



Northern California Ranch Update



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Feed Alternatives in a Drought Year

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In the past, rice straw has been one of the alternatives to feed during a drought with high hay and feed prices. The best way to find sources of rice straw is go to <http://www.ricestrawmarket.org/> Rice harvest is ongoing, so contact grower now to assure availability. Price range from \$40 to 50/ton FOB the rice field. For more information on feeding rice straw go to <http://anrcatalog.ucdavis.edu/pdf/8079.pdf>

This year the price of corn has brought more acres grown in California. In the Midwest, corn stover (the stalks, husks and cobs after harvest) has been used to winter non lactating cows. Producers provide supplement and either graze the field or bale the product and take it to the cows. Corn stover nutritive quality deteriorates with rainfall, especially in the field. To increase palatability, some producers have flail chopped the stover before bailing. Flail chopping too close to the ground can increase dirt in the bales. The major nutrient lacking in corn stover is protein and vitamin A. Most Midwest publications recommend supplementation of both.

Here is a comparison of the average values with rice straw:

	<u>Crude Protein</u>	<u>TDN</u>	<u>Ash</u>
Corn Stover	5.9	50	5.8
Rice Straw	4.5	41	16.6

Source - By-Products and Unusual Feedstuffs in Livestock Rations
Western Regional Extension Publication, No. 39

Corn stover provides increased energy and less ash than rice straw. Field reports have stated that the rice straw feeds better when spread out on the rangeland in big bales. Most producers cut half the twine strings on big bales and report efficient utilization of rice straw. In contrast, the chopped corn stover bales had greater waste when fed as bales, due to bales falling apart and the cows walking on much of the feed. An alternative is to feed the corn stover in bale feeders.

Marketing Your Calves on the Video A Quick Review

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Market*

Fall is creeping up on us and it's time for calves to be heading to market. But which market? Currently there are many more marketing opportunities than were available a few years ago. Video sales, auction yards and country order buyers all have a place in the merchandising of cattle.

Over the past decade, a plethora of alliances and marketing opportunities have emerged. Careful evaluation of these choices may result in opportunities to add value to the cattle you have raised. Marketing your cattle through any of these programs is more than a spur-of-the-moment decision. Take the time to think entirely through the program. Develop a simple spreadsheet to help you figure out if selling all your calves off the cow to a country order buyer nets more back to you than selling weaned, pre-conditioned, natural calves on the video. Work closely with someone knowledgeable in the current market and industry trends to help you think through the process.

Planning is key to using the video auction to sell cattle. Recall that cattle are typically sold in truckload lots (42,000-50,000 lbs). For a 300-cow outfit that has sold their calves as "natural" and weaned for 30-45 days that breaks back to about a load of heavy steers, a load of heavy heifers, a split load of heifers and steers and a balance of about 20 steers and 10 heifers. Recall that you have pulled out your replacement heifers and have to sort off the steers and market heifers that had been treated with antibiotics. Having a plan to sell these odds and ends is important and needs to be considered.

You effectively begin to decide on the marketing options for your cattle at branding time. There is a growing interest in purchasing calves that are "natural." To be able to sell to this market you must be willing to sign an affidavit that the calves to be sold have not been implanted with growth promotants, fed ionophores (e.g. - Rumensin or Bovatec) and have never been fed or treated with antibiotics. Some buyers require the seller to explain (in writing)

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how they assure the cattle purchased have not been treated. Some buyers also ask for the date the animals were worked and the name of the pharmaceutical products used. To provide the information required by the buyers, you must have thought through your health program and have some sort of individual identification system. There is a lot of discussion about “value added programs” but remember that adding value through these programs will require additional management, record keeping and labor.

To help you think through some of the parameters associated with marketing cattle, we have worked up a short discussion on some of the important parameters

Commission

Paying commission to an auction yard or video marketing company is a fact of life. The commission paid goes to offset the costs incurred in the marketing of your cattle. One of the advantages of the video sale is if you decide the amount offered for your cattle isn't what you think they are worth you can “no sale” for a nominal charge (\$2/head on a CA Video marketing firm) and you can consider other marketing venues. It is also worth considering that a country order buyer is not working for free and that his commission is built into the price he is offering you for your cattle.

Weighing conditions and shrink

Shrink isn't a new concept—when calves are sold at the auction yard, they are generally sold by the pound as a “straight” weight. In reality this is a shrunk weight in that they have been gathered at the ranch, sorted, hauled to the sale, sorted again and then sold.

The contract between the video marketing company and the producer clearly spells out the weighing conditions. Over the years, shrink figures have been developed to reflect the weighing conditions. For example, “*early AM gather, load on buyer's truck and drive 15 miles to scales, weigh on the truck.*” might have a 2% shrink, while “*early AM gather, weigh on the ground*” might have a 3% shrink. After they are weighed, the agreed upon shrink will be subtracted from that weight. This “calculated weight” will be the buy weight. The representatives of the video marketing firms have shipped cattle from literally thousands of ranches under every condition and facility imaginable—they have a good grasp of what a “fair shrink” figure is.

Slide

Marketing cattle on the video requires the producer to estimate what the cattle will weigh when they are shipped. The slide essentially adjusts the price paid for the cattle to reflect of their actual ship weight. It allows buyers to bid with confidence that they are not buying “a pig in a poke”. Generally a producer is “into the slide” at the first pound over the target weight. Slide is figured based upon how much over the target weight the cattle are.

Keep in mind that the slide only works one way. If you underestimate the target weight of the cattle, the per-pound price received for your cattle will not change.

