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Animal Health MATTERS Newsletter

Veterinary and Biomedical Sciences

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Animal Health MATTERS

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South Dakota State University

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Animal Health MATTERS



Vol. 11, Issue 2

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Head/Director's Message

David H. Zeman, DVM, PhD

Partnerships Matter

One of the secrets to the success of the SDSU Veterinary Science Department is that we have always been blessed with outstanding partners in the battle against animal diseases. Passionate partners work together diligently to solve animal health issues, to alleviate animal suffering, and to provide safe and wholesome food for society.

At the grass roots level we partner with animal owners. Every case we receive has an animal owner at the other end that is waiting for test results to aid them and their veterinarian in making important animal health decisions. We partner with the region's veterinary practitioners. The hometown DVM is in the best position to interpret test results and consult with the owner to determine the best course of action during an outbreak or surveillance situation. I may be biased by familiarity, but the Veterinarians in this region are the most dedicated and professional group I have ever been associated with. We also partner with the animal health products industry. These companies take scientific discoveries and develop products that treat or protect animal health, such as vaccines and diagnostic test kits. On campus we partner with the College of Agriculture and Biological

Sciences. As a land grant university, SDSU intimately understands the heritage of professional service to relevant industries and the vital role agriculture plays in everyone's life. We partner with government agencies as well, such as the SD Animal Industry Board, the USDA AVIC in Pierre, and the SD Secretary of Agriculture. All are dedicated to the task of assuring animal health and prosperity for the industry. Lastly, we work closely with professional societies that promote excellence in our disciplines, such as the American Association of Veterinary Laboratory Diagnosticians (AAVLD). AAVLD operates the oldest animal health accreditation program in the world, and the ADRDL is proud to have been continuously accredited since the 1970s. AAVLD has also partnered with the USDA National Veterinary Services Laboratories to create the National Animal Health Laboratory Network of which the ADRDL is a proud member.

With strong partners, the ADRDL will continue to thrive and be able to meet the needs of animal owners today and in the future. As always, it is a pleasure to serve our clients and our partners.

Diagnostic News - SDSU ADRDL

Bovine Lead Poisoning: May and June are Peak Months for Diagnosis

Dr. Russ Daly, SDSU

Lead poisoning continues to be the most frequently diagnosed toxicosis of cattle at the SDSU ADRDL. From fiscal years (July – June) 2003 through 2008 (as of June 6, 2008) a total of 67 cases of lead poisoning were confirmed through work at the ADRDL.

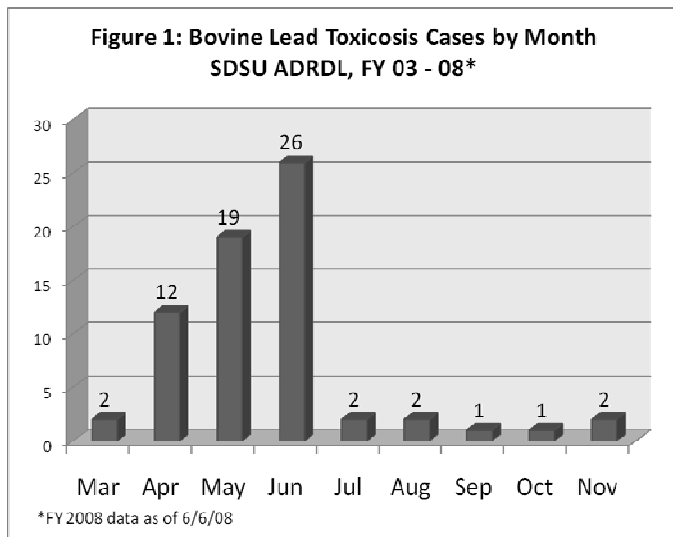
Many species of animals are susceptible to lead poisoning, including cattle, horses, dogs, and waterfowl. Due to their eating habits, and possibly some increased susceptibility, lead poisoning is diagnosed more frequently in cattle than other species. The acute lethal dose of lead in cattle is estimated at 400 – 600 mg/kg for calves and 600 –

800 mg/kg for adult cattle. Lower exposures (6-7 mg/kg/day), however, may result in toxicity signs over longer periods.

