

THE ROUNDUP

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
LIVESTOCK, RANGE, AND NATURAL RESOURCES NEWSLETTER
KERN, TULARE, AND KINGS COUNTIES



ECONOMIC VIABILITY IN TODAY'S BEEF INDUSTRY

I've been holding onto a Drover's article by Alan Newport since December of last year because the article was presenting information that, in some ways, goes against current breeding trends. The article can be accessed here: (<http://www.cattlenetwork.com/news/newport-time-change-directions>). I found the article to be a very interesting take on current breeding objectives in the cattle industry today. Newport's main point is that cattle are being bred beyond the forage production potential for many areas. The corresponding concern is the impact current breeding objectives may have on the financial well-being of the ranch business. Some of Newport's specific observations are:

- Calf-weaning weights, on average, haven't increased in 20 years
- Most heifers need to be fed to get big enough to breed and have their first calf at 2 years of age (or rebreed as 2nd calf heifers)
- Most modern cows don't get enough energy from a range environment to produce their genetic capacity for milk (11-15 lbs is optimum). Excess milk production drags down the cow
- In 1974 the average cow ate about ½ an acre worth of alfalfa. In 2014, the average cow at about 2 acres worth of alfalfa

The critical message is that everyone has different forage resources available, therefore,

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everyone's breeding goals should be a little different. I'd like to illustrate by discussing weaning weights. Let's assume the average weaning weight in the southern San Joaquin valley is 600 lbs for a steer calf. Let's also assume a cow is expected to wean 60% of her body weight each year. That means a 1,000 lb cow, should wean a 600 lb calf. In northern California, the average weaning weight is 700 lbs for a steer calf, that calculates out to about a 1,200 lb cow weaning that size calf. What do these numbers imply for cow/calf operations where the average weaning weight is 600 lbs?

It is important to acknowledge that a number of factors affect mature cow size and the weaning weight of calves and there is no one-size fits all answer. One concept worth consideration is residual feed intake or RFI, which is a process of measuring how efficiently an animal utilizes feed and basically identifies thrifty keepers and easy-fleshers. In other words, RFI testing identifies animals that use feed more efficiently and can survive on fewer total calories. While the size of animal plays a role in this trait, what studies have found is that two animals of relatively uniform size and weight, will gain the same, but it takes more to feed one than it does to feed the other.

How can these concepts be applied on ranch and how do they apply to ranch economic viability? The first two things to consider are reproduction success within the herd and the supplementation needed to achieve that reproduction rate. The second part is to look at ranch economics and consider what could be done to make the profit line-item more appealing to the eye. This might require asking some hard questions. For example, what do we want ranch finances to look like? How much profit do we need to make? How much profit do we want to make? What can we do to achieve that goal? What needs to change? Often overhead costs have the most significant impact on per head profit. It's important to take a hard look at where your money is going and why.

I have heard ranchers compared to MacGyver because you all are known for being extremely creative problem solvers. If you are encountering a problem, and you are determined to fix it, there is nothing that will stop you. Here are a few tips I've picked up over the years from people who are smarter than me.

- Create clear, defined, measurable goals.
- Think outside the box and embrace the positive aspects of change.
- Be open to all ideas...new, old, and weird...and vet each option thoroughly before making a decision to support or oppose.

Keep in mind the quote, often attributed to Albert Einstein, "The definition of insanity is to do the same thing over and over and expect different results."



IDENTIFICATION, BIOLOGY, AND CONTROL OF ITALIAN THISTLE

Italian thistle (*Carduus pycnocephalus*) is not traditionally a major nuisance weed, however, in some instances it can take over a pasture and have a significant impact on forage production and availability. It can grow as tall as six feet high and has flowers that are rose to pink to purple and clustered in groups of two to five. It has prickly leaves and stems with prickly wings and generally grows below 3,000 feet in elevation.

Italian thistle is a winter annual, classified as moderately invasive by the California Invasive Plants Council. It germinates in the fall with the first rains, overwinters as a rosette, and then bolts and flowers in the spring. The plant will continue to flower until the soil moisture is depleted. The plant only reproduces by seed and high temperatures inhibit germination. The seeds are mucilaginous, meaning slimy and moist, and are dispersed by humans, animals, vehicles and wind. While seeds rarely persist in the soil for more than a few years, then can persist for up to ten years. Italian thistle produces two types of seeds:

- Silver seeds: dispersed by the wind; can remain dormant in the soil longer – up to 8 to 10 years
- Brown seeds: generally remain with flowerheads and fall near plant at the end of the season; can germinate at lower temperatures than silver seeds

The average distance a seed travels via wind dispersal is 75 feet, but it may travel up to 325 feet in strong winds. The plant forms a deep taproot and in general, does not compete well with healthy, established grasses and other vegetation. Similar species include Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), and Scotch thistle (*Onopordum acanthium*). Native thistles may look similar, but are not invasive.

