



Consider Ammoniating Rice Straw for Low Cost Forage

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Low cost supplemental feed is almost unheard of this fall, but in the face of drought is more necessary than ever. This is especially important as we are seeing running age cows selling at cull cow prices due to a lack of feed across the north state. One option available for a low-cost feed is ammoniated rice straw. Multiple years of research into improving the feeding value of rice straw have found this to be a cost-effective approach to increase both intake and the performance of cattle on this traditionally low-quality forage.

Table 1 shows the intake, gain, and forage quality differences between ammoniated and traditional straw. While rice straw is typically considered a supplement for dry cows, we used weaned steers in this trial in order to evaluate weight gain differences. Not only did the cattle consume 20% more of the straw (fed free choice) when it was ammoniated, they also performed considerably better on it, gaining 0.6 lbs/day more with the ammoniated straw as compared to untreated.

Table 1. Gain and Forage Quality Comparison of Straw		
Measure	Control Straw	Ammoniated Straw
Average daily gain, lbs	1.1	1.7
Intake lbs/hd/d	9.6	12.0
Crude protein, %	3.98	8.42
total digestible nutrients, %	50.3	50.6
Neutral detergent fiber, %	58.4	58

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To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products not mentioned.

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Forage testing did not show that the treatment increased the energy or digestion of the straw, but it did more than double the protein value of the ammoniated rice straw. It appears that the added protein value increased palatability and likely the rumen microbes' ability to utilize the straw. Not only did the cattle consume more ammoniated straw, but they likely did a better job at digesting the rice straw based on the increased gain. This effect was seen similarly over multiple years of feeding trials.

The ammoniation process involves loosely tarping the stack of straw, making sure to weight the bottom of the tarp with tires or other heavy items. Tarping the stack loosely will allow the gas to dissipate around the stack. This has been found to be important in previous trial work. Once the stack is tarped, your local fertilizer company can apply the ammonia to the stack at a rate of 2% by weight of the straw. Once the ammonia is applied, wait 30 days to allow absorption around the stack before feeding.

A recent price check showed the cost of ammoniation is \$15.90 per ton of rice straw; a modest cost in light of the improvement to the straw. Estimating rice straw at \$50 per ton, the added cost of ammonia would bring the supplement to roughly \$66 a ton. At the least, this is an option that can help to stretch out supplies of valuable hay that's already in the barn.

Cattle Deworming Considerations

Larry Forero—Livestock, Range and Natural Resources Advisor Shasta, Trinity

Josh Davy—Livestock and Range Advisor Tehama, Glenn, Colusa

During the spring and summer of 2021, UCCE worked with producers in northern CA to get an idea of internal parasite loads, deworming protocols and efficacy of different deworming products.

Parasite control is generally part of a cattle parasite management program aimed at reducing external parasites (flies, lice, mosquitos, ticks, etc) as well as internal parasites (roundworms, tapeworms, flukes, and coccidia. Control of internal parasites involves interrupting their life cycle.

Interruptions could include:

- Presence of unfavorable climatic conditions (extreme heat/drought or cold)
- Development of resistance (to parasites) in cattle
- Management of cattle to prevent their ingestion of infective organisms
- Destruction of intermediate hosts (snails harboring liver fluke larvae)
- Therapeutic treatment of cattle

Other factors that should be considered when developing a parasite management program:

- Generally, older animals (cows) are more resistant to parasites than younger animals (replacement heifers, calves, yearlings).
- Cattle suffering nutritional or disease stressors are likely less resistant to parasites
- 10% of the herd sheds 90% of the parasites.

From: Coles, G.C., et al. 1992 World Association for Advancement of Vet Parasitology Paper

How cattle get infected by worms

Mature parasites reproduce in cattle internally and eggs are released in the feces. The larvae hatch and travel up blades of grass (2-3 inches typically) and are consumed by cattle again. Rotating pastures can help reduce worm loads in cattle unless cattle are forced to graze close to the ground or fecal pats. This is because the typical life cycle for many internal parasites is three-six weeks. Rotating out of a field for four to six weeks can help break the life cycle (larvae die) during warm wet weather but can take months in a cool humid climate.