If the catalog description for a set of steers reads “*Base weight 625 lbs, slide \$0.08 off @ 1# over base weight*” and the steers sold for \$102/cwt (\$1.02/lb). When the cattle were weighed up at shipping, they weighed 651 lbs (shrunk weight). Here is how the slide is figured:

Target Weight:	625#
Ship Weight:	<u>651#</u>
Difference	26#

Take the difference (26#) and multiply it by the slide factor (\$0.08). This is equal to \$2.08. This is subtracted from the purchase price.

Purchase Price:	\$102.00/cwt (\$1.02/lbs)
Slide	<u>2.08/cwt</u> (\$0.028/lbs)
Net Sale Price	\$99.92/cwt (\$0.9992/lbs)

While it is important to try to estimate the weight of the cattle at delivery accurately, getting into the slide does not reduce the gross receipts paid to the producer for the calf.

Consider our example:

If we hit the target weight of 625# and sold them for \$102/cwt, our gross per head receipts would be \$637.50. If the cattle weighed 651# and the price (after the slide) was \$99.92/cwt, the gross receipts would be \$650.44/head.

Shipping

Generally, cattle are shipped on the buyer's trucks. The seller saves the cost of freight to the point of sale (frequently the sale barn for auction yard sales). On the west coast we have become accustomed to trucks and trailers. Some local ranches are difficult to get semis into. Think about your roads and corrals and what kind of accommodations might need to be made to facilitate the loading of a semi. Selling on the video generally requires some sorting. Having a set of corrals with enough pens to hold the various groups of cattle and a competent crew reduces the stress for everyone.

Selling cattle on the video sale doesn't fit everyone's operation. Go back through the points we have discussed and think about them. If you have any questions, please don't hesitate to call.

Editor's Note: We had a number of readers write or call us regarding the absence of reference to the use of goats for blackberry management. We appreciate the feedback and will be including articles on the use of herbivores for weed management in this issue. We are also close to completing a UC cost study estimating cost/return for meat goat production.

New Trichomonosis Laws In California

Michael Poulus, DVM, California Department of Food and Agriculture

Over the past couple of years the California beef cattle industry has been working on the development of regulations to help manage Trichomonosis. These updated regulations will take effect on October 5, 2007 and are in addition to regulations that have already been in effect. If you have any questions, please call me at 530-225-2140.

1. **Veterinarians** must be approved to do Trichomonosis testing. Approvals will be renewed every two years with the brucellosis contracts.
2. All Trichomonosis tests are **official tests**; bulls will require official identification when samples are taken. That means the veterinarian will place a silver bright tag similar to a bangs tag in the ear unless the bull has an official registration tattoo. **NUMBERED HERD DANGLE TAGS ARE NOT OFFICIAL IDENTIFICATION!!!**
3. Samples must be cultured in **approved** laboratories.
4. Confirmation of positive test results may be requested, but is not required.
5. Positive trichomoniasis cases must be reported to CDFA: Animal Health Branch (AHB) within two days of diagnosis.
6. All test results, **including negative tests**, must be reported by the veterinarian to your local AHB office on a form supplied by CDFA within 30 days.
7. CDFA will investigate cases, notify owners of potentially exposed cattle, and **quarantine** bulls in **affected** and **exposed** herds.
8. **Bulls from infected herds** require three negative tests at least seven, but not more than 28, days apart to move anywhere except to slaughter.
9. **Bulls from exposed herds** require one negative test before movement anywhere except to slaughter. **Exposed herds** are herds in direct contact (ie: share an allotment or pasture with an infected herd), have fence line contact with an infected herd or herds that can be traced to have co-mingled recently beyond fence line contact.
10. **Bulls 18 months of age or older sold at public sale yards in California** require a negative Trichomonosis test within 60 days prior to sale or be consigned as slaughter only.
11. **Public auction yards** must post a notice in a prominent place stating: *"All bulls 18 months of age and older must have a negative trichomonosis test or be consigned as slaughter only."*
12. **Bulls 18 months of age and older ENTERING California** require a negative test taken by an approved individual within 60 days prior to entry unless entering for slaughter, semen collection, or exhibition (not to be co-mingled with other cattle).
13. **Pasture-to-pasture bulls** require a negative test within the past 12 months.

If you are experiencing a higher than usual number of open cows, don't fall into the trap of trying to make excuses for them (it was a tough feed year, it was wetter than usual, etc.). If you have made excuses for the cows this year and have overlooked Trich and it turns out it is the culprit, the impact on next year's calf crop will be devastating. Test your bulls!!

Applications Now Being Accepted for NRCS EQIP Funding

USDA Natural Resources Conservation Service (NRCS) is now accepting applications for the Environmental Quality Incentive Program (EQIP). The cutoff date to submit an eligible application is November 2, 2007.

It is important to apply early for the program to make sure all eligibility requirements are met before the November 2 deadline. Producers who do not meet the requirements by this date will be deferred for the current program year.

EQIP provides financial and technical assistance to farmers and ranchers in making voluntary improvements to natural resources on land they own and manage.

EQIP is a broad ranging program that shares the cost related to improvements of producer's natural resources. Priority resource concerns include water conservation on irrigated crop land, water quality on cropland, grazing land and livestock feeding operations, range health, riparian area enhancement and wildlife habitat improvement.

All eligible applications are ranked based on environmental benefit to national, state and locally identified resource priorities. Producers who currently have a conservation plan or are in the process of developing a plan will be considered a priority application.