Lead toxicosis in cattle results from the animal's exposure to many different man-made products that contain lead. These individual sources include materials such as car or truck batteries, lead ammunition, discarded oil and grease from old machinery, and many older building materials that may include lead paint, window putty, linoleum, caulks and sealers, plumbing pipes, and solder. While lead has been excluded from many of these materials for many years, older

sources such as lead paint or oil from vehicles burning leaded fuel may still be present in trash or junk piles. Lead is quite stable in the environment; exposures have occurred even after lumber containing lead paint is burned and cattle ingest the ashes. Animals are often turned into areas that contain these trash piles to graze. Cattle will often selectively lick or otherwise ingest these materials, resulting in significant exposures. In a great number of cases, a specific source of lead is never identified.

Lead poisoning in cattle can certainly occur whenever there is exposure; however, diagnosis of lead toxicity tends to be very seasonal in South Dakota. (Figure 1) Over the period of FY 2003-08 (to date), 39% of lead toxicosis cases were diagnosed during the month of June, with an additional 28% diagnosed during the month of May. In South Dakota, this time frame coincides with turnout of cattle onto new grazing sources. During this period, the mean accession date for positive submissions was June 4; the median date May 31. Comparing calves to adult animals (>12 mo. of age), the median date for diagnosis in calves is May 31; for adults June 17.

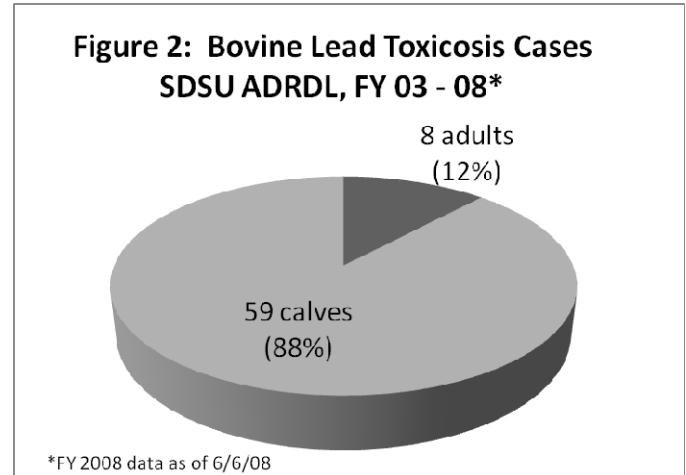


Acute lead toxicity occurs when a single exposure is sufficient to cause clinical signs and/or death, but chronic, or longer-term, exposure is not uncommon. Because absorption of lead from the digestive tract can occur over a long period of time, it is possible for clinical signs to emerge several days after the exposure.

Clinical signs of lead poisoning are dependent on the dose ingested and the size of the animal. Clinical signs result primarily from its action on the nervous system, but also on the digestive system. Early signs include mild incoordination, lack of appetite, muscle twitching, blindness, abdominal pain, and excess salivation. Signs may then progress to convulsions and death. In many cases, especially with calves, deaths on pasture with no prior observed signs may occur.

According to ADRDL data, calves are much more frequently diagnosed than are adult animals (Figure 2).

During the FY 03–08 time period, 88.0% (59/67) animals were less than 12 months old. The median age of diagnosed cases was 2.5 months (mean of 6.5 months). This probably reflects increased susceptibility on a weight basis, along with the age of calves upon pasture turnout.



The clinical signs of lead poisoning may be very similar to other causes of sudden death or neurologic signs. Calves found dead on pasture may be the result of blackleg or anthrax (although anthrax will more frequently affect adult cattle rather than calves). Anytime neurologic signs are noted in domestic animals in South Dakota, rabies needs to be on the list of differential diagnoses. Polioencephalomalacia results in neurologic signs and may stem from high sulfur in feed or water, or thiamine imbalances due to ration changes. *Histophilus somnus* and listeriosis are also causes of neurologic signs in cattle. Proper diagnosis by a veterinarian is critical to sort out lead poisoning from these other potential problems.

Diagnosis of lead poisoning in the live animal can be made by lab analysis of a whole blood (purple top tube) sample. Lead levels over 0.35 ppm are considered diagnostic for lead poisoning.

In the dead animal, lesions characteristic of lead poisoning usually are not present. Lead-containing material, such as fragments of lead plates from batteries, may be found in rumen or stomach contents if examined carefully. Samples of fresh kidney or liver submitted chilled should be submitted for analysis. Levels of 10 ppm in kidney or liver are considered diagnostic for lead poisoning.