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Determining the extent of an internal parasite problem

Many cattle producers have worked with their veterinarian and/or pharmaceutical representative to collect fecal samples to provide insight into the significance of the problem. Typically egg counts are used to give an estimate of possible internal parasite loads. When evaluating results, keep in mind the following:

- 150 eggs per gram (epg) is a ballpark treatment threshold
- Treatment should result in a 95% reduction in egg counts. Less reduction could indicate parasite resistance to the dewormer.
- Actual treatment thresholds vary by parasite species -700 epg *Trichostrongylus* probably Not an issue, where *Ostertagia* at same levels is a big problem. The most common roundworm species we have observed in growing cattle are *Cooperia*, *Ostertagia* and *Haemonchus*, all of which can cause problems at the 150 epg level.

Consider the four sets of fecal egg count data from local yearling cattle below:

Fecal Egg Count Data on Annual Rangeland					
	Number of Head	Last Wormed	Egg Count Range	Average	Recommendation
Group A - Replacement Heifers Annual Rangeland	10	Fall 2020	0-20	7	Likely do not benefit from treatment
Group B - Replacement Heifers Annual Rangeland	10	Fall 2020	20-1305	244	Recall that a small percent of the cattle shed the majority of parasites. When the egg count range is considered, these cattle should be wormed even though some have low counts.

Table 1. Fecal Egg Count Data on Annual Rangelands

Fecal Egg Count Data on Irrigated Pasture					
	Number of Head	Last Wormed	Egg Count Range	Average	Recommendation
Group C - Replacement Heifers Irrigated Pasture	10	Fall 2020	35-415	244	Recall that a small percent of the cattle shed the majority of parasites. When the egg count range is considered, these cattle should be wormed .
Group D - Replacement Heifers Irrigated Pasture	13	Fall 2020	5-65	23	When the egg count range is considered, it is likely there is no economic benefit associated from deworming these cattle at this time.

Table 2. Fecal Egg Count Data on Irrigated Pasture

Final thoughts

Egg counts are a part of the puzzle when considering parasite management and can be used to gauge the worm burden at different times of the year as well as the efficacy of dewormers. Consult your veterinarian to discuss the best approach for your herd. As mentioned earlier in this article, it can be important to know the species of worm that are infecting cattle. If liver flukes or lungworms are of concern, those should be tested for as well and treated with appropriate drugs if present. Although this article's focus has been on internal parasites, external parasites are still an important piece of parasite management.

Don't Forget The Mineral

Josh Davy—Livestock and Range Advisor Tehama, Glenn, Colusa

Larry Forero—Livestock, Range and Natural Resources Advisor Shasta, Trinity

The stress of finding feed for cattle during these drought conditions can make it easy to forget the importance of mineral supplementation. Unfortunately, the drought only amplifies the importance of a mineral program. There are a few things to consider.

Adequate Consumption

Selenium should be supplemented at 100-120 ppm when cattle are consuming 1 oz/hd/day. If a supplement contains 120 ppm of selenium, cattle should be consuming 1- oz/head/day. There are 800 ounces in a 50-pound bag of mineral (50 lbs*16 ounces/pound). Starting with 800 ounces divide by the number of cattle consuming mineral (include calves) and then further divide by the number of days for them to consume the mineral. To determine the amount of mineral that would need to be consumed by 50 pair (100 head) being provided mineral with 120 ppm selenium (recall they need to consume 1 ounces/head per day),

Consider the following calculations:

- 800 ounces/100 head=8 days per sack of mineral
- To determine the number of sacks required/month divide the days of the month by the number of days it should take the cattle to consume a sack (8). 30 days/8 days/sack=4 sacks/month. To do this calculation, you must know the amount of selenium in your mineral. The table below shows the amount of selenium in three different minerals mixes. The necessary consumption to meet selenium needs is noted as well.

Mineral	Product 1	Product 2	Product 3
Selenium	120 ppm (min)	53 ppm (min)	25 ppm (min)
Daily Consumption	1 oz/hd/day	2 oz/hd/day	4 oz/hd/day
50# sacks/month/50 pair	4/month	8/month	15/month

Table 1. Selenium Needs Based on Consumption

Take a minute to think about how much mineral your cattle actually consume. Is it realistic or cost effective to expect them to eat 4oz/day? If feeding a mineral with 25 ppm selenium, and consumption is less than 4 ounces per head, selenium deficiency is still very likely. Conversely, if consumption is over what is necessary, consider only putting out what is needed during weekly intervals to save money.

Water Levels for Sulfur Content

High levels of sulfur in water are not uncommon in the foothills. If this is the case, the sulfur can inhibit the absorption of copper, which can exacerbate what would otherwise be a mild deficiency. Most moderate copper deficiencies can be adequately supplemented with around 3,500 ppm of copper in either a sulfate or organic form at 1 oz/hd/day consumption. High sulfur levels may require this to be much higher to correct copper deficiency.

