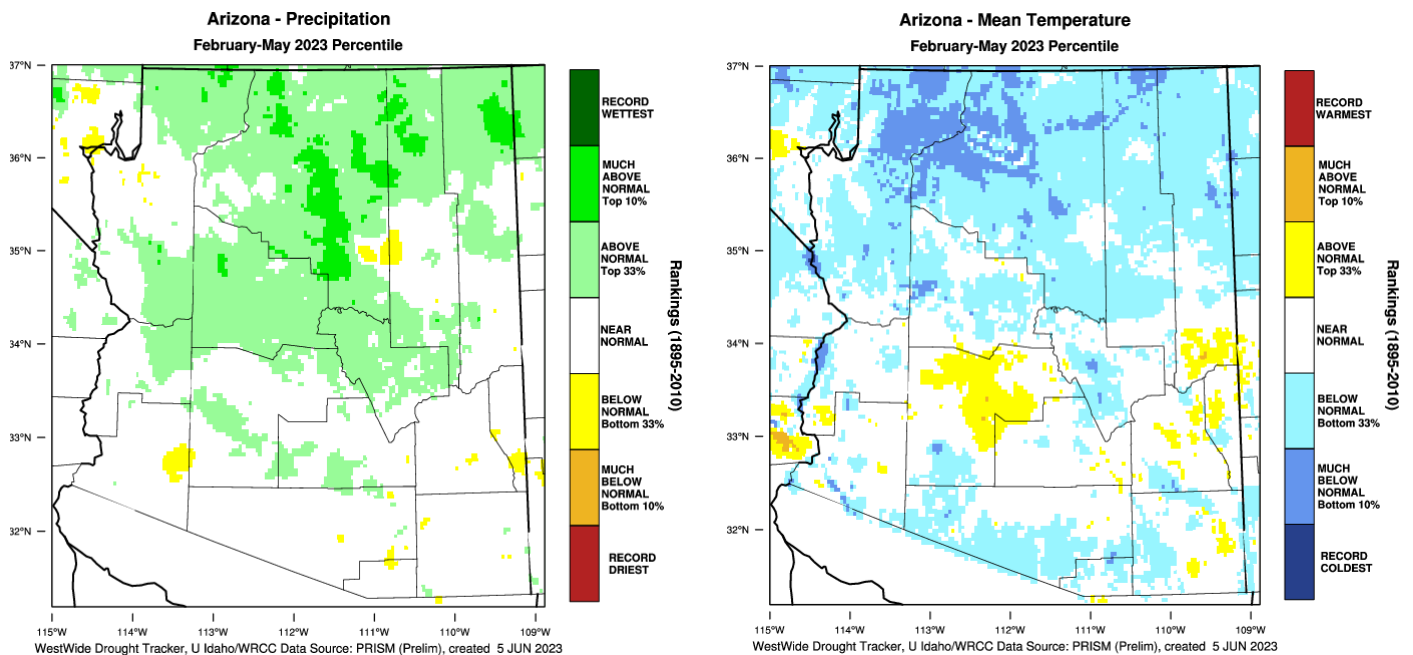




Arizona Seasonal Climate Summary: Spring 2023

June 5, 2023 - Interesting weather continued through the spring season across the Southwest with unusually cool and wet conditions visiting and revisiting the region at various times. The cool and wet conditions of December and January rolled right into February with two separate large winter storm systems dropping large amounts of high elevation snow and widespread lower elevation rains to the state. This unsettled weather pattern persisted into March as well with another three major storm events crossing the Southwest throughout the month. This brought more snow to upper elevation locations with numerous snow monitoring sites observing 4 to 6 times normal snowpack for March. The weather pattern finally shifted to warmer and drier in April as the winter storm track started to shift north. Most of Arizona observed very little to no precipitation with numerous observing stations across central and southern Arizona reporting their driest April on record. Dry conditions persisted into early May, but by the middle of the month an unusual weather pattern set up over the Southwest that brought over a week widespread showers and thunderstorms to Arizona. This unusual precipitation pushed much of the state to above-average May precipitation levels.