Treatment of lead poisoning is challenging, due to the fact that antidotes are difficult to find, administration is not convenient, and responses are often less than rewarding. Calcium EDTA, which chelates lead for removal by the body, is the classic treatment. Administration of 110 mg/kg IV or SC divided 2 times a day for 3 days is recommended. Other adjunct treatments include administration of thiamine HCL (2-4 mg/kg 1 time a day SC) may help alleviate clinical signs. Oral administration of magnesium sulfate (400 mg/kg/day) may also help bind lead that may be present within the digestive tract.

Disposition of animals that have been exposed to lead raises some controversy and concern regarding the possible entry of lead-contaminated meat and milk into the food supply. While in the broader sense, these exposures would contribute to a miniscule amount of lead exposure to the general public, if a large herd is affected-- or if meat or milk from those animals is consumed by a small number of people--lead exposure could potentially be high enough to warrant a health concern. What should be done with animals that survive exposures to lead? Is there a way to know whether they are safe to enter the food supply?

Federally and in South Dakota, lead poisoning is not a reportable condition; meat or milk from cattle exposed to lead will only stay off the market if producers choose to delay marketing of the cattle (or if the animal becomes non-ambulatory before slaughter).

In a publication that describes a lead poisoning case in an Amish community in Minnesota, it was noted that the FDA recommended to the state health department that milk lead levels should be at or below 5 µg/L before it is consumed. The state of Michigan maintains that cattle should not enter the food supply if blood lead levels exceed 50 µg/L (.05 ppm), and milk at 10µg/L. Reports of the half-life of lead in the bovine body vary greatly because some animals may retain lead in the rumen for a greater length of time. It is suggested by various reports that 6 – 12 months or more are needed for blood levels to return to normal. Shorter half-lives tend to be found in calves and lactating females.

Although these potential exposures would pale in comparison to a child or other individual ingesting lead-paint chips, for example, people should avoid exposure to additional lead from any source, and producers should exercise due diligence to ensure these exposures do not occur.

References:

Oswieiler GD, Carson TL, Buck WB, et al. *Clinical and Diagnostic Veterinary Toxicology*, 3rd ed. Dubuque, IA: Kendall/Hunt Publishing, 1985:107-120.

Puls R. *Mineral levels in animal health*. 2nd ed. Clearbrook, BC, Canada: Sherpa International, 1994;147-149.

US Dept. of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, Division of Health Assessment and Consultation. Health Consultation: Emergency response to lead poisoning of cattle and potential human exposure, Bertha MN. Available at: <http://www.atsdr.cdc.gov/HAC/pha/BerthaMNFarm/BerthaFarmHC091807.pdf>. Accessed June 5, 2008.

Holiday hours:

July 4 – Independence Day
September 1 – Labor Day
October 13 – Native American Holiday

Water Suitability for Livestock

Dr. Regg Neiger, SDSU

Water quality and quantity are always important considerations for livestock production in South Dakota. Livestock performance and well-being can be adversely affected by poor water quality through reduced water intake and by the consumption of harmful substances. The most important water quality considerations include objectionable taste, odor, total dissolved solids, nitrates, sulfates, alkalinity, and hardness.

Three SDSU scientists have put together a very useful document titled “Interpretation of Water Analysis for Livestock Suitability”. The authors are Dave German of Water Resources Institute, Nancy Thiex of Olson Biochemistry Laboratories, and Cody Wright of the Department of Animal and Range Sciences. This publication is now available at the SDSU Cooperative Extension Service Publications website (<http://agbiopubs.sdstate.edu/>). The document will also be available on the internet pages of Water Resources Institute (http://wri.sdstate.edu/livestock_qw.cfm) and Olson Biochemistry Laboratories (<http://anserv.sdstate.edu/>).

