Use Your Mineral Smarts

If your budget for cow minerals doesn’t stretch year-round, at least make sure your females get what they need that last trimester of pregnancy. "We need to focus the most on mineral nutrition the last trimester of pregnancy and the first 100 days following calving when cows are re-breeding," says John Arthington, University of Florida animal scientist. "That includes both the quality of the mineral nutrition as well as the assurance they are eating the mineral in the proper amount." He explains, "Copper (Cu) and zinc (Zn) are both excreted from the body during stress, and calving is very stressful. Cows need stores in their tissues to replenish those lost in calving. They are also putting minerals in the calf through fetal growth."

Montana Extension beef cattle specialist John Paterson agrees. "We worked with a set of cows at Montana State Prison and did liver biopsies on them. We monitored how their mineral status changed over a 12-month period, primarily with copper," he explains. "The data showed the animals really started losing copper from the liver that last trimester. It makes sense. They were sending it over to the fetus." He adds, "It looked to us like they were building zinc levels in the liver before calving, but those declined after calving. Zinc is necessary to repair tissue, and calving is an insult to the cow’s body." Paterson says the levels of macrominerals, particularly calcium, phosphorus and magnesium (Mg), also need to be emphasized.

Ranchers are usually feeding hay the last trimester of pregnancy," he explains. "In drouthry parts of the country it is usually barley, wheat or oat hay. These annuals have really high levels of potassium (K) and low levels of calcium and magnesium. Grass tetany is caused by a deficiency of magnesium in the diet. I think that's caused by an excess of potassium." Paterson notes that on winter range, cattle don’t tend to have problems with tetany. However, when winter range is gone and spring growth is lush and green, "you better have the magnesium out there," he says. The good news is, at times, producers can safely cut their mineral budget by letting their cows get the minerals they need from their feed supplement.

"Many producers over-supplement minerals to cows during the winter supplementation period," Arthington explains. "Almost every commercial winter energy and protein supplement contains a fortified macro- and trace-mineral pack. So why feed them extra free-choice minerals?" If cows’ mineral needs are being met that last trimester of pregnancy, either from their feed or mineral supplement, chances are their calves benefit from it, too. "We did a small study and divided cows into three groups," Paterson elaborates. "One group got no minerals the last third of pregnancy, the other got organic minerals and the third group got inorganic minerals. We didn't have enough numbers [for it to be statistically relevant], so what I have is my opinion. It looks like there was a case or two less of calf scours in the mineral groups."

Arthington says it makes sense that selenium, supplied to the cow in the last trimester of pregnancy, should have a positive effect on calf health. "It appears
selenium has a nice impact on the ability of the cow to expel her placenta, it has a nice impact on the formation of quality colostrum, it is linked to decreased bacterial counts in milk, and a deficiency of selenium is linked to white muscle disease." It is important to make sure cows get the minerals they need during the last part of pregnancy, but also to give newborn calves a 2-cc injection of Bo-Se,™ a selenium-vitamin E injectable by Schering Animal Health. We have seen improved health and survivability in calves and a lower incidence of scours.

As important as minerals are, though, Paterson says there are two areas that are even more vital — overall nutrition and a thorough vaccination program. "Do you have the quantity needed, the daily intake of protein and energy? Are you maintaining a body condition score (BCS) of a 5 or 6? If you aren't, you have bigger problems than minerals." He shares that in a University of Idaho study, one group of cows got 50% of their required protein while the other group got their full required amount of protein. Ten percent of the calves in the 50%-protein group had weak calf syndrome. "That is striking," he says. He also emphasizes, "It is so critical to work with your local veterinarian to make sure you have a good vaccination program. The vaccination titer is better with a good mineral program. Both of these have to go together."

This excerpt was taken from an article by Becky Mills found in the Angus Journal. For a complete copy go to: http://www.mtbeefnetwork.org/article/health/mineral.html.