The above-average precipitation in February, March and May overcame the record dry conditions of April to make the past four months generally average to above-average precipitation-wise across Arizona. Temperatures were also generally below-average in concert with the wetter weather pattern. Short-term drought conditions have also almost completely disappeared from Arizona as well. The latest U.S. Drought Monitor shows only far western parts of the state experiencing 'abnormally dry' conditions.



February-May precipitation and temperature rankings from the WestWide Drought Tracker

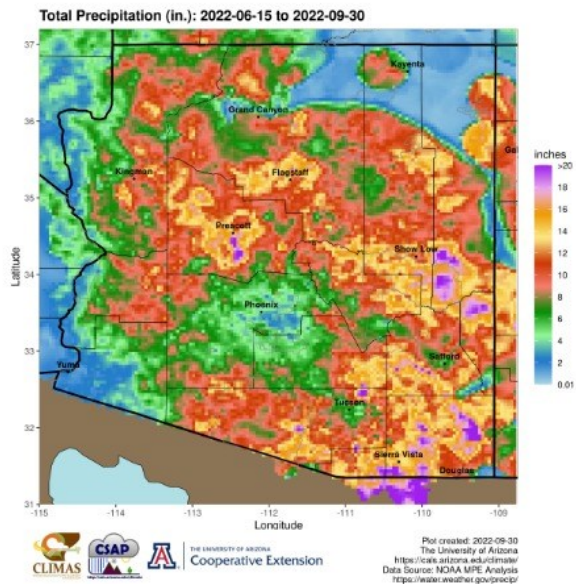
(<http://www.wrcc.dri.edu/wwdt/>)



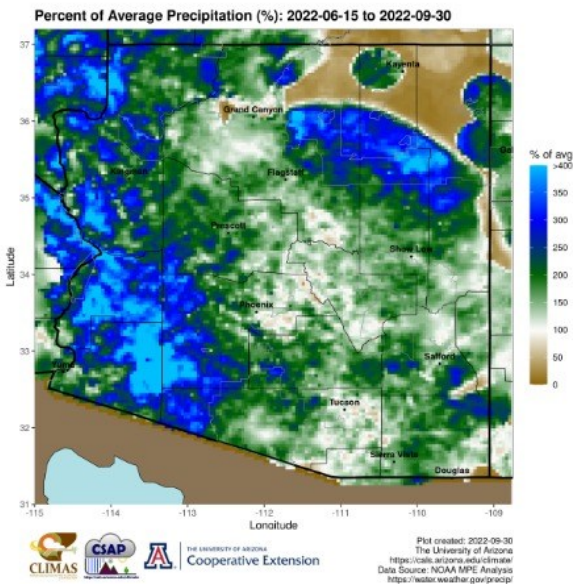
More information available at :
<http://cals.arizona.edu/climate>
<http://www.climas.arizona.edu>

Questions /comments? Contact Mike Crimmins, crimmins@email.arizona.edu





Total precipitation: Daily precipitation data summed from 6/15 to present. (Categorical color scale, Colorblind-friendly)