One of the primary goals of weed management, particularly in annual plants, is to reduce or eliminate the plants ability to set seed. If weed management succeeds in keeping seedset to a minimum then eventually the manager should be able to maintain a minimum population through continued follow-up and effective control measures. Total eradication is not common for a number of reasons including cost, time, and seed migration from nearby sources.

Control options include:

- Mechanical
 - ⇒ Can be hand-pulled
 - ⇒ If using a hoe or shovel, the plant must be severed four inches below the soil to prevent resprouting

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- ⇒ Can be mowed, just after bolt, but mowing can be unreliable because individual plants are in different stages of growth. Also, plants may regrow. Mowing is not considered the most effective means of reducing seed set
- Cultural
 - ⇒ Grazing is generally not considered effective. With intensive management and animal density, seed production may be reduced. Goats seem to be the most likely animal to readily consume seed heads in large quantities
 - ⇒ With the right timing fire could be an effective tool, however, grasses may not be hot enough to fully kill plant. A flamer could be used for individual plants. Air quality concerns will most likely limit the application of this control method
- Biological
 - ⇒ Thistle head weevil (*Rhinocyllus conicus*) has been introduced and is established in much of the northwestern and north central United States
 - ⇒ The crown weevil (*Trichosirocalus horridus*) and thistle crown fly (*Cheilisia corydon*) are locally established
 - ⇒ The fungus musk thistle rust (*Puccinia carduorum*) may soon be approved
 - ⇒ All biological control agents have varied efficacy rates, especially in the southern Sierra foothills
- Chemical
 - ⇒ 2,4-D – Broadleaf selective herbicide. Not the most effective treatment, but is inexpensive. May require repeat applications. Apply postemergence at rosette stage
 - ⇒ Aminopyralid (Milestone) – Apply preemergence in winter to early spring. Apply postemergence in spring up to flower bud stage. Should be applied with 2,4-D if applied very late in the season. Aminopyralid is a highly effective, broadleaf selective, thistle control treatment
 - ⇒ Clopyralid (Transline) – Broadleaf selective herbicide. Apply postemergence in spring, up to flower bud stage.
 - ⇒ Dicamba – Apply postemergence to rapidly growing plants. Broadleaf selective herbicide, often combined with other active ingredients
 - ⇒ Fluroxypyr and Triclopyr – broadleaf selective and safe on most grasses. Both are used for postemergent application
 - ⇒ Glyphosate (Roundup) – Apply postemergence. Non-selective herbicide; may require multiple applications
 - ⇒ Chlorsulfuron (Telar) – Apply postemergence. Mixed selectivity, but generally

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safe on grasses.

- ⇒ Imazapyr – Non-selective herbicide. Apply pre- or post-emergence
- ⇒ Sulfometuron (Oust) – Apply preemergence or early post-emergence. Fairly safe on perennial grasses
- ⇒ Hexazinone (Velpar) – Apply preemergence or postemergence. May injure trees or shrubs

Resources for further information:

http://www.cal-ipc.org/ip/management/plant_profiles/index.php

<http://www.cdfa.ca.gov/plant/ipc/weedinfo/carduus.htm>

DiTomaso, J.M., G.B. Kyser et al. 2013. Weed Control in Natural Areas in the Western United States. Weed Research and Information Center, University of California. 544 p.

DiTomaso, J.M. and E.A. Healy. 2007. Weeds of California and Other Western States. Regents of the University of California Agriculture and Natural Resources. 2 Volume set. 1808 p.

DiTomaso, J.M. 2013. Weed Pest Identification and Monitoring Cards. Regents of the University of California Agriculture and Natural Resources. Publication # UC3541

Disclaimer: Discussion of research findings necessitates using trade names. This does not constitute product endorsement, nor does it suggest products not listed would not be suitable for use. Some research results included involve use of chemicals which are currently registered for use, or may involve use which would be considered out of label. These results are reported but are not a recommendation from the University of California for use. Consult the label and use it as the basis of all recommendations.