Cattle News

Signs of Impending Calving in Cows or Heifers

As the calving season approaches, cows will show typical signs that will indicate parturition is imminent. Changes that are gradually seen are udder development, or making bag, and the relaxation and swelling of the vulva or springing. These indicate the cow is due to calve in the near future. There is much difference between individuals in the development of these signs and certainly age is a factor. The first calf heifer, particularly in the milking breeds, develops udder for a very long time, sometimes for two or three months before parturition. The springing can be highly variable too. Most people notice that Brahman influence cattle seem to spring much more than does a Holstein.

Typically, in the immediate 2 weeks preceding calving, springing becomes more evident, the udder is filling, and one of the things that might be seen is the loss of the cervical plug. This is a very thick tenacious, mucous material hanging from the vulva. It may be seen pooling behind the cow when she is lying down. Some people mistakenly think this happens immediately before calving, but in fact this can be seen weeks before parturition and therefore is only another sign that the calving season is here.

The immediate signs that usually occur within 24 hours of calving would be relaxation of the pelvic ligaments and strutting of the teats. These can be fairly dependable for the owner that watches his cows several times a day during the calving season. The casual observer or even the veterinarian who is knowledgeable of the signs but sees the herd infrequently cannot accurately predict calving time from these signs. The relaxation of the pelvic ligaments really cannot be observed in fat cows, (body condition score 7 or greater). However, relaxation of the ligaments can be seen very clearly in thin or moderate body condition cows and can be a clue of parturition within the next 12 - 24 hours. These changes are signs the producer or herdsman can use to more closely pinpoint calving time. Strutting of the teats is not very dependable. Some heavy milking cows will have strutting of the teats as much as two or three days before calving and on the other hand, a thin poor milking cow may calve without strutting of the teats. Another thing that might be seen in the immediate 12 hours before calving would be variable behavior such as a cow that does not come up to eat, or a cow that isolates herself into a particular corner of the pasture. However, most of them have few behavioral changes until the parturition process starts.

By MSU Extension Resource Area Experts

Experimental E. coli Vaccine

*Escherichia coli* O157:H7 is one of several food-born pathogens which may be found in beef. E. coli O157:H7 is associated with hemorrhagic colitis. Intensive research by universities targeting elimination or reduction of fecal O157:H7 shedding in cattle has been conducted for the past ten years. The Federal Register (2002) reported that five multistate studies showed the apparent prevalence in breeding herds containing one or more animals infected with E. coli O157:H7 were 24%, 61%, 75%, 87% and 100%. In addition, three other multi-state studies reported the apparent prevalence in feedlots containing one or more cattle infected with E. coli O157:H7 was 63%, 100% and 100%. Similarly, Smith, et al. (2001) reported that the fecal prevalence of E. coli O157:H7 in fed cattle was 23%.

Post-harvest interventions in the...
packing plants have dealt with controlling food borne pathogens in multiple hurdle approaches. In order to reduce pathogen contamination in primarily ground beef, recent work has focused more on pre-harvest methods to reduce the incidence of E. coli O157:H7. The objectives of this study were to determine if an experimental E. coli O157:H7 vaccine given to gestating beef cows would result in transferring E. coli antibodies to the newborn calf via colostrum.

The experiment was conducted at the USDAARS- LARRL Research Station at Miles City (Ft. Keogh), Mont. One hundred and thirty seven gestating beef cows in the last trimester of pregnancy were used for this study. Cows were weighed and randomly assigned to the two treatments (Control vs. Vaccinated with E. coli) approximately 30 days prior to the start of expected calving. Seventy-one of the gestating cows were vaccinated with the experimental vaccine, (developed by Fort Dodge Animal Health Laboratories) which was designed to prevent the attachment of E. coli O157:H7 to the intestinal wall and then co-mingled with 66 non-vaccinated control cows. Cows remained in calving pens for the first 15 days after parturition and then were moved to native range pastures.