For additional information on programs and eligibility requirements phone your local NRCS office.

Fall Cattle Health Reminders

Fall is here, the days are shorter and the list of things to get done is longer. Sometimes, there are multiple lists, or even a list of lists. Suffice it to say there is plenty to do and not much time. This time of the year as we try to get all the cattle worked through the chute, I thought it might be good to review a few cattle health considerations that are always important.

Pregnancy Check. For the cow herd this an important check on current progress and can be the first sign of any problems that might have occurred. This is a check on the bulls as well as the cows. For spring-calving herds, open cows can be culled at this time. The price of cows has been pretty good recently so it may be a good time to sell open cows or late-calving cows. For thin, open cows you may want to add a little weight on cheap feed before selling them. If the pregnancy rate is less than 90%, consider checking the bulls for Trichomonosis. When Trich gets into a herd the first year, the pregnancy rates often falls to less than 90% and the next year may plummet to 70% or less. When your veterinarian checks the cows for pregnancy, get a general assessment of health. If the cow is in marginal condition, this may be the time to start planning for her eventual exit from your herd.

Bull Examinations. For fall-calving herds, examine the bulls BEFORE they go out with the herds. This includes a breeding soundness exam and a Trich test. This is the time to prevent these types of losses. Dominant bulls that are sterile will really decrease pregnancy rates and move your calving season back. Vaccinate and deworm these bulls before they go out with the cows. The bulls can receive 2 doses of a "vibriosis" bacterin at 2-3 times the dose given to the cows. This is an effective way to prevent Vibriosis in the herd. If you have bought new bulls, be sure they were vaccinated against Anaplasmosis or do it at this time. Adult bulls should receive 2 doses of the killed anaplasmosis vaccine available from the California Woolgrowers. Vaccinate the bulls as you would for the cow herd (Clostridial vaccines, virus vaccines, etc.).

Vaccinations. In the cow herd, the minimum should include (1) a Clostridial vaccine (usually an 8 way) that includes Redwater protection (*Clostridium hemolyticum*) as the most important component (2) vibriosis vaccine for cows that are going to be turned out with the bulls, (3) Leptospirosis vaccine for cows 3 to 8 months pregnant, and (4) a virus vaccine booster (IBR, BVD, PI3, BRSV). For open cows the modified live vaccines are safe and for pregnant cows the killed virus vaccines are safe. Additionally, there are some new modified live virus vaccines that are safe for pregnant cows **IF** the cow herd has been vaccinated appro-

priately in the past. We need to remember that the modified live IBR vaccines can cause abortions if the pregnant cows have not been well vaccinated in the past. For pregnant cows that are going to calve within 30 to 90 days it is wise to use a Rota virus, Corona virus, K99 combination vaccine to help prevent scours in calves. In herds that have had Trichomonosis in the past, this may be a good time to vaccinate the cow herd with the Trich vaccine. But before you go to all the work and expense of working the cows through the chute, talk over your vaccination program with your veterinarian. Also, take good care of the vaccines when handling them. Keep live vaccines out of the sun. Keep all vaccines on ice and prevent them from freezing on cold mornings.

Parasite Control. This is an excellent time of the year to deworm cattle. They are often going on to clean pastures or range. So kill the parasites, stop the parasites from laying eggs, and prevent the contamination of the fields they will be on for the next few months, as well of getting the parasites out of the cattle. Fluke control is particularly effective at this time of the year, as most of the flukes will be mature and this is the life stage when the flukes are most susceptible to drugs. The drugs that can kill flukes include Valbazen® and Ivomec Plus®. Grub control is an important consideration in the fall. Also be sure to check with your veterinarian that the grub control drug you are going to use is safe and effective.

Miscellaneous Items. Fall is the time of year to remove any fly control ear tags from the cattle. This will help prevent the flies from developing resistance to the insecticides used in these ear tags. There have not been many new fly control ear tags developed over the last several years, so preventing resistance in the flies is important. If you are in an area of California that is copper deficient, this is time of year you want to supplement with injections or boluses. The copper injections (copper glycinate) last about 6 months and the copper boluses last about 12 months. Also, for selenium deficient areas, this may be the time of year to supplement the cattle. The California Cattlemen's Association sells a selenium bolus that lasts for one year. Alternatively, selenium injections can be given to provide partial supplementation for 30 to 40 days. This is a good time of the year to review your overall supplementation program as well as your mineral program. Be sure to spend a little time with your veterinarian, livestock advisor, nutrition consultant, and any others to discuss the items that need to get done at this busy time of the year.

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Managing Mint in Irrigated Pasture in California

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Irrigated pasture acreage in California totals just over 1.1 million acres (2004). County Agriculture Commissioner Reports estimate the value of pasture between \$100 and \$120 per acre per year. The forage provided by irrigated pasture supports the California beef, sheep, dairy and horse industries. Irrigated pasture provides between 5 and 6 million animal unit months (AUMs*) of forage annually, including summer forage for California ranches and is critical to their economic sustainability.

The typical vegetative composition of irrigated pasture generally includes a mix of perennial legumes and grasses. This combination of grasses and broadleaves coupled with the long term nature of the crop make managing weed pests challenging.