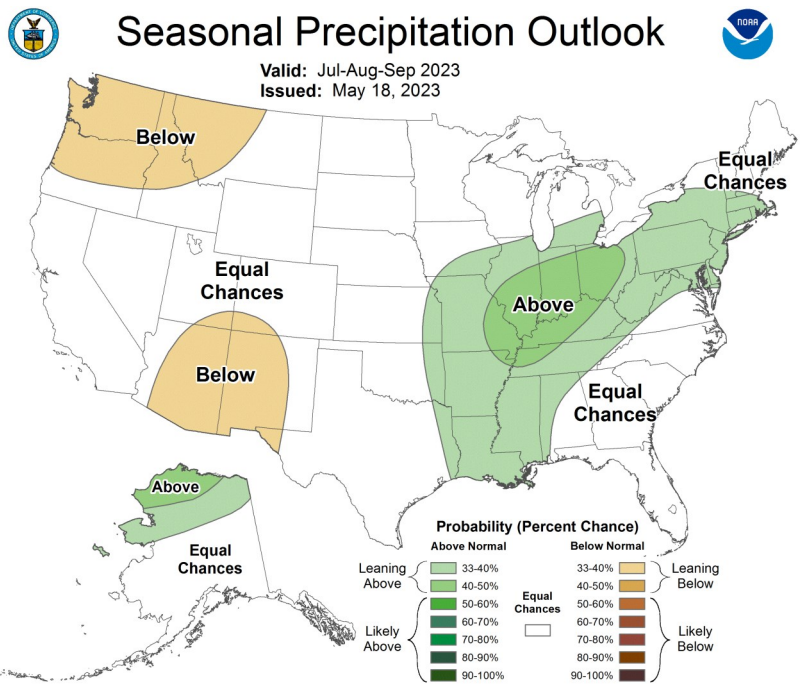


Percent of average precipitation: Percent of average is calculated by dividing the total accumulated precipitation by the long-term (1991-2020) mean and is an indication of how much totals have deviated from average precipitation for the June 15th to present period. 100% is equal to average for the time period shown on the map. (Seasonal Average Total Precipitation)

Tracking summer precipitation during the monsoon can be challenging due to the isolated nature of the summer season thunderstorms. UofA Cooperative Extension produces monsoon precipitation tracking maps that update on a daily basis through the June 15th-Sept. 30th season. The maps

use a gridded precipitation monitoring dataset produced by NOAA through the Advanced Hydrological Prediction System (<https://water.weather.gov/precip/about.php>). This gridded dataset uses a combination of surface observations and radar precipitation estimates to produce a near real-time estimates of precipitation on a 4 by 4 km grid. The UofA Arizona Summer Monsoon Season Precipitation Mapping site produces daily updates of total precipitation and percent of average precipitation as well as several other maps to track fine-scale changes in monsoon precipitation. Maps for past years and maps of daily precipitation totals are also available on the site. Check out the site for more details at: https://cals.arizona.edu/climate/misc/monsoon/az_monsoon.html. (A companion site for New Mexico is available at: <https://cals.arizona.edu/climate/misc/monsoon/>)

The July through August seasonal precipitation outlook issued by the NOAA Climate Prediction Center in mid-May depicts increased chances of below average total precipitation for this three month period across much of Arizona. This outlook indicates that there is an increased chance that the total precipitation over the July-September period will be below the 1991-2020 average for these months. The shift in odds towards below-average precipitation for the upcoming monsoon covers much of both Arizona and New Mexico. Climate models have suggested a sluggish start to the monsoon in early July that might persist into early August, but confidence is low on how late the start may occur. The developing El Nino event may increase the chance of tropical storm activity impacting Arizona later in the summer as well. Stay tuned to short-term outlooks at <https://www.cpc.ncep.noaa.gov/products/predictions/WK34/> and updates to seasonal outlooks at <https://www.cpc.ncep.noaa.gov/products/predictions/>



Ashley Hall - Area Associate Agent, Agriculture and Natural Resources Gila/Pinal Counties

The USA-National Phenology Network (NPN) has a new resource that may be of interest to rangeland managers and livestock producers.

In collaboration with researchers at the US Geological Survey, there are real-time and short-term forecasts for flowering and senescence in red brome (*Bromus rubens*). The flowering forecasts can support ranchers in timing grazing after grasses have grown enough to provide good forage, but prior to unpalatable flowering and seeding stages. This practice reduces the development of new seeds and subsequent spread of the species. The forecasts also support the interpretation of satellite imagery of grassland green up. The senescence forecasts are useful in assessing the risk of wildfire spread.