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Adding Ionophore for Yearlings and Replacement Heifers

Consider adding an ionophore to a loose salt mineral supplement. Results from trials over several years averaged a 0.15 pound per day gain over feeding mineral with no ionophore. Over a six-month season that can result in a 27-pound increase in gain for an investment of only \$1 per head for the entire season.

Patching the Eye of Cattle with Pinkeye Results in Faster Healing

Larry Forero—Livestock, Range and Natural Resources Advisor Shasta, Trinity

Josh Davy—Livestock and Range Advisor Tehama, Glenn, Colusa

Pinkeye (also known as infectious bovine keratoconjunctivitis or IBK) is a painful ocular disease in cattle that is characterized by presence of a corneal ulcer and production losses. A common industry practice is to cover an affected eye with a piece of cloth to reduce exposure to face flies and ultraviolet light. It's thought that patching will alleviate pain, accelerating healing, and reducing spread. Though commonly recommended, no scientific literature documenting the value of this practice (either positive or negative) could be found.



Ulcerated eye in yearling steer

To determine the efficacy of this practice 216 crossbred British steers were followed between April and August 2019 and evaluated weekly. Cattle that contracted pink-eye were randomly assigned treatment (received an eye patch) or control (no eye patch), and were blocked by the severity of their ulcer (account for how bad the case of pink eye was). All cattle were treated with antibiotic and anti-inflammatory when first treated for the disease. Corneal ulcers were scored and measured weekly to evaluate how long it took the affected eyes to heal. Patching the eye statistically shown the eye healed four days faster than the cattle not patched. Patching the eyes of pink eye affected cattle should be considered a viable option for accelerating the healing of ulcers on affected animals.



Patched eye on treated yearling steer

Steps to Plant and Establish Flecha Tall Fescue

Josh Davy-Livestock, Range, Pasture Advisor Tehama, Glenn, Colusa

Larry Forero—Livestock, Range and Natural Resources Advisor Shasta, Trinity

Flecha tall fescue has shown promise as a summer dormant perennial grass to plant on annual rangeland. It provides the most benefit as a consistent forage producer on deep valley soils. A project to determine the economic value of Flecha fescue for grazing cattle is being conducted locally. Replicated 1½ acre plots (treatment-Flecha, control is native) were developed several years ago. These plots were grazed by growing yearling cattle beginning in the winter and moved to new plots as appropriate. For 2021 grazing season, the control plots produced 1.3 AUM of feed while the treatment plots produced 1.4 AUM. The project will continue as the stand fully establishes. At this point, the grass appears to be very palatable, productive, and resists weed invasion once established.

Flecha fescue is not suited to shallow soils or low rainfall areas. Key to a successful planting is timely rainfall, and most importantly, management of competition (weeds) prior to planting and until full establishment. Although there are many benefits to having Flecha fescue as a dryland pasture, it is important to consider the necessary inputs required to plant it so you can determine if it is a worthwhile practice to undertake. Following is a step-by-step process of initiating a planting.



Lightly disced field ready to plant to fleche fescue

It is imperative that all steps are followed. Failure is very likely if any step is skipped.

1. The most important component to the elimination of weeds is done the spring before planting. In April, prior to a fall planting, the ground should be disked or sprayed with glyphosate (Roundup). Spraying should only be done if the planting will be no-till drill planted and the soil will not be later disturbed. Any cultivation after the spraying risks bringing new seed to the soil surface to germinate.
2. In the fall, if early rain and good germination of undesirable grasses and broadleaf plants occurs, spray with glyphosate at the labeled rate (~2 pts/acre).
3. Soon after the fall weed control, broadcast Fletcha fescue at about 10 lbs per acre if the ground is disked (or no-till drill at 5 lbs if the ground is not worked up), then harrow lightly or cultipack the disked soil. Early planting is important. Planting from mid-December through winter can cause late germination which can inhibit summer dormancy if plants are not vernalized (gone through cold weather prior to spring).
4. In late Feb. or early March spray a tank mix of 2,4-D (2+ pt/acre) and Transline (3 oz/acre). The 2,4-D will control emerged radish, mustard, etc. The Transline will keep the starthistle from germinating the rest of the season.
5. Defer grazing the entire season of planting. You should be able to lightly graze the site in March and April the year after planting. Plantings usually reach full establishment in year three.
6. A typical grazing pattern to maintain plant populations would be:

November to Mid December – Defer

Mid December to April – Graze, let regrow, regraze

April to May – Defer to allow dormancy

May to November – Graze remaining stubble



Beef cattle grazers - Established fleche fescue stand

Monthly Irrigated Pasture Production in the Northern Sacramento Valley

Larry Forero—Livestock, Range and Natural Resources Advisor Shasta, Trinity
Josh Davy—Livestock and Range Advisor Tehama, Glenn, Colusa

Irrigated pasture produces more forage than livestock can consume in May and June, but as we ease into the summer, growth levels off. As autumn approaches, the hope is there is enough grass to get to winter.

In an effort to learn more about the monthly production of irrigated pasture, we clipped plots from five ranches in Shasta County (elevation ranged from 450-1700 feet). The chart below depicts the average monthly production across all five ranches.

Irrigated Pasture Production by Month (on a dry matter basis) in Shasta County

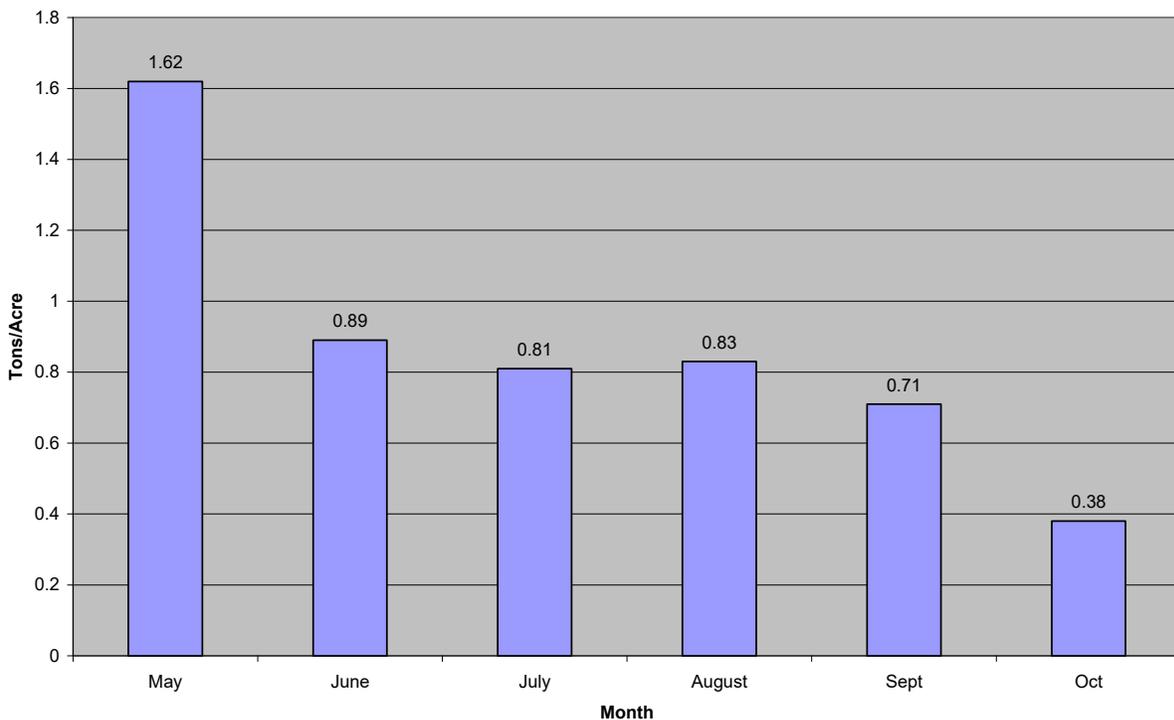


Table 1. Irrigated Pasture Production by Month

Although production on specific ranches varies, the trend for when production occurs is constant. This is particularly important to consider this year with high feed prices and limited dry feed on rangelands. If pasture feed appears to be short now, the data is clear that it isn't going to get better going in to fall. If this is the case, it may be worth figuring out methods to ease pasture consumption in order to stretch its availability as far into fall as possible. This could include weaning calves early to lessen cow requirements, shipping calves earlier than normal, pregnancy checking early to cull open cows, etc.

Knowing the general production curve for pasture production locally can help to manage pastures more efficiently. Knowing what production is in later season can help to drive marketing and feeding decisions.