Many pasture operators in California have been plagued with mint infestation. Members of the mint family usually give off a distinctive, aromatic, minty odor when the stems and leaves are crushed. They have a square stem and opposite leaves, which are characteristic of the plants in the mint family. Common mint weeds in pastures include henbit (*Lamium amplexicaule*), white horehound (*Marrubium vulgare*), pennyroyal (*Mentha pulegium*), and healall (*Prunella vulgaris*). While henbit is an annual or biennial, the other common mint weeds are perennials, persisting for many years. Biennial and perennial weeds generally pose the greatest problems in pastures since they produce seed each year and can also reproduce from underground roots or rhizomes. Perennial weeds can also survive for many years and are not affected by occasional mowing or grazing. Additionally, henbit is a host of the *Sclerotinia* fungus that causes crown and stem rot in forage legumes.

Mint species have been reported to produce from 100 to over 5,000 seed per plant. Seeds can persist in the soil for 20 to 30 years, with some seed surviving much longer. Seeds of mint weeds often fall near the parent plant, but can disperse to greater distances when soil is moved or with water. Animals also can move mint seed by consuming seeds and passing through the digestive tract, but more commonly by transporting them in their hair or hooves. Mint seeds generally require a short after-ripening period before they will germinate. Germination occurs more readily when seed are exposed to light and moisture, generally in the upper ½ inch (5 to 20 mm) of soil. Mint seeds often germinate in fall or spring, but can germinate most times of the year if conditions are correct. Seedlings are frost tolerant. Established perennial plants often will

die back during the cold winter period and re-grow from rhizomes in the spring. Rhizomes or stem fragments can develop into new plants if conditions are favorable.

If unchecked, mint can dominant a pasture. Livestock do not generally find the plant palatable and will actively avoid it. This puts more grazing pressure on the more desirable pasture plants which in turn creates more opportunity for the weed.

Management Considerations

Control of mint in pastures, barn lots and forage fields is very important. The best time to scout for and control mint is late April to early June. It is very difficult to control in late summer and early fall. While livestock typically avoid mint in pastures, Kingsbury (1964) notes the plant is toxic if ingested in large amounts and cites the death of two horses on Prince Edward Island. Burrows and Tylr (2001) report cattle, sheep and horses are susceptible to poisoning by *L. amplexicaule* but rarely causes death. If control measures are not taken early, it becomes even more crucial in late summer to maintain an adequate supply of quality feed for cattle and other farm animals so they will not feed on these toxic weeds. Grazing in infested pastures should be limited during late summer when mint is flowering. Avoid harvesting forages in areas infested with these weeds.

Mint Management

Cultural practices include anything that makes the desirable pasture species more competitive with the weeds. The best management is to prevent the introduction of mint into the pasture. Avoid moving animals from mint infested fields, since 5 to 15% of weed seed which has been eaten safely passes through the animal's digestive tract and infests the new field. Seeds can also be transported in the hair and hooves of animals. Contaminated hay is also a potential source of mint seeds. Use hay free of weed seed to avoid introducing weeds into pastures.

Managing Mint Using Mechanical Methods

Systematic mowing can help to control weeds. Repeated mowing reduces the competitive ability of weeds, depletes the carbohydrate reserves in the roots of perennials, and helps to prevent seed production. Mowing reduces seed production, but seed production on mints can occur below the cutting height of most mowers, allowing some seed to still be produced. Mint also has the ability to regrow after mowing, and thus seed production may only be delayed. Mowing at a height just above the desired species reduces shading and increases the competitive ability of the desired forage species. A single mowing will not control mint, but repeated mowing 3 or 4 times per season can greatly reduce there presence. Mowing along fence lines and borders helps to stop the spread of weeds into the pasture. Hand removal may be the easiest way to deal with new infestations or when only a few individuals are present. An attempt should be made to dig up the roots of perennials to prevent their recovery.

Grazing Management to Limit Mint Infestations

Over-grazing can result in new infestations of weeds. Weeds, such as mint, are opportunist, germinating and growing where sunlight, water and nutrients are available. When pastures are heavily grazed, open spaces are created, allowing weeds to invade. Moving livestock when pastures reach approximately a 4-inch height allows the pasture to recover quickly, preventing open spaces and weed invasion. If bare areas exist, over-seed with desirable species to keep open areas to a minimum.

Maintain Pasture Fertility

Fertility management can help to reduce weed problems. Feeding the crop and not the weeds is the objective. Fertilizing in the spring when pasture plants are growing rapidly, often results in good pasture growth, while fertilizing when desirable pasture plants are small with limited root systems, results in nutrients being more available to weeds.

Chemical Management of Mint

Herbicides can be used to selectively control mints in pastures. 2,4-D amine has been shown to be very effective at controlling mint weeds in pastures. 2,4-D is safe for use on grass pastures, but can cause injury to clovers and thus may not be desirable in all situations. Sequential treatments of 2,4-D amine at 1 lb/ac made one month apart were highly effective at controlling established mint. Likewise, triclopyr is also effective in controlling mint weeds in pastures, but also injures clovers. Triclopyr is less volatile than 2,4-D and thus would be considered safer from drift or volatilization around sensitive vegetation. 2,4-DB also controls mints, but is generally less effective than either triclopyr or 2,4-D. The advantage of 2,4-DB is that it is safer for use in clovers. As with 2,4-D, sequential treatments of 2,4-DB at 2 to 4 week intervals is more effective at controlling mint than a single treatment.

Non-selective herbicides can also be used to control mints. Spot treatment with glyphosate is very effective, but kills almost everything that is contacted. If spot treatments are used, a dye should be added which will indicate the plants that have been treated, and to avoid missing plants or treating others twice. If mints are taller than the surrounding vegetation, a rope-wick applicator can be used to selectively treat the mint. The rope-wick contacts the taller mint plants, while the shorter pasture species are not contacted. Glyphosate is often used with this type of application, as it is effective against a broad range of annual and perennial weeds.