The NPN is encouraging incidental reports of the leaf, flower, and fruit status of red brome and cheatgrass (*B. tectorum*) through this simple web-based form: <https://brome.usanpn.org/>. Anyone can quickly report on what they see in a matter of seconds. These reports will be used to refine the red brome forecasts as well as forecasts for cheatgrass that are currently under development.

Any thoughts or feedback you might have on these products are welcomed and can be sent to

Theresa Crimmins at theresa@usanpn.org.

Livestock Operator Fire and Flood Assistance Program (LOFFAP) - Now Accepting Applications

NOW ACCEPTING APPLICATIONS FOR THE LIVESTOCK OPERATOR FIRE AND FLOOD ASSISTANCE PROGRAM (LOFFAP)

Arizona Department of Agriculture
1110 W. Washington Street, Suite 450
Phoenix, AZ 85007

The application period is now open for the LOFFAP2023-4 Grant Cycle. Instructions for completing grant applications can be found in the LOFFAP Grant Manual & Application Package. The Grant Manual and all application forms are available on the AZDA's website at

<https://agriculture.az.gov/about-us/divisions/agricultural-consultation-training/livestock-operator-fire-and-flood-assistance>

Early Review Deadline

11:59:59 p.m. (MST) Friday, June 23, 2023

Final Application Deadline

11:59:59 p.m. (MST) Friday, June 30, 2023

Applicants must submit their application package electronically online at:

<https://tinyurl.com/LOFFAP2023-4>.

For additional information, please email or call Lisa James, Program Manager at ljames@azda.gov or (602) 542-3262.

Residual Feed Intake as a Selection Tool for Cow Herd Efficiency

Ashley Wright

Feed conversion ratio (FCR or G:F) is the traditional measure of feed efficiency and feedlot performance. This trait is defined as the ratio between the animal's gain and feed inputs. It's highly correlated with growth rate, ideal for cattle entering feedlots, however studies have shown that selecting cattle based on FCR also tends to increase mature cow sizes over time. Larger cows have higher maintenance energy requirements, which means increased feed costs and forage requirements for those cows who may stay in your herd for many years.



Residual Feed Intake (RFI) is an alternative way to measure feed efficiency. It measures variations in feed intake beyond those needed for maintenance/production (i.e. growth, lactation). Research has demonstrated that as much as 37% of feed efficiency differences between animals is due to differences in metabolism and protein turnover. For example, if we have two identical dry, open cows and we measure the average of their daily voluntary forage intake over a week's time, most likely these two animals will NOT eat the same amount of forage. Their intake could vary by as much as 10 or more pounds per day. Given all other production traits equal, which cow would you rather have in your herd: the one eating only what she needs, or the one eating ten extra pounds per day? RFI is a way to measure these differences in intake independently of other traits like growth, production, and mature size. If we're looking at growing cattle, like steers, we can account for average daily gain (ADG) in the equation to compare the intakes of steers who may have different rates of growth.

When examining RFI scores, it's important to remember that cattle with a negative RFI score are efficient animals (they consumed less feed than expected based on their size and performance), and cattle with a positive RFI score are inefficient animals (they consumed more feed than expected). If an animal has an RFI score of zero, it ate exactly the amount of feed expected based on its growth and other performance factors. The calculations used to determine RFI make this trait independent of growth and mature size and using it to select cattle will not inadvertently select for larger animals (as selecting only on FCR will), but it does result in improvements in FCR. RFI is also moderately heritable. It's becoming more common to see young bulls RFI tested before large bull sales, and many breeds now include an EPD (Expected Progeny Difference) for RFI. Look for an animal with a negative RFI (ex: -3.36 means that this animal should produce offspring that consume on average 3.36 pounds less than the breed average).