Ag Producers Continuing Education for Applicators Day

November 17, 2021

7:30 AM – 12:00 PM

Red Bluff Fairgrounds

Please Register by calling the Tehama County Department of Agriculture at (530) 527-4504 or email your RSVP to: MVieyra@tehamaag.net Please Register by November 10, 2021

Virtual Water Measurement and Reporting Course

November 04, 2021

9:00 AM—12:30 PM

Larry Forero—Livestock, Range and Natural Resources Advisor Shasta, Trinity

Khaled Bali— UCCE Irrigation Water Management Specialist

Daniele Zaccaria— Assistant Water Management Specialist in Cooperative Extension

Senate Bill 88 requires that all water right holders who have previously diverted or intend to divert more than 10 acre-feet per year (riparian and pre-1914 claims), or who are authorized to divert more than 10 acre-feet per year under a permit, license, or registration, to *measure and report the water they divert*. Detailed information on the regulatory requirements for measurement and reporting is available on the State Water Resources Control Board Reporting and Measurement Regulation webpage. The legislation as written requires for diversion (or storage) greater than or equal to 100-acre feet annually that **installation and certification** of measurement methods be approved by an **Engineer/Contractor/Professional**. Diverters across CA were concerned about this requirement.

California Cattlemen's Association heard from their membership and worked with Assemblyman Bigelow on a bill that would result in a self-certification option. Assembly Bill 589 was passed and became law on January 1, 2018. This bill, until January 1, 2023, allows **any diverter**, as defined, *who has completed this instructional course on measurement devices and methods administered by the University of California Cooperative Extension*, including passage of a proficiency test to be considered a qualified individual when installing and maintaining devices or implementing methods of measurement.

The bill requires the University of California Cooperative Extension and the board to jointly develop the curriculum for the course and the proficiency test.

At the workshop you will:

- Clarify reporting requirements for ranches.
- Understand what meters are appropriate for different situations.
- Learn how to determine measurement equipment accuracy.
- Develop an understanding of measurement weirs.
- Learn how to calculate and report volume from flow data.

This is likely the last training being held in 2021.

If you need this training, register and pay here: <https://surveys.ucanr.edu/survey.cfm?surveynumber=33616>.

If you have any issues with the registration link provided reach out to Sara Jaimes with the contact information below.

The scheduled trainings are:

November 4, 2021 Virtual Training. If you have any questions about this training, please contact Larry Forero (lforero@ucanr.edu) or Sara Jaimes (sbjaimes@ucanr.edu) or by calling the Shasta UCCE office at 530-224-4900. Training will begin at 9:00am and conclude at 12:30 pm.

Traditional Market– Animal Projects, Positively Influence 4-H Enrollment

Josh Davy—Livestock and Range Advisor Tehama, Glenn, Colusa
Larry Forero—Livestock, Range and Natural Resources Advisor Shasta, Trinity
Nathaniel Caeton– 4-H Youth Advisor Shasta, Tehama, Trinity

The 4-H Youth Development Program (4-H) teaches a host of lifelong skills, but to build these skills enrollment is necessary. Outwardly, much of 4-H has been associated with market-animal projects, but the effect of these projects on enrollment was not known. To find out how market animal projects influence enrollment we analyzed seven years of enrollment data (2007-2015) from 27 Northern California counties focusing on beef, sheep and swine projects.

The question we were interested in answering is:

Could encouraging market-animal projects in Northern California increase overall 4-H enrollment at greater than a 1:1 rate (i.e., adding one market-animal project could increase enrollment by more than one youth participant).

We included three livestock species, year, region and population density to determine if, for each factor, a significant causal relationship with total enrollment existed. This approach allows the influences of all the factors to be considered and results in a specific interpretation of each individual factor’s contribution to enrollment, independent of the contributions of the others. Because of this, the model can determine how many new 4-H memberships are produced by a new market-animal project — regardless of year, location or population density. This article will only discuss the analysis associated with market animal projects.

This analysis indicates that the primary hypothesis of this research — that swine, beef and sheep projects are important to 4-H enrollment — is true. It demonstrated that market-animal projects produce significant, positive effects on enrollment. Each beef project contributed nearly four new members to county enrollment; a single sheep project yielded just over two new members; and two new swine projects produced a single new enrollment (Table 1).

