



## MEDUSAHEAD ON RANGELANDS

### Did You Know...

There is a new digital flip book about beef :  
Beef 101—How beef gets from the farm to your dinner table.  
Check it out at [calbeef.org](http://calbeef.org)

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Medusahead has been invading our rangelands for years. The Natural Resource Conservation Service (NRCS) has photo documentation from the early 1980's with large stands of Medusahead on the east side of the county. Medusahead can also be found in the Livermore area but until this spring I have never seen it on the west side. It is a very invasive grass that can potentially reduce grazing capacity by at least 50%. Early detection and control can help eradicate it on a ranch. Here I summarize the research projects that my colleagues and I have conducted to date. We are continuing to research management practices that are cost-effective and practical with the hope that we can find a combination of practices that will work.

**Controlled Burn.** Fire is the best option for controlling Medusahead. Since it is a late season grass, our desirable grasses have already set seed and the seeds are on the surface of the ground, ready to germinate in the fall, while Medusahead is still actively growing and green. A quick moving grass fire can control Medusahead while not harming the seeds that have already dropped. Timing for a controlled burn typically should be early to mid May, after the desirable grasses have started to turn brown and drop seeds and while Medusahead is still green and has not dropped seeds. Obtaining burn permits may be difficult.

**Targeted Grazing.** Medusahead is has a short window of opportunity where grazing can have an impact. Typically in our area that window falls from April 15<sup>th</sup> to May 1<sup>st</sup> and corresponds to the period in development just before seed heads emerge. After the seed heads emerge, livestock typically will not graze it. Management practices that can increase animal concentration in areas with high Medusahead can all work. We have created small pastures where we can increase the stocking density to 0.8 AUM/acre (an AUM is a 1000 lb animal for a

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

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month), effectively creating pressure so all plants are grazed equally. Using 125lb supplement tubs, we created localized concentration areas and saw an effect up to about 50 yards radius from the supplement tub. Using this method, the supplement tub would have to be moved from one patch of Medusahead to the next to see large scale results.

**Herbicide.** Since Roundup is non-selective, we used it at three different timing levels to find a combination where we can allow for the longest grazing period and still control Medusahead. Our late spring (early April) timing accomplished this. Recently Milestone has been used early in the year to selectively control Medusahead and broadleaves, especially Yellow Starthistle. Timing is early fall and the higher the rate of Milestone applied, the better control was found to be, with roughly 89% control at 14 oz/acre compared to 59% control at 7 oz/acre. However, at that level the label states “Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per annual growing season; however, not more than 50% of an acre may be treated at that rate.” So in addition to the cost of treatment, the label does not allow more than small patches to be treated at this high rate annually.

**Mechanical.** Mowing is another option and will allow for a three week window of opportunity, a week longer than grazing. We had successful mowing plots in the Dunnigan Hills area and saw a substantial decrease in Medusahead along with an increase in filaree, rose clover and annual rye grass, desirable forages. Before mowing consider the amount and size of rocks in the area.

**Fertilizer.** One of our more recent projects has been to look at how fertilizing with nitrogen can change forage composition. In a drought year, we saw roughly 50% decrease in Medusahead while annual rye grass and bur clover increased. This year, we have added to the project, with a fall and spring treatment timing as well as two different rates of nitrogen. Results are promising so far that we should see a decrease in Medusahead in the spring fertilized plots, regardless of rate. These plots are grazed, and the reduction is due in part to competition since more desirable forages are using up the soil moisture, and by attracting livestock to the fertilized area. We are analyzing the percent crude protein between all of the plots. Our thought is that the extra nitrogen is increasing the crude protein in all of the forages and making Medusahead more palatable at the critical period of grazing, right before it develops a seed head.

If you have Medusahead on your ranch, especially if you find a new infestation, it is important to try a management practice that can help you reduce it and hopefully eradicate it before it becomes well established.