The initial antibody titer (titer: a measurement of the strength or concentration of a substance) levels were similar for cows at time of vaccination, but when sampled at approximately 14 days after parturition the E. coli O157:H7 vaccinated cows had titers which were significantly higher than the control cows. The initial titer levels of the calves, which were collected within 14 days of parturition, showed a ten fold difference (P less than 0.001) between treatments (135 vs. 1485 for Control calves vs. calves which suckled vaccinated cows respectively). Titer levels at branding (~60 d) showed a slight decrease in titer levels, but calves from vaccinated cows were still seven times higher (P less than 0.001) than the control calves.

Methods to reduce the shedding of E. coli O157: H7 would be useful in controlling the potential contamination of meat. Results of this experiment showed that vaccinating the gestating cow with an experimental vaccine against Escherichia coli O157:H7 resulted in increased antibody titers in both the cow and her calf.

By Travis Standley, Extension Agent, Stillwater County

Gardening Update

Register Now! Classes Start in February!

The Montana State University Extension Master Gardener program has undergone some changes for 2010 to better serve both beginning and experienced gardeners throughout Montana. Previously, the Master Gardener designation.

"As an Extension agent in Silver Bow County for the last two seasons, I taught the previous Master Gardener curriculum and found that many people in the class wanted to learn basic gardening, while others were much more advanced," said Toby Day, MSU Extension horticulture associate, who oversees the statewide Extension Master Gardener Program. "It made it difficult to keep it interesting for all those who signed up. While the previous Master Gardener program was successful, we've decided to go forward with a three-level Master Gardener program for Montana to better serve our clientele."

The three-level Master Gardener Program will start with an eight-week Level 1 (beginning level) course that will cover basic fertility and soils, plant growth and development, growing food and flowers, lawn installation and maintenance, irrigation, yard and garden maintenance, composting, introduction to integrated pest management, and how to select, install and maintain trees, shrubs and vines.

"This class is specifically designed for those who want to learn more about gardening, how to install a garden and how to take proper care of their property," Day said. "The class will run eight weeks, will have an open book test and will require 20 hours of a volunteer commitment."

The volunteer commitment component of the Master Gardener program is an opportunity for the Master Gardeners to give back to the community by answering horticulture questions at their local Extension office, staffing booths at fairs and farmers markets, writing articles and helping design, install and maintain community flower and vegetable gardens.

Following the Level 1 Extension Master Gardener class, the Level 2
Master Gardener program will be available in mid-March. The Level 2 class will be an advanced class for those that have basic experience and/or knowledge about gardening and want more technical training. It will require a closed-book test and 30 hours of volunteer commitment.

In the summer of 2011, the Level 3 Extension Master Gardener course will be offered as a three day intensive gardening and volunteer training offered on the campus of Montana State University. Details about the training are still being developed.

Every county Extension agent in Montana will have the opportunity to administer the Extension Master Gardener program. However, the individual county Extension agents will determine whether there is a need in their community. According to Day, it is up to the agents if they want to hold a Master Gardener class.

“The classes can take some time away from other Extension programs, so we have left it up to the agents to decide if, through their needs assessment, the class will benefit their program area,” said Day.

- **Gardening 101—Hot Springs, MT**
  The classes will begin Wednesday, February 3, 2010. Classes will continue for 9 consecutive weeks and will be held at the Tribal Senior Citizens Center, located in Hot Springs. Class will start at 6:30 pm and go until 8:30 pm.

- **Gardening 101—Pablo, MT**
  The classes will begin Thursday, February 4, 2010. Classes will continue for 9 consecutive weeks and will be held at the SKC Late Louie Caye Building, in Pablo. Class will start at 5:30 pm and go until 7:30 pm.

  The cost for all participants is $20 per student to cover program expenses. Additionally an excellent "MSU Master Gardener Handbook" is available for $35, and two companion guides, Tree and Shrub Selection and Tree and Shrub Grower’s Guide available for $10 each. **Registration deadline is Friday, January 29, 2010.** To register please call Rene Kittle, Flathead Reservation Extension at 675-2700 ext 1247, or send an email to flatheadreserv-ation@montana.edu. You may also contact John Halpop, Sanders County Extension at 827-6934.