Herbicides need to be applied at the proper timing for optimum performance. Weeds are always most sensitive at the seedling stage. Treat biennial weeds in the rosette stage prior to bolting. Perennial weeds are best controlled when treated at the flower bud or bloom stage. Early fall can also be a good time to treat perennials, if a good rain has occurred to wash off the dust and the target weeds are actively growing.

When herbicides are used, it is critical to read and follow all label instructions—understanding the label improves efficacy and assures the product is being applied safely. When pesti-

cides are applied to commercial production pastures, use reports are required. Some products require a restricted materials permit where others only require an operator ID (see Table A). If you have any questions about this—call you local agriculture commissioner's office.

Table A Summarizes the regulatory and reporting requirements for products outlined above.

Mint management often requires repeated treatments or combi-

Product	Operator ID	Restrict ed Materi- als Per- mit	Notice of In- tent	Use Report
2,4-D	No	Yes	Yes	Yes
2,4,DB	No	Yes	Yes	Yes
Gly- phosate	Yes	No	No	Yes

nations of treatments. The goal is to prevent seed production and to control established plants. When mint infestations are dense, repeat treatments of herbicides or cultural control methods are needed to reduce the population.

An Introduction to Grazing for Weed Control

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Noxious weeds cause ecological and economic damage to rangeland and irrigated pasture. Displacement of desired vegetation by noxious weeds results in reductions in plant diversity, and decreases of forage value. There are several tools available to manage noxious weeds including chemicals, prescribed burning, mowing, tillage and targeted grazing.

This newsletter article is an introduction to some current local projects and past research that demonstrate the use of livestock to control weeds and promote desirable vegetation. Future articles will report specific details and results of some of these projects and the grazing practices applied.

Grazing management involves controlling the kind and class of animal and the time (season, month, phenological state), intensity (stocking density or rate) and duration (length of grazing and rest periods) of grazing. Often noxious weeds are not preferred by grazing animals. By increasing stock density, grazing animals use the most desired species first, but eventually must consume the target weed as they use up the preferred species. In some cases, plant toxins, such as alkaloids or tannins, can cause toxicity in some animal types, and forced consumption will result in detrimental health effects.

For example, tansy ragwort is far less toxic to sheep than cattle. Also, goats are able to consume higher levels of tannins than other livestock species, which makes them desirable for grazing woody-type plants that could potentially cause toxicity to other animals. Additionally, timing of livestock impact on target weed species is often the most critical factor for optimal weed control. Timing and duration of impact is also essential in preventing harm to desirable species

Medusahead, barbed goatgrass and yellow starthistle are the most important noxious weeds, having infested millions of acres of California's foothill rangelands. Once it flowers, medusahead is generally not a desired species because of its abrasive awns and high silica content. Medusahead is slow to digest and to decay because of this high silica content. Slow decay rates result in a build up of thatch that tends to exclude other species eventually resulting in small and then large medusahead dominated patches prevalent on many foothill rangelands. Studies in the 1980s in Tehama County found that high stock densities applied during the growing season for two years reduced the thatch and allowed species that are more desirable to increase. There are multiple UC trials underway in California annual rangelands that are attempting to develop and fine tune practices for managing medusahead and barbed goatgrass. These studies are documenting differences in phenology up and down the state so that time of grazing can be precisely targeted. In other studies, high stock densities are being tested by concentrating stock using fencing and by attracting stock into medusahead patches using protein supplements. Sheep and goats have proven successful tools for controlling many broadleaf weeds including yellow star thistle, scotch broom, spotted knapweed and tansy ragwort (sheep particularly). Additional research is underway using sheep and goats for firebreak control in chaparral and forest areas. This work uses browsing activity to impact brushland plants that pose significant threats as fuel for wildfires.

The key to using livestock for weed control is to plan for what you want, rather than for what you don't want! Clear measurable objectives are key to the management of vegetation. Planned grazing is crucial to proper control of timing, intensity and duration of grazing. By working toward your vision, the undesirable species will be minimized.

Additional sources of information include:

Livestock Grazing Guidelines for Controlling Noxious Weeds in the Western United States

<http://www.unce.unr.edu/publications/files/ag/2006/eb0605.pdf>

UC Rangelands Website

<http://californiarangeland.ucdavis.edu/>

UC Weed Research and Information Center

<http://wric.ucdavis.edu/>

UC Online Statewide Integrated Pest Management Program

<http://wric.ucdavis.edu/>

Irrigation Scheduling Tools in Sacramento Valley Irrigated Pastures

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Sacramento Valley irrigated pastures generally require three to four acre-feet of irrigation water in a single season to supplement rainfall. On a hot summer day, irrigated pasture can consume about 9000 gallons of water per acre. This equates to flow rates of about 6 to 7 gallons per minute per irrigated acre to have enough water to meet the maximum daily water consumption of irrigated pasture. Since, irrigated pasture is rarely irrigated daily and sprinkler or flood irrigation systems are designed to irrigate the pasture in sets, higher flow rates of 10 to 30 gallons per minute per irrigated acre are more realistic. Typically, lower flow rates are needed for sprinkler irrigation and higher flow rates for flood irrigation. More flow helps to efficiently flood irrigate longer fields and sandier soils with higher water intake rates that can be difficult to cover. Higher flow rates also provide more flexibility with timing sprinkler or flood irrigations.