For the beef producer, using RFI as a selection criterion, particularly for sires of replacement heifers, has the potential to decrease the overall feed costs associated with the cow herd. In heifers selected for RFI, it has been demonstrated that a 2.2 lb./day difference in intake predicted a 2.6 lb./day difference intake during their first lactation, and 3.1 lb./day difference after weaning that first calf. Since RFI has been determined to be moderately heritable, offspring of heifers selected for low RFI (more efficient) will likely have improved efficiency in the feed yard and require less feed to reach finished size and weight than similarly performing peers. For the cow-calf producer, a cow who stays in the herd for 8 years consuming 5 lbs. less forage per day than her peers saves approximately 14,600 lbs. of forage over her lifetime.

RFI does come with a caveat. A few studies have demonstrated that RFI may be negatively correlated with carcass marbling and leanness: more efficient animals may be leaner with less marbling than inefficient animals. Additionally, heifers that are more efficient (low RFI) may not begin cycling as early as heifers with high RFI scores, and pregnancy rates may be slightly lower in these animals. This can be mitigated through careful heifer management: select heifers born earlier in the season and monitor their growth carefully. Cull heavily based on pregnancy and calving rates. Remember too that all selection tools have downsides and selecting replacement animals based on a single trait is always inadvisable. Be aware of these potential pitfalls when selecting animals using RFI, but don't be afraid to consider it alongside other criteria such as genomic data, and carcass EPDs, and carefully manage and cull replacement heifers to avoid cultivating negative traits in your herd. Used appropriately, RFI is another toolbox for producers to reduce feed costs to the cow herd while improving the efficiency of the beef industry as a whole.

The relationship of RFI and voluntary forage intake and cow survival under range conditions. Dan B. Faulkner; <https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1696-2016.pdf>

Phenotypic and genetic parameters for different measures of feed efficiency in different breeds of Irish performance-tested beef bulls. J.J. Crowley, et. al.
http://www.beefefficiency.org/info/crowley_RFI_heritability.pdf

Can We Select for RFI in Heifers? L. Kriese-Anderson.
http://animal.ifas.ufl.edu/beef_extension/bcsc/2016/proceedings/kriese_anderson.pdf



29th Annual Southwestern Noxious, Invasive Plant Short Course

We are pleased to be able to offer the 29th annual Short Course happening July 18, 19, and 20, 2023, in Farmington, New Mexico at the San Juan College's (SJC) Henderson Fine Arts Center, Rooms 9008 and 9010. This three-day Short Course will be live and in person, including the popular 1/2-day field trip from Farmington, New Mexico to Durango, Colorado.



For more information, including the agenda and how to register and pay to: <https://tinyurl.com/Noxious-Invasive-Plant-Course>

Agency and Capacity Building Training July 24-28 in Tucson

An agency and capacity building training is being offered on the University of Arizona campus from the late afternoon of July 24th (Monday) to the morning of July 28th (Friday). Topics addressed will include climate literacy, agribusiness, financial literacy, and first-hand exposure to agricultural-related facilities and curriculum offered on the U of AZ campus. Scholarships are available through grant funds to cover lodging and meals in Tucson and priority will be given to younger socially disadvantaged individuals with an interest in attending the University of Arizona, as proposed in the funding for this education. Drs. Rahman and Tronstad will provide instruction along with several subject experts in multiple departments across campus. If you are interested in attending or know of individuals that would be interested in attending, please email Drs. Rahman (tauhid@arizona.edu) and Tronstad (tronstad@arizona.edu) by 15 June 2023 with a few sentences describing your background, contact information, and interest in this education.

Agency and Capacity Building of Socially Disadvantaged Farmers and Ranchers
AgBusiness, Financial Literacy, Climate Literacy Curriculum and Training

Date: 24-28 July 2023
Location: University of Arizona, Tucson

Send Application to: Lead Instructors

FREE of cost training. Hotel accomodation and food will be covered.

Lead Instructors (Contact us for information)

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Dept. of Agricultural and Resource Economics
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Tauhidur Rahman, Ph.D.
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Agricultural & Resource Economics

 United States Department of Agriculture



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Arizona Range & Livestock Newsletter is managed and edited by Nate Brawley, Assistant in Extension.

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