POULTRY PRODUCTION RESOURCES AVAILABLE THROUGH UC COOPERATIVE EXTENSION

UC Cooperative Extension has recently hired a number of poultry experts and they have put together a very informative and helpful website. At their website you can find a list of people, along with their areas of expertise and contact information. They have also been compiling a list of veterinarians who treat poultry at their practices; the vets are listed by County. The poultry center has also been hard at work putting together a quarterly newsletter and establishing important research to assist backyard poultry enthusiasts. For more information visit their website at: <http://ucanr.edu/sites/poultry>.



ASK THE ADVISOR

Do southern San Joaquin valley residents need to purchase endophyte-free tall fescue for their irrigated pastures?

The short answer is yes. The explanation is a bit more lengthy. First, not everyone chooses to use tall fescue as a forage species in their irrigated pasture. During our hot, dry summers this cool season grass uses a lot of water and it can be difficult to maintain a healthy stand. I frequently recommend that people choose a bermuda/winter rye seasonal rotation and then include some clover in their seed mix. This requires irrigated pasture owners to mow their pasture and plant winter rye seed every year, and this option is not favored by everyone. Some choose to use tall fescue because it stays green and grows almost year round in our relatively mild climate. Its growth will slow in the winter during cold spells, and extended exposure to freezing temperatures will cause it to go dormant until soil temperatures rise to about 50° F, but for the most part this grass will provide green forage year round in an irrigated pasture setting.

Anyone choosing to plant this grass in their irrigated pasture, regardless of local climate conditions, should plant endophyte-free fescue. Endophytes are a fungus that live in tall fescue and also in perennial ryegrass. The relationship between the endophytes and the grass is mutually beneficial. The grass provides a place for the fungus to live, and the fungus produces alkaloids when the plant is stressed which helps the plant defend against insects, disease, and grazing. The grass is stressed when conditions are either too wet or too dry. While we're not likely to experience conditions that are too wet very often here in the southern San Joaquin valley, we often experience conditions that are very dry. The endophytes produce a number of different types of alkaloid toxins, but the primary toxin that affects grazing animals is called ergovaline. While ergovaline is always present in an infected plant, more ergovaline is produced when the plant is stressed. In perennial ryegrass, the process is essentially the same, but the fungus is a different species and therefore produces different alkaloid toxins.

The livestock disorder caused by ergovaline in tall fescue is called fescue toxicosis and is characterized by: 1) reduced feed intake; 2) decreased weight gain; 3) lower milk production; 4) higher respiration rate; 5) elevated body temperature; 6) rough hair coat; 7) more time spent in water and/or shade; 8) less time spent grazing; 9) low blood serum prolactin concentrations; 10) excessive salivation; and 11) low reproductive performance. Ergovaline is a vasoconstrictor, which means it restricts blood flow. Specifically, blood flow to extremities is restricted. In cold weather this can cause frostbite is-

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sues, and in hot weather, animals become overheated quickly and easily. Ergovaline has been shown to affect cattle, sheep, deer, and horses. In horses, the primary effect is seen in mares, especially pregnant mares, who show a significant increase in reproductive difficulties including increased foaling difficulties, poor milk production, reduced foal survival, and reduced mare survival.

In perennial ryegrass the primary toxin is lolitrem B, and the condition it causes is called ryegrass staggers. Lolitrem B and other lolitrem alkaloids are tremorgens, which means they cause muscle weakness, tremors, and spasms. Usually affected animals don't show clinical signs until they are excited or stressed and they try to run. Running animals can reveal difficulties such as trembling, severe incoordination, and falling.

In order for the alkaloids to cause symptoms in animals they must exceed threshold levels in the animals' total diet. These levels are different from species to species and they are also dependent on the toxin, ergovaline threshold levels are different from lolitrem B threshold levels. It is important to note, while alkaloid levels might be high in the tall fescue, if other forage is available the total alkaloid levels in the animals' diet may or may not exceed threshold levels.

The best way to ensure that alkaloid toxins are not present in your tall fescue pasture grass is to buy only endophyte-free tall fescue seed. Be sure that the seed has been lab tested and is certified endophyte-free. One thing to keep in mind is that endophyte infected tall fescue is hardier and has greater survivability under stressful growing conditions. That means that endophyte-free fescue is more sensitive to poorly managed grazing, stressful growing conditions, and attacks from plant diseases and pests. An endophyte-free tall fescue pasture requires more careful attention to management than an endophyte-infected pasture or a Bermuda/winter rye pasture.