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**Residual Herbicide Can Damage Sensitive Garden Plants**

This summer an unusually large number of plant samples were sent to the Schutter Diagnostic Lab at Montana State University with symptoms of herbicide damage in home gardens. The Extension offices which were reporting the suspected herbicide damage wanted confirmation. Of the specimens sent for diagnosis, tomatoes were most frequently seen, followed by potatoes. All of the samples exhibited symptoms consistent with damage caused by exposure to growth regulator herbicides called Pyridines. Symptoms of growth regulator injury can include leaf cupping or curling, stunted growth, and curling of the growing point, which can give the plant a fern-like appearance. Examples of these herbicides include aminopyralid (Milestone), clopyralid (Stinger), and picloram (Tordon). These herbicides provide excellent control of broadleaf weeds along roadides and in grass pastures used for grazing livestock or hay production and have low levels of toxicity in livestock forage.

In spite of label instructions restricting their use, manure and hay residues from grazing operations have periodically ended up in composts and natural fertilizers used in home gardens. Plant species known to be sensitive to this type of herbicide damage include beans, peas, tomatoes, potatoes, lettuce, spinach, sugar beets, carrots, dahlias, and some roses. In an effort to prevent using contaminated compost or manure a simple test may be used to verify the presence of herbicide. To perform this test plant a tomato or bean plant in a pot containing the suspect mixture to a pot containing a non-contaminated potting mix or soil. If the plants in the suspect pot begin to exhibit injury symptoms the compost or manure may be contaminated by herbicide. Samples of affected plants can be taken to the Flathead Reservation Extension Office (FREO). FREO will then mail your sample in for diagnostic testing and get the result back to you.

**Plant Injury Assessments**

- Compare plants grown in pots with suspect mixture to plants grown in non-contaminated potting mix or soil.
- Observe plants for symptoms of herbicide injury, such as poor seed germination, yellowing or dead leaves or shoots, or cupped or curled leaves.
- If there is apparent herbicidal activity, do not plant the intended crop (another option is to plant a grass crop in the garden).
Plants should be examined from emergence until they have three true leaves or more at weekly intervals.

Pesticides break down during the composting process; however, the rate of decomposition is dependent on many factors including soil type, temperature, aeration of the soil, and compaction. These factors impact microorganisms, extracellular decomposition, intracellular decomposition, adsorption, volatilization, and leaching. The existence of multiple primary and secondary factors makes it difficult to predict the accurate breakdown of certain pesticides in compost. The standard assumption by homeowners is that pesticides will break down to safe levels within 12 months. This is often incorrect.

By Melissa Graves, MSU Extension Weed and IPM Specialist, and Cecil Tharp, Pesticide Education Specialist, MSU

New Years Day Resolutions!

This year, while you’re setting your New Year’s resolutions, promise to keep the hottest nutritional resolution of the new year: Vitamin D. Long known as the “sunshine vitamin,” this nutrient has recently taken on an even healthier glow. The studies are stacking up and the experts are changing their recommendations. It turns out that many of us are vitamin D-deficient, especially in those with limited sun exposure (during winter and in northern states).

Why all the fuss about D? It turns out that strong bones and teeth are at the top of an impressive list of benefits from getting your daily dose of D. It is essential for every human cell and it also helps cells communicate with each other. Scientists now believe that D helps fight infection, slow muscle loss in aging, and prevent a host of serious health problems, including cancer, heart disease, diabetes, osteoarthritis, gum disease, and autoimmune disorders.

How much is enough? How much is too much?

CHILDREN: For youth, the answer to "how much" is now clear. In October 2008, the American Academy of Pediatrics doubled their recommendation: from 200 IUs (International Units: over the counter and prescription Vitamin D is measured and labeled in IUs) to 400 IUs per day. From birth through adolescence, all children who do not consume at least a quart of vitamin D-fortified formula or milk per day should take a supplement.