The document covers many water quality aspects in detail; several of the highlights will be discussed here:

- **Total Dissolved Solids.** In the best case scenario, we prefer total dissolved solids (TDS) to be less than 1000 parts per million (ppm). At SDSU, water analyses for solids is performed by electrical conductivity, which is expressed in the units µmho/cm. These electrical units are roughly equal to ppm of TDS. TDS is also referred to as water “salinity”. The effects of high salinity depend on the degree of salinity and include decreased water intake, mild to severe diarrhea, or in severe cases, salt poisoning/water deprivation. Remember that in the summer as the stock dams evaporate, all the harmful agents mentioned here concentrate and become more harmful.
- **Nitrates.** The nitrate content of the water should be less than 100 ppm in most cases. A nitrate concentration of more than 300 ppm could cause nitrate poisoning in cattle, sheep, cattle, or horses.
- **Sulfates** are a problem in many South Dakota waters. Elevated levels cause diarrhea and an objectionable bitter taste. High sulfates in the water combined with sulfur in the feed can cause polyoencephalomalacia in cattle. Water sulfate concentrations should be less than 50 to 250 ppm depending on the species drinking the water.
- **Alkalinity and hardness.** The effect of alkaline, or “hard”, water on animals is hard to predict. A detailed and good discussion of the topic is present in the publication mentioned above.

Another water quality aspect not detailed in the livestock suitability document is that of the presence of blue green algae. Blue green algae in large numbers can cause toxicosis.

Normally these organisms flourish in the summer and they die off in the winter. Their presence under normal situations does not mean a poisoning will occur. The most common scenario in algae poisoning is when toxic blooms occur. This happens when the weather is sunny and warm, and the water is stagnant and contains high levels of nutrients (esp. phosphates). These organisms can be toxic while still suspended; however, when the blue green algae are stressed they will float to the surface of the water and form what is called a bloom. Then the wind will blow the floating algae to shore, which further concentrates the organisms. Poisoning usually occurs when this high concentration of algae in the water is consumed. Animals of all types are susceptible. Exposed animals can die in 24 hours or less. Sometimes they die within minutes. Blue green algae produce a variety of toxins. There are three main syndromes produced, two of which are caused by effects on the nervous system and one due to liver damage. When examining an animal suspected of algae poisoning, look for blue-green staining of hair and skin. Blue-green algae may be seen in the gastrointestinal tract. Lesions vary from none to gastrointestinal disturbance. When liver toxins are involved, the liver may be swollen and hemorrhagic. When sending in water for algae examination, send in a pint that has a large population of the algae and cool--do not freeze--the sample. Additionally, submitting 5 ml of water in 5 ml of 10 % formalin can help us identify the type of algae present.

If you wish to have a water sample analyzed for livestock suitability, you can send the sample directly to Olson Biochemistry Laboratories or ADRDL (Animal Disease Research and Diagnostic Laboratory) on the SDSU campus. Please submit at least 1 pint of water in a clean container. Please find below the addresses of the laboratories mentioned:

Oscar E. Olson Biochemistry Laboratory
South Dakota State University
ASC 133 Box 2170
Brookings, SD 57007
Phone: 605-688-6172

ADRDL-SDSU
Box 2175, North Campus Drive
Brookings, SD 57007-1396
Phone: 605-688-5171

If you have any questions on water quality for animals or other animal health issues please contact Dr. Regg Neiger, at 605-688-5171.

“Why can’t you just run it anyway?”

Dr. Tanya Graham, SDSU

Ever wondered why diagnostic labs can be so picky on what you submit and how you submit it? It’s because we can’t just take a test kit off the shelf and assume that it works. Our lab (and all AAVLD-accredited labs) must ensure that any new test kit or collection system is working correctly with our protocols. If a single reagent is different than our current test method, we must validate the “new” system/test/collection method. The 2004 Manual of Diagnostic Tests and Vaccines for Terrestrial Animals describes test validation as...“a step wise process which confirms truthfulness of the test in question and it helps establish client confidence in the services offered by a diagnostic lab. During the validation process, a test method is selected to find out how accurate and sensitive it is for the intended use (e.g. determination of the presence of an anthrax bug in blood samples from bison). The reagents, growth media, machines, techniques etc. needed for the test method are standardized before the method is evaluated to determine how consistent it is in providing accurate results irrespective of the severity of the disease in the animals. It is very important that the diagnostic labs validate test methods before using them to test client samples because using validated methods, labs can help clients identify animals / birds as positive or negative for a disease (or a condition) on a consistent basis.”

So what does this all of this mean? It means that we have to be picky—it ensures that you receive accurate and trustworthy results. We recently ran into a validation issue with the ProSampler BVD ear notch collection system. The manufacturer, Jenrik Ag, Scandia, Minnesota, has offered to provide tubes filled with 10% neutral buffered formalin for our clients that wish to send formalin-fixed ear notches to the laboratory. For more information contact them at Jenrik Ag, 21090 Olinda Trail North, Scandia, MN 55073; 877-251-2804 (toll free) or 651-204-9343.