Researchers have recognized the importance of endophytes in enhancing plant performance and have looked for ways to insert novel endophyte varieties that do not produce alkaloid toxins that affect grazing animals, but do provide the disease and pest resistance valued in endophyte infected fescue. They have been successful and some of this seed may be commercially available.

If you are concerned about endophytes in your tall fescue irrigated pasture, you can have submit samples to the Endophyte Service Laboratory in Corvallis, OR. To sample your pasture, take grass plants from at least 20 locations. Air dry the grass in paper bags, but do not place the grass in direct sunlight. If you are sampling in the summer, you

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might consider bringing the samples inside to allow the samples to dry more slowly. The rapidity of drying can affect the quality of the sample. Call 541-737-2872 to contact the laboratory. You can also contact Julie and she will provide you with their mailing address and answer any questions you may have. For more information you can visit the Oregon State Endophyte Lab webpage directly where a number of informative documents are available for free download. <http://oregonstate.edu/endophyte-lab/>

REPRODUCTION AND THE IMPACT OF BODY CONDITION SCORE

In late 2015 the Western Livestock Journal ran an article written by Clay Wright, a consultant to the Samuel Roberts Noble Foundation. In the article Wright addresses the importance of body condition score (BCS) when considering reproduction in cows. One of the major causes of poor reproductive performance in cows is a low BCS. BCS is a useful tool to evaluate the nutritional status of an animal. In livestock, a scale of 1 to 9 is often used, where 1 represents an animal so skinny they are near death and 9 represents an animal so fat they have trouble walking. An ideal BCS for a cow is between a 5 and a 6. You can access a visual guide to BCS scoring in cattle here: <http://beef.unl.edu/learning/condition1b.shtml>. It is important to note that there are other potential causes for poor reproductive performance and it the most effective way to address these issues is to have a good working relationship with your veterinarian.

The article discusses two scientific trials. In the first trial, cows that calved at BCS 4 weren't cycling 80 days post-calving. For a cow to produce a calf every 365 days, she must re-breed, post-calving, within 80-85 days. In other words, that BCS 4 cow is not going to re-breed in a timely manner and she will most likely fall out of your calving schedule, or simply be open at pregnancy check time. The second trial showed that cows must achieve a BCS of 5 before they are able to rebreed successfully.

Weaning is a really great time to evaluate BCS in your cowherd because that's when the nutritional requirements of your cows are at their lowest. That means it's a great time to provide additional nutrition because cows will gain more easily. Evaluating BCS at weaning also provides ample time to make adjustments in forage availability and management to help you cowherd achieve a BCS 5.5 by calving time next year.

A wise old cowman once said, "You can't starve profit out of a cow". Looks like he had it figured out.

EBEEF ONLINE RESOURCES AVAILABLE

A number of informative fact sheets are available online at <http://www.ebeef.org>. eBeef is a part of eXtension which is a nationwide network of extension personnel. By accessing eXtension and related resources you can access expertise from across the nation. A list of factsheets currently available regarding beef production is provided below. If any of you do not have access to the internet, but are interested in anything printed in this newsletter, please feel free to call Julie and ask for a paper copy.

Beef Cattle Selection

[Value of Collecting Phenotypes](#)

[The Random Shuffle of Genes: Putting the E in EPD](#)

[EPD Basics and Definitions](#)

[Beef Sire Selection Recommendations](#)

[Beef Cattle Economic Selection Indices](#)

[Decreasing Generation Interval to Increase Genetic Progress](#)

[Genetic Correlations and Antagonisms](#)

[Economically Relevant Traits](#)

Use of DNA Information

[How To Get Started With DNA Testing](#)

[DNA Sample Collection](#)

[How DNA Testing Will Affect the Accuracy of EPD Information](#)

[Recent Developments In Genetic Evaluations and Genomic Testing](#)

[Initial Genome-Wide Association Study of Feed Intake Related Traits in Beef Cattle](#)

[Genetic Markers of Bovine Respiratory Disease Complex \(BRDC\) Susceptibility](#)

[Genetic Practices to Improve Beef Cattle Reproduction](#)

[Commercial Replacement Heifer Selection](#)

[Mating Systems in Commercial Beef Cattle Operations](#)

Simple (single gene) Traits

[Color Patterns in Crossbred Beef Cattle](#)

[Genetic Defects](#)

[Managing Genetic Defects](#)

[The Genetics of Horned, Polled and Scurred Cattle](#)

New Technologies

[What is Gene Editing?](#)



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