# COPPER DEFICIENCY

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## Description and Cause

Copper deficiency in beef cattle has been recognized more commonly in California. Copper deficiency causes significant economic losses where it occurs. Copper deficiency in cattle is complicated because it can be the result of:

- very low copper in the diet—a primary copper deficiency, or interference with copper absorption in the animal due to molybdenum and/or sulfates in the food or water—a secondary copper deficiency.

Regardless of the reason for the copper deficiency, the problems exhibited by the animals are the same. Some of the common symptoms seen in cattle with copper deficiency include:

- diarrhea,
- unthrifty appearance,
- poor weight gains,
- light hair coats (angus are grey, Herefords are yellow),
- swollen, painful joints,
- broken bones,
- rear leg weakness or paralysis in calves,
- infertility,
- anemia

and decreased resistance to disease.

The problems seen will vary from herd to herd and are not easily predictable. However, when copper deficiency does occur, it invariably causes losses in production, health, and profits.

The most commonly observed results of copper deficiency in cattle are diarrhea and poor weight gains, particularly in calves. The diarrhea may be easy to see when it is constant and profuse; however, it may only be noticed as soiling of the back of the hind legs and tail. Signs of diarrhea and/or weight loss are not specific for copper deficiency and could be caused by parasites, selenium deficiency, [BVD](#) virus, or a number of other conditions. The other signs of copper deficiency (broken bones, infertility, anemia, etc.) that can occur in cattle may be subtle or occur only as the deficiency worsens. The fact that copper deficiency lowers the immune response and can make the cattle more susceptible to disease and less responsive to vaccines is of particular importance to the health of the herd.

## Dietary Requirements for Copper

The diet of cattle (pasture, range, hay, etc) should contain about 4-10 parts per million (ppm) of copper to supply the needs of cattle. Less than this amount results in a primary copper deficiency; however, if excess molybdenum and/or sulfates are present in the feed or water there can be marked interference with copper utilization by the cattle and copper deficiency lowers will result. Cattle will usually perform normally when the copper to molybdenum ratio is from 5:1 to 10:1 in the diet. When the copper to molybdenum ratio falls to 2:1 or less, one can expect severe interference with copper

utilization and a resulting copper deficiency to occur. While molybdenum and sulfates are the most common interfering substances in cattle's diets, other situations can drastically interfere with copper nutrition and these include:

- soil ingestion due to overgrazing,
  - excess cadmium,
  - excess zinc,
- and excess calcium, particularly as limestone.

### **Testing for Copper Status**

It is easy to see that copper nutrition in cattle can be complicated by a number of factors. While it is possible to test feed, soil, and water for all various minerals mentioned above, it is more practical to test the cattle to determine their copper status and make any necessary changes based on those findings.

The University of California's Veterinary Diagnostic Laboratory and other UC Laboratories are available for routine testing of animal and feed samples for copper, as well as a number of other nutrients. Your veterinarian can test animals within your herd for copper status using serum samples (serum is the straw colored fluid in blood left when red blood cells are removed). If the serum copper concentration is below 0.5 ppm in your cattle, it is diagnostic of a copper deficiency. Screening the herd with serum copper analysis is quick and inexpensive, however, it is primarily of value to identify advanced deficiency situations.

Copper metabolism is complicated by the fact that most of the copper in the body is stored in the liver and it is the liver copper level that gives the true reflection of the copper status of the animal. The serum copper concentration begins to drop only after the liver copper reaches very low levels. That is why serum copper is a good screening tool; however it is not a good measurement for marginal deficiencies or for monitoring the cow herd after supplementation with copper begins. On a practical level this means that liver samples from a few cows for copper analysis is necessary for monitoring the effectiveness of copper supplementation. This is important for two reasons:

- to be sure that the copper supplementation is solving the deficiency, and because excess copper is extremely toxic to cattle, to be sure that excess copper supplementation is not occurring.