Research News - SDSU Veterinary Science Department

Research Spotlight: Dr. Chris Chase

The bovine respiratory virus group consists of Dr Chris Chase; senior microbiologist Lyle Braun; graduate students Joel Teachout, Jessica Mediger and Scott Mark; and undergraduate students Sherif Halaweish, Suzanne Roth,

Anne Schafer and Sean O’Dell. The bovine respiratory group has been working on two projects with BVDV. One is studying the different immune responses between noncytopathic (NCP) and cytopathic (CP) BVDV. NCP

BVDV vaccine virus traffics to more immune tissues, particularly the lymphoid tissues in the gut and oral mucosa. We have also found that the NCP BVDV immune response is faster than the CP response. We continue to study these different strains to help devise better vaccine strategies.

The second project is a collaborative project with Dr. Julia Ridpath at the National Animal Disease Center in Ames. We are studying the role of white-tailed deer as reservoirs of

BVDV and their ability to transmit the virus to other deer and cattle. Using the two BVDV viruses isolated from cases of BVDV in deer that occurred in SD in 2003 we have been infecting white-tailed deer and have been able to produce persistently infected fawns. We are now working on the transmission studies, in hopes of understanding the role that deer could play in transmission of BVDV to other animals.

Extension News - SDSU ADRDL

State Veterinary Loan Repayment Programs – a Regional Review

Dr. Russ Daly, SDSU

Due to the recognition that rural areas are facing a declining number of veterinarians willing to live and practice in these areas, several states have implemented programs that reimburse student loan amounts for those veterinarians willing to practice in underserved areas as determined by the state. The goals of these programs are to ensure the animal populations and producers are served with veterinary care, but also to help ensure the public's well-being: veterinarians are often regarded as individuals that will be the first to detect or respond to a serious foreign animal disease or agroterrorism incident.

In 2003, the federal government addressed this issue by passing the National Veterinary Services Act. The Act, however, has not been implemented or funded. As a result, several states have taken it upon themselves to enact programs to alleviate shortages of veterinarians in rural areas. With current average student indebtedness exceeding \$100,000, these programs are being looked to as a means of enticing new veterinarians to locate in areas and practices other than urban companion-animal practices.

In **South Dakota**, beginning in 1992, the Board of Regents has been authorized by state law to establish a tuition assistance program for South Dakota residents who have been admitted to colleges of veterinary medicine. These awards are good for the difference between resident and non-resident tuition at the particular institution. Awardees are required to practice veterinary medicine in South Dakota within three years of graduation. The individual must maintain practice in the state for one year for every year they are awarded the tuition assistance, otherwise the corresponding amount must be repaid with interest.

In the 2008 South Dakota legislature, a bill was introduced (HB 1127) to establish and appropriate for a loan repayment program for veterinarians. The bill, which closely followed language from a bill passed by the North Dakota legislature (see below), would have provided for funds to repay student loans up to \$80,000 over four years for up to three individuals who contract to provide full-time food animal and large-animal veterinary services for a community

in South Dakota. The funds available would total up to \$15,000 for each of the first two years, and up to \$25,000 for each of the next two years. The bill would have directed the South Dakota Board of Veterinary Examiners to set criteria for eligibility for veterinarians and for communities in need of veterinary services. In the bill, preference would be given to communities of less than 5,000 population. The bill was referred to the House Agriculture and Natural Resources committee, where it was tabled by a vote of 7-4 on January 29.

North Dakota: In 2007, the North Dakota legislature approved their Veterinarian Loan Repayment Program. It provides for loan repayment funds totaling up to \$80,000 per individual for a four-year length of commitment, although the program also provides for two or three year commitments. The program is administered by the North Dakota Department of Health. Preference is given to individuals that will practice food animal medicine in communities less than 5,000 and/or in areas with large livestock numbers and relatively few veterinarians.

Nebraska: The Nebraska unicameral this past April passed the Food Supply Animal Veterinary Incentive Program Act. This will also provide loan repayment funds in the amount up to \$80,000 per individual for up to four veterinarians (also amounting to \$15,000 in each of the first two years, then \$25,000 per year for years three and four). The program is administered by the Nebraska Department of Agriculture, which has the authority to designate areas of the state that are considered to have a shortage of food supply veterinarians.