ADULTS: Most vitamin D experts believe that the current guidelines for adults (200 IUs to age 50, 400 IUs from 51 to 70, and 600 IUs for 71+) are probably far too low. The current consensus is that 1000-2000 IUs per day is a healthier goal and many expect this to be the recommended amount when future guidelines are released. While the upper limit of safe intake is currently set at 2000 IUs per day for adults, many vitamin D researchers are urging that this be raised as well.

Smart sun exposure

Vitamin D is called the sunshine vitamin because skin cells can make it from the sun’s ultraviolet rays. For fair-skinned people, the smart way to sun is sunscreen on the face - and direct exposure to arms, legs or torso for 10 to 15 minutes at least 2 to 3 times per week. People with darker skin, like American Indians and African Americans, need longer exposure. In winter months, the angle of the sun’s rays is too low to make vitamin D, so you need to get your D from other sources.

Smart food sources

Frankly, it is hard to get the currently recommended levels of vitamin D from food sources alone. The only significant sources are fish oils and fortified foods (milk and some yogurt, cheese, juice, and cereal). In the US, fluid milk is fortified with 100 IUs per 8-ounces, so drinking your 3-A-Day will provide 300 IUs. A 3-4 ounce serving of fish (such as salmon or tuna canned in oil) can add another 350 IUs or so - and a cup of ready-to-eat cereal can provide around 40 IUs.

Smart use of vitamin D supplements

As indicated by the numbers above, a vitamin D supplement is really the only realistic way to reach the higher levels suggested for adults. This is especially true in winter - when sun exposure is ineffective anywhere above the latitude of Atlanta, Georgia. Fortunately, vitamin D supplements (as 1000 IU capsules) are readily available, relatively inexpensive, and well absorbed. Vitamin D can be taken with or without food - alone or with a multi-vitamin/mineral supplement.

This article was written by the MSU Extension Service in Roosevelt County.
The Invisible Environment: Seasonal Affective Disorder (S.A.D.). The source of energy and life for the Earth is the Sun. Historically, humans lived in fishing-based societies, which required that people spend much of their lives out-of-doors. The change to a society where people spend as much as 90 percent or more of their lives indoors is relatively recent. The impacts of removing ourselves from natural light exposure are only now being seen. One such impact is that of Seasonal Affective Disorder (S.A.D.).

What Is Seasonal Affective Disorder?
Seasonal Affective Disorder is recognized as a disease that affects nearly 6 percent of the population in temperate zones. Other estimates suggest that another 14 percent of the population experiences a low-level, self-clinical, or non-diagnosable form of the disorder. Women account for 75 percent of diagnosed cases. Some of the possible symptoms include depressed mood, irritability, reduced visual acuity, tendency to overeat, and physical lethargy. Classic symptoms also include hypersomnia (sleeping a great deal) and a tendency to withdraw from elective social activities. S.A.D. is a specific type of clinical depression, and diagnosis based on patient symptoms and a history of recurring “winter blues” that disappears in the spring.

What Can Someone Do? As with most environmental health issues, all people are affected to some degree with light deprivation. Many people notice their moods turning “gray” to match the skies during extended overcast, winter days or the resurgence of energy they feel on sunny winter days. S.A.D. is diagnosed when symptoms are recurrent, persistent, and severe. For many individuals, prevention is better than treatment. From spring through autumn, spend time outdoors and, when appropriate and possible, without sunglasses. During winter, try to be outside and be exposed to morning light. Most people would benefit from changing cool white fluorescent lights to full spectrum bulbs indoors. Such bulbs can be found in some hardware and lighting fixture stores. Most people can feel a difference if the brightness of the lighting in a room is increased (usually 5 to 20 times higher than is standard). If individuals diagnosed with S.A.D., brightness is of greater importance than the spectrum exposure for treatment. When clinically diagnosed, there are treatments for S.A.D. The predominant method is the use of a very bright, full-spectrum light box. The therapy involves regular exposure of between 2,500 and 10,000 lux while the person is awake and reading or watching television. For individuals who believe S.A.D. may be a factor in their lives, a psychiatrist, physician, or psychologist may be able to confirm diagnosis and recommend appropriate treatment.