Liver samples from cattle can be obtained by two common methods:

- when normal animals are slaughtered a small piece (3 ounces) of liver can be saved and frozen (indefinitely) until analyzed, and your veterinarian can take liver biopsy samples from live cattle (usually 4-7 animals are sufficient) and these can be analyzed.

Liver biopsy can place animals at increased risk of [Redwater](#) and your veterinarian will usually administer penicillin after the liver biopsy procedure.

### **Prevention**

Copper deficiency can be managed by supplementation of the cattle by a variety of methods. Injectable copper glycinate has been used for many years to treat and prevent copper deficiency. Recently, this injectable product (Moly-Cu -Schering-Plough) was removed from the market for manufacturing reasons and while it is still legal to use, it is not known when or if this injectable product will

be available again. This copper injection product provided adequate copper supplementation for six months in most cases.

Copper can also be added to salt-mineral mixes to aid in supplementing the cattle. With diagnosed copper deficiency, these mixes are usually formulated to contain 0.2% to 0.5% copper, with the higher levels reserved for severe deficiencies. The above levels of copper in salt-mineral mixes assumes intakes of about one ounce of salt-mineral mixture per cow per day to meet the cows' copper requirements.

Also, copper can be added to total rations via a premix or can be added to molasses-based supplements to meet the copper requirements for the cattle. A relatively new method of copper supplement is the copper oxide bolus (Copasure -Schering-Plough) which is given orally and provides supplementation for up to 12 months. This product works very well; however, it has the disadvantage of having to be given via balling gun and the capsule is water soluble, so that it will melt if rained on. Whatever the method of supplementation it is extremely important to remember that while a little copper may be good, too much copper can be extremely toxic.

### **Copper Toxicity**

All of the methods mentioned above can provide excellent supplementation for cattle. However, sheep are much more sensitive to copper toxicity than are cattle and if sheep are allowed access to copper supplements formulated for cattle in most circumstances the sheep will experience significant death losses. When copper is fed in excess of requirements it tends to accumulate in the liver. With minimal stress, the stored copper can cause death in cattle or sheep within a few hours to a few days. As the excess copper being fed accumulates in the liver there are no outward signs in the animals and death can occur at any time. Treatment of copper toxicity is invariably unsuccessful. Therefore, it is extremely important for you and your veterinarian to monitor any copper supplementation program with liver samples on at least a yearly basis.

Copper deficiency occurs commonly in California and new analytical methods make diagnosis and control much easier. Working with your veterinarian and UC livestock advisors prevention of both copper deficiency and the possibility of copper toxicity is relatively straightforward even though the metabolism of copper in cattle can be very complicated.

## **FORAGE PRODUCTION**

This past fall had a great start with fall rains. Unfortunately we had another year of substantially drier than normal winter. "Peak Standing Crop", when the annual grasses have grown as much as they will and have developed seeds, occurred early this year, by almost a month. The dry conditions, warm weather, and wind all triggered the annuals to complete their life cycle early, and consequently made most of you ship cattle early as well. We have established locations in both counties to document forage production to develop a good local base of information. This information can be used many ways, but probably the one that happens all too often lately is to provide data to Farm Services Agency on drought conditions. Below is the range in pounds per acre (lbs/acre) of forage production for the West Side and East Side, as well as how this year relates to what is considered normal in the Soil Survey, and how this year relates to the past seven years we have been clipping.

Location	Range for 2013	Low and High % of Normal (NRCS Soil Survey)	Typical Range
West Side	153—2530 lbs/acre	7% to 115%	20% to 50%
East Side	564—2765 lbs/acre	30% to 150%	50% to 75%



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# Livestock Lines

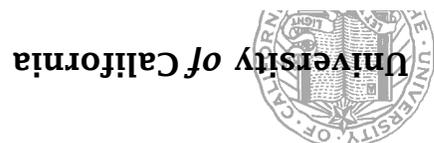
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