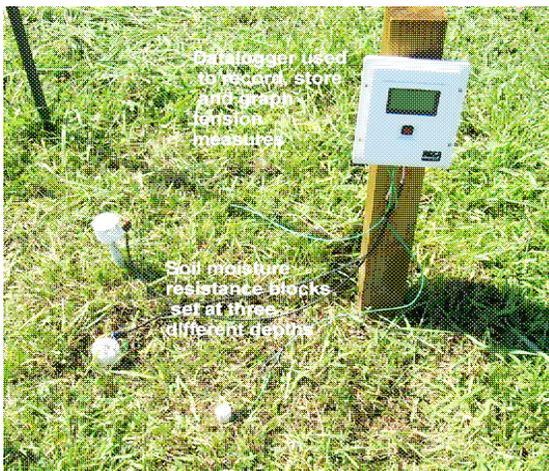
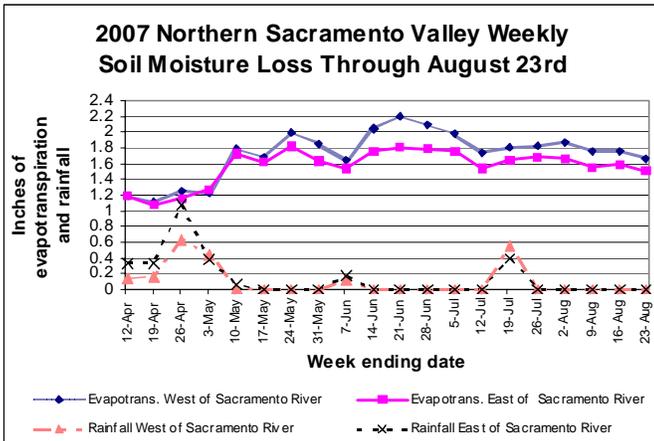
Irrigation scheduling (when and how much) is one of the most important factors influencing irrigated pasture production. It is a term that refers to having a plan for irrigating at the right times, and with the right amounts of water, for optimal plant growth. Irrigation scheduling has a direct influence on forage production and grazing capacity, the amount of weeds in a pasture, and economic return.

Without tools for assistance, it can be difficult to determine irrigation scheduling because most pastures require different practices. Simply waiting for forage to turn brown before irrigating will cause a reduction in production and can permanently damage a pasture. Factors such as soil type and temperature create large variability in necessary irrigation management practices between pastures. For example, the necessary frequency of irrigation can vary from seven to 20 days between pastures. In addition, the necessary frequency of irrigation can also vary within a single pasture depending on the time of year (spring, summer, fall).

In some situations, the timing of irrigation may be determined more by the quantity of surface water available or the ability to convey it among all of the water users who share the resource and less on the pasture water needs for optimal production. Many water districts are pursuing improvements that increase their flexibility to convey water to their customers, and some water districts can deliver water on demand. In other situations, water users may have a great deal of flexibility in choosing when to irrigate their pastures if they use groundwater from a privately operated well or are the sole user of surface water from a smaller diversion. In any case, a variety of irrigation scheduling tools is available to help understand pasture water needs and assist with growing more forage.

One tool is a weekly report published by the Department of Water Resources and UC Cooperative Extension that uses current

weather conditions to estimate soil moisture loss (Evapotranspiration or ET) from irrigated pasture in inches. Weather stations in the northern Sacramento Valley, Gerber (westside) and Durham (eastside), measure sunlight, temperature, humidity, wind, and precipitation each minute and calculate soil moisture loss for irrigated pasture. The reports can help judge how well rainfall balances soil moisture loss, when to begin supplementing rainfall with irrigation, and how long to operate your irrigation system to replace the soil moisture loss. The graph displayed here shows the weekly level of crop water use from April through August of this year. Weekly soil moisture loss updates can be viewed every Friday during the irrigation season at <http://cetehama.ucdavis.edu> under the irrigation and water resources program link.



A second irrigation-scheduling tool is to actually monitor soil moisture. Soil moisture monitoring is especially useful: 1) to determine how deep water percolates into the soil profile after rainfall or irrigation; 2) to understand the distribution of the pasture root zone and depth of soil that the pasture extracts water; and 3) to determine seasonal water extraction trends in the root zone.

There are several ways to monitor soil moisture, some provide a general sense of the soil moisture levels while others provide specific indicators of soil moisture and establish trends. A shovel or soil auger can be used to retrieve soil samples at different depths

in the root zone. These samples can then be handled to generally evaluate the soil moisture. Samples lighter in color and that crumble are dryer than soil samples that are darker and roll into a firm ball or form a ribbon when the soil is pinched between the thumb and index finger.

A more descriptive method of soil moisture monitoring uses resistance blocks to measure the tension that water is held by the soil. As a soil profile becomes dryer, the tension that soil has on water becomes greater, thus limiting the amount of water available to the pasture. Soil moisture resistance blocks measure this tension as centibars on a scale from 0 (soil is saturated) to 200 (soil is very dry). Measurements of soil moisture tension can be taken with a hand held meter or a data logger can be used to automatically take readings in predetermined intervals and store data over the season. The approximate cost for two or three resistance blocks is \$70 to \$100 to monitor two or three soil depths. In addition, costs are approximately \$300 for a hand held meter or about \$600 for a datalogger. The resistance blocks and hand held meter or datalogger should last at least five years and most likely longer with proper handling and care. Hand held meters can be used at more than one location, whereas a datalogger is stationary and will require protection from grazing cattle. However, dataloggers ensure that the soil moisture measurements are taken and provide more thorough information to understand the trends in soil moisture.