Estimated Influence of the Occurrence of a single Additional Market-Animal project on Total 4-H Enrollment		
Parameter	Single Market Animal Enrollment	Estimated Increase in enrollment for each market project
Market Beef Cattle	1	3.98
Market Sheep	1	2.3
Market Swine	1	0.62

Table 1. Estimated Influence of the Occurrence of a single additional Market-Animal Project on Total 4-H Enrollment
*This is in addition to the youth enrolled in the market animal project

Continued...

Traditional Market– Animal Projects Positively Influence 4-H Enrollment continued...

The authors speculate that a member enrolling in 4-H creates awareness among siblings, peers and friends about the opportunities that 4-H offers. For example, if a youth is interested in raising a market animal, the youth's parents may reason that, since they will be taking one child to community club meetings, they might as well involve siblings because 4-H could offer projects that also appeal to them.

The results of this research show that market-animal projects positively increase enrollment in a large way. Through participation in these projects, youth are exposed to the other constructive aspects of the youth development program. Useful future research could focus on barriers that prevent youth participation in market-animal projects. Overcoming these barriers could result in an increase in participation in 4-H. Lessons learned from market-animal projects, coupled with the structure of the traditional community club system, produce encouraging outcomes well documented among 4-H alumni. Innovative ideas for overcoming barriers locally include local cattlemen's associations offering no interest revolving loan funds to help youth purchase project steers. These loans have been accessed by youth. To date repayment rate is 100%

New Advisor Introduction

Curt Pierce– UCCE Area Irrigation and Water Resource Advisor for Glenn, Tehama, Colusa and Shasta County

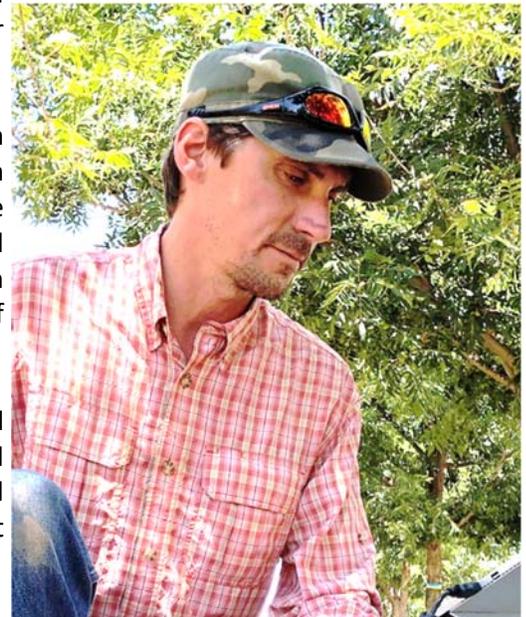
On October 15th, 2021, I will be joining the UC Cooperative Extension team as the Area Irrigation and Water Resources Advisor for Glenn, Tehama, Colusa, and Shasta Counties, based in Orland. I am looking forward to getting boots on the ground and working together with all of you.

I have a bachelor's degree in Agriculture and since 2016, I have been working as a Graduate Research Assistant with Richard Heerema, Pecan Specialist in the Extension Plant Sciences Department at New Mexico State University. While there, I spent two years in the Water Science and Management Master's program before moving into the Ph.D. program in Plant and Environmental Sciences with a focus on the stress physiology of woody plants.

My main areas of interest are plant water relations under water deficit, and irrigation system optimization. The research I conducted at NMSU studied methods of targeting limited water to when and where they would maximize benefit, and I look forward to continuing that work in ways that help producers and other stakeholders in the northern Sacramento valley.

In my free time I enjoy hiking with my family and dogs, trips on my motorcycle, and exploring everything I can. I'm excited to be a part of the community and look forward to meeting everyone.

I can be reached at the Glenn County office starting October 15th (530) 865-1107.



Curt Pierce, Shasta/Tehama/Glen/Colusa Water Advisor

Livestock and Range News is a newsletter published by the Farm Advisor's office containing research, news, information, and meeting notices related to the areas of livestock production, irrigated pasture, range, and natural resource management.

In this Issue...

- Consider Ammoniating Rice Straw for Low Cost Forage
- Cattle Deworming Considerations
- Don't Forget the Mineral
- Patching the eye of Cattle with Pinkeye Results in Faster Healing
- Steps to Plant and Establish Flecha Tall Fescue
- Monthly Irrigated Pasture Production in the Northern Sacramento Valley
- Ag Producers Continuing Education Day
- Virtual Water Measurement and Reporting Course
- Traditional Market-Animal Projects Positively Influence 4-H Enrollment
- New Advisor Introduction

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