5 Smart Ways to Make MyPyramid Work for Your Family

1. Make half your grains whole. Nutrient-rich whole grains make a whole lot of nutrition sense - with extra fiber and delicious nutty flavors. In addition to breads and cereals, you can enjoy wide range of whole grains (many grown in Montana) as delicious sides dishes. Add a half-cup of whole grain pasta, barley, bulgur (cracked wheat), spelt, or kamut to your plate.

2. Vary vibrantly colored vegetables. To get the incredible nutrient benefits of vegetables, just keep two things in mind: variety and color. If you enjoy a wide variety of brightly colored veggies, you’ll get all the super nutrients you need from this group. Go for acorn squash, beets, broccoli, carrots, green beans, mushrooms, peas, spinach, sweet potatoes, tomatoes, and more!

3. Focus on the fantastic flavors of fruit. Fruits and vegetables have lots in common. They have similar nutrients, tasty flavors, and come fresh, frozen, canned, and dried. Variety and bright colors are also important when choosing fruit and 100% fruit juice. Sweeten your life - morning, noon, and night - with blueberries, grapes, grapefruit, melons, pineapple, dried plums, and more!

4. Go for plenty of calcium-rich foods. Calcium is a big problem for Americans. Most of us just aren’t getting enough, which puts our bones at risk. The solution is simple and delicious: Eat 3 nutrient-rich dairy foods every day, especially the low-fat and fat-free versions. Milk, cheese, and yogurt all have calcium plus more than 8 other essential nutrients - and they taste great.

5. Go lean with a variety of protein. Lean options from the meat and beans group give your body nutrition to lean on. Protein, iron, zinc, and B-vitamins help to build and maintain muscles, bones, blood, and skin. Variety is also important with this group. Lean beef, fish, chicken, turkey, pork, and lamb, as well as eggs, beans, lentils, nuts and seeds all provide key nutrients.
Riparian Lands and You!
By the Alberta Riparian Habitat Management Society

What is Riparian?
Riparian areas are the lands adjacent to streams, rivers, lakes and wetlands, where the vegetation and soils are strongly influenced by the presence of water. Although they make up only a small fraction of the land, they are among the most productive and valuable of all landscape types and have been the focus of conflicts between resource users.

What makes riparian areas different from the uplands?
Riparian areas are formed as the result of water, soil and vegetation interacting with one another.

Whether we call them floodplains, shorelines, green zones or riparian areas, their character begins with fine wet soils developed in them.

Vegetation in the riparian area is different from that of uplands:

- Riparian areas stay greener longer and produce more forage than uplands, partly due to soils and mostly due to an elevated water table. The type and abundance of vegetation is a tip-off to identifying riparian areas. Vegetation is different and it attracts livestock, wildlife and humans.
- Riparian areas are productive and can be reliable producers of forage, shelter, fish, wildlife and water. These areas are a buffer, an insurance policy especially useful to have when drought or flood occurs. They are part of a healthy, functioning landscape and form part of an extensive drainage basin within every watershed.

Can you find these words?
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T U L H A O B H E B H D O D E T E A I Y
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ANGLER BEAVER BOATING BULRUSH CATTAIL CATTLEDOG COTTONWOOD MUD FISH DRAGONFLY FROG HERON MEANDER MUSKRAT PELICAN PEOPLE SEDGE RECREATION RIPARIAN RIVERBANK SALAMANDER SHORELINE WATERSHED WETLAND WILDLIFE WILLOW
### January 2010

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Closed for Holiday

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### MSU’s Resource on the Flathead Indian Reservation—8

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Flathead Reservation Extension Office
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Pablo, MT 59855-0335

MSU Extension is an equal opportunity/affirmative action provider of educational outreach.
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