Properly managed irrigation scheduling depends on the climatic conditions unique to each season and soil type. These two tools can assist in timing your irrigations by enhancing your knowledge of the pasture's soil moisture use and need for recharge from irrigation.

This newsletter contains articles written by University of California Farm Advisors, Specialists, and Program Representatives. Our aim is to provide the ranching community in the Sacramento Valley with science based information. We welcome your feedback and encourage you to call or email us.

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Implications of Postweaning Nutrition on Carcass Characteristics and Feed Costs

Dan Drake, Livestock Farm Advisor

Some producers have few options and have to ship calves immediately after weaning, others will feed weaned calves for anywhere from a few days to several months. Calf nutrition postweaning can have a significant effect on profit and ultimately on carcass quality.

A short postweaning feeding program is probably most helpful in educating the calf to bunk or trough feeding and getting them ready for more intensive feeding programs while not greatly increasing live weight. It is an important step, and part of a good pre-conditioning program.

Longer postweaning feeding periods can add significant amounts of weight (and impact price per pound), substantially delay marketing, and impact carcass attributes. The importance of any of those factors will depend on the marketing system used. Individuals with terminal marketing plans (selling weaned calves) will be more concerned with cost of gain and weight impacts on price per pound. Their decisions on postweaning feeding programs will depend on feed costs and availability, feeding facilities, animal performance and health, price changes (weight and seasonal) and risks compared to selling calves directly or soon after weaning. As feedlots and processors keep more detailed records on performance of purchased backgrounded or stocker cattle, even terminal sellers may want to also consider effects on the carcass. Those that retain ownership or market through some type of vertical integration will want to consider postweaning nutrition impacts on carcass characteristics.

Since finished or feedlot cattle are typically marketed when they are “ready” as judged by fat cover, the heavier the in-weights into the feedlot the heavier the out-weights, and heavier carcasses. In general, heavier carcasses are more efficient for the packer and produce more desirable (larger) hides. However, to maintain acceptable yield grades, heavier carcasses require larger ribeyes and potentially ribeyes can get too large for a particular market. This is illustrated (Table 1) showing that as carcass weight increases (and fat thickness and kidney, pelvic and heart fat remain the same) that ribeye area must increase to maintain the same yield grade. For some markets, a ribeye size over 15 square inches is too large, and carcasses more than 900 pounds would need even larger ribeye areas to maintain the same yield grade.

Carcass wt	Fat Thickness	Ribeye area	Kidney, Pelvic &	Yield Grade
550	0.35	10.7	2.5	2.5
600	0.35	11.4	2.5	2.5
650	0.35	12.1	2.5	2.5
700	0.35	12.7	2.5	2.5
750	0.35	13.3	2.5	2.5
800	0.35	13.9	2.5	2.5
850	0.35	14.4	2.5	2.5
900	0.35	15	2.5	2.5

Table 1. Relationships between increasing carcass weight, ribeye area and yield grades (with fat thickness and kidney, pelvic and heart fat the same).

From a practical standpoint, many producers have a fixed length of time for postweaning feeding limited by feed supply, often weather, or some other factor. Muddy, cold conditions are not conducive to efficient gains. With that in mind, the rate of gain during postweaning feeding has implications when the length of the feeding period is fixed. It is fairly obvious that postweaning feeding with higher rates of gain over the same number of days will result in heavier cattle entering the feedlot compared to lower rates of gain for the same number of days. The rate of gain or feed composition during the backgrounding or stocker phase may influence carcass quality. Work conducted at UC Davis (Sainz et al 1995) with 3 different backgrounding rations (Table 2): 1.) 96 percent forage (64 % alfalfa, 32 % oat straw) fed free choice, (daily gains were 1.7 lb/day), 2.) 75 percent grain ration but fed in limited amounts to produce gain similar to the forage diet, (daily gains were 1.5 lb/day) and 3.) the same grain diet free choice, (daily gains were 4.3 lb/day), showed the backgrounding phase will impact carcass quality.

Table 2. Backgrounding period results for British breed steers fed from 520 to 720 pounds on 3 different rations. Feed costs are estimates.

Ration	Days Back-grounded	Daily In-take, lbs.	Total Feed, lbs.	Estimated Values		
				Ration Cost \$/ton	Total Feed Cost	Difference compared to forage
1.) Free choice forage	112	18.5 ^a	2077	145	\$151	
2.) Limited amount of concentrate	112	10.0 ^b	1124	300	\$168	\$ +17
3.) Free choice high concentrate	57	18.5 ^b	1057	300	\$158	\$ +7

Adapted from Sainz et al 1995

Values within columns with different letters are significantly different

Carcass Results

Steers from all groups were fed the same during the finishing period and harvested at about 1100 pounds shrunk weight. Steers receiving the forage diet for backgrounding had lighter carcasses, less backfat thickness, more kidney, pelvic and heart fat, and smaller ribeyes than their mates that were backgrounded on free choice grain diets (Table 3). Marbling, quality grade and yield grades were not statistically different. The steers backgrounded on the grain diet but fed for growth rates similar to the forage-fed steers had carcasses more like the free choice grain fed steers. This shows that the composition of the diet had an impact on carcass characteristics, while the rate of gain during backgrounding was not as important.

Table 3. Carcass characteristics of steers fed 3 different backgrounding rations but finished the same.

Ration	Carcass wt, lbs.	Backfat, in.	KPH Fat, %	REA, sq in	Marbling Score	Quality Grade	YG
1.) Free choice forage	652 ^a	0.25 ^a	2.1 ^a	9.3 ^a	8.7	SE+	3.4
2.) Limited amount of concen-	667 ^b	0.29 ^b	1.9 ^{ab}	10.6 ^b	8.9	SE+	3.2
3.) Free choice high concentrate	678 ^b	0.32 ^b	1.6 ^b	10.3 ^b	8.0	SE	3.3

Adapted from Sainz et al 1995

Values within columns with different letters are significantly different

Note that the grid price of these carcasses would be the same since the quality and yield grades were not different due to the backgrounding treatments (the small variation is due to random variation between animals). However, the differences in carcass weight would result in more money for the steers backgrounded on the concentrate rations compared to the forage backgrounded cattle.

Feed Costs

The feed costs of the 3 different backgrounding programs varied greatly using \$300/ton for high concentrate rations and \$145/ton for forage rations. **Using these costs**, backgrounding feed costs varied from \$151 for the forage diets to \$168 for the limit fed concentrate diet (Table 2). In the feedlot, steers backgrounded on forage (Ration 1) required 22 days longer than those fed limited amounts of concentrate rations during backgrounding (Ration 2) and 15 more days in the feedlot than steers fed high concentrate free choice during backgrounding (Ration 3). This resulted in feedlot feed costs of \$457, \$323 and \$287 for each group, respectively. Combining the backgrounding days on feed with the feedlot days on feed resulted in 70 days and 22 days more of feeding for the forage-fed steers compared to the free choice and limit fed high concentrate programs, respectively. **Using these feed costs**, the steers backgrounded on limited amounts of concentrates (gaining 1.5 lb/day) had feed costs \$117 lower than the steers backgrounded on forage (and gaining 1.7 lb/day), and steers backgrounded on free choice concentrate ration (gaining 4.3 lb/day) had \$163 lower feed costs.

Table 4. Feed costs of steers fed 3 different backgrounding rations but finished the same.

Ration	Feedlot Period Only			Total feed cost, \$	Combined Background & Feedlot Feed Costs, \$	Difference compared to forage backgrounded
	Estimated Ration Cost (\$/ton)	Daily intake, lb/day	Days on feed			
1.) Free choice forage (hay)	300	25.8 ^a	118	458	608	
2.) Limited amount of concentrate	300	24.2 ^a	89	323	492	\$ -117
3.) Free choice high concentrate	300	19.9 ^b	96	287	445	\$ -163

Adapted from Sainz et al 1995

Values within columns with different letters are significantly different

Conclusions

Numerous research trials have explored the area of postweaning nutritional management on backgrounding gains and subsequent carcass quality. While there is still much to be learned, on some points a few guidelines are becoming clearer.

- Lower energy backgrounding rations will result in reduced rates of gain, lighter feedlot in-weights and/or longer backgrounding periods.
- Fat deposition during the feedlot phase is impaired for cattle on low energy or restricted energy backgrounding rations compared to those on more moderate energy diets. Significantly longer finishing periods are required for cattle from energy restricted backgrounding to reach a fat constant endpoint.
- Intra-muscular fat deposition during the feedlot phase may be impaired due to a prolonged low energy stocker phase. Conversely to the theory of impaired fat deposition, IM fat deposition may not be impaired due to prolonged stocker phases but instead may be reduced simply due to fewer feedlot days on feed (when fed to the same end weight) and therefore cattle may not have time on feed to achieve the same marbling as cattle entering the feedlot at lighter weights (i.e. shorter stocker phase).
- Lower energy backgrounding rations can be effective in adding apparent size to moderate frame cattle, albeit at the cost of additional days on feed and reduced feed efficiency.
- Increasing the background period (when on moderate or better rations) can reduce the use of concentrates in the finishing phase to achieve the same degree of fat cover.
- During the backgrounding phase, cattle on superior diets will consume more feed and have better conversions than cattle on lower energy diets, but during the finishing phase intake, conversion and daily gain comparisons are more varied when fed to a fat constant endpoint. This point may be modified if background restrictions are sufficient to result in compensatory gains during the finishing phase.
- Impacts of postweaning nutrition vary depending on the genotypes (breeds).
- Moderate frame cattle will reach a fat constant end point sooner than large frame cattle regardless of whether on low or high gaining background periods.
- When backfat thickness is used to determine harvest timing, forage backgrounding will increase feedlot out-weights and carcass weights.
- Forage-fed backgrounding even at higher daily gains (2.0 lbs/day) will add weight but not increase backfat so that cattle entering the feedlot will have less backfat thickness.

In many respects these principles can be boiled down and support the concept that cattle can be “grown” out to larger size on lower gaining, forage type rations. But the ramifications when cattle are subsequently finished under the typical endpoint of a specific fat thickness are days on feed increase, feed conversions decline, and carcass weight increases.

A few examples of these principles in application: If cow herd conditions dictate use of relatively small cows that have been producing carcasses that are too small, then feeding a forage type backgrounding ration will help to increase carcass weights and ribeye size. Length of the backgrounding phase can be increased to exacerbate that response. On the flip side, if carcasses tend to be too large, a shorter background phase with higher energy would help to lower feedlot in-weights, reduce the feedlot period and lower carcass weights. Each of these scenarios will have economic consequences that must be evaluated. Understandably some producers have few options. Others are vigorously seeking alternatives and options to capture more value from each calf they produce. In these cases, they may be able to capture additional financial returns by adjusting postweaning nutrition.

Information for this article was adapted from the following publications.

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