Wyoming: The 2008 Wyoming legislature passed an act creating the Veterinary Loan Repayment Program. The Wyoming Livestock Board is authorized to administer the program, and is currently (as of this writing), taking public comments on rule-making for the program. The Livestock Board is charged with developing a list of communities in need of food animal veterinary services. The law also requires that a total of 25% of the state funds be matched with other funds from sources such as counties, cities, veterinary clinics, state agencies, universities, laboratories, or veterinary associations. Funding is authorized for up to \$30,000 per individual per year for at least three years.

No introduced or passed legislation regarding veterinary loan repayment programs was found for Iowa, Minnesota, or Montana.

Other states that have recently implemented loan repayment programs for food animal veterinarians serving underserved areas include: Georgia, Kansas (student loans for 5 students up to \$20,000/year, which can be forgiven), Ohio, Louisiana, Maine (up to \$7500/year), Pennsylvania (mixed practice), Missouri (student loans for up to 6 students, maximum of \$80,000 total), and Washington.

Pieces and Parts

Thaler returns to roles as professor and swine specialist at SDSU.

Animal and Range Sciences department head Bob Thaler announced plans to return to his first professional passions as a professor of animal science and an extension swine specialist at South Dakota State University. He will leave his role as department head July 1. A national search will begin immediately to fill the position of department head, according to Gary Lemme, dean of the College of Agriculture and Biological Sciences.

Doug McFarland has been appointed interim department head. McFarland was named a distinguished professor in 2007. He has been a member of the SDSU Department of Animal and Range Sciences since 1986 and has led the department's efforts in muscle cell biology. He is the departmental liaison with the South Dakota poultry industry and coordinator of the animal and range science graduate program.

"Dr. Thaler has been an incredibly productive department head," Lemme said. "During his administrative tenure, the department has seen tremendous growth in undergraduate student enrollment. He has led the department in transforming research facilities and hiring eight faculty positions to better serve the needs of South Dakota."

During his tenure, the department developed a strategic plan to meet the diverse needs of South Dakota's livestock industry while becoming a national center of excellence in meat science and pre- and post weaning ruminant nutrition.

A native of South Dakota, Thaler received his Ph.D. at Kansas State University and master's and bachelor's degrees at South Dakota State University.

Extension Publication Spotlight:

1. [Interpretation of Water Analysis for Livestock Suitability \(C274\)](#). See discussion in the article, "Water Suitability for Livestock" above.
2. [Feeding Dairy Cows for Body Condition Score \(ExEx 4040\)](#). More so than body weight, a dairy cow's body condition score (BCS) dramatically affects milk production, reproduction, and overall health. This publication discusses these relationships, along with guidelines on feeding to achieve desired BCS, in light of current high feed costs. Scoring methods (a 1 to 5 scale is used in dairy cows) are described, along with pictures and descriptions.

3. [The South Dakota Fuel Ethanol Industry \(FS945\)](#). South Dakota has been a leader in ethanol production, and will likely continue to be for years to come. The 13 currently-operating ethanol plants in the state produce 8.5% of the nation's ethanol supply. The fuel ethanol industry has a greatly increasing effect on the state's economy. This fact sheet summarizes the current status of the ethanol industry along with a discussion of historic production data.

These, and many other, SDSU Cooperative Extension Service publications are available for free at any county extension office, or at <http://agbiopubs.sdstate.edu/>.

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To request e-mail delivery instead of a mailed copy, please send an e-mail to Janice Kampmann at janice.kampmann@sdstate.edu with your e-mail address.

SDSU Extension effort targets high feed costs

Lance Nixon, SDSU AgBio Communications Unit

SDSU Extension is stepping up its programming efforts to help farmers and ranchers manage high feed costs.

South Dakota State University Extension is extremely concerned about the high costs of feed and the effects on our agricultural community," said Latif Lighari, the new director of the South Dakota Cooperative Extension Service.

Lighari said the push is not a new programming effort, but an increased emphasis that will build on what SDSU has already done in this area.

"We have the folks in place to engage and help out anyone who needs us," Lighari said. "We have the research, we have the people, and we have the educational materials."

Bob Thaler, from SDSU's Department of Animal and Range Sciences, said most South Dakota livestock producers are already running efficient operations. But he said the added push from SDSU could help beef, swine, sheep and dairy producers tweak one or two variables in their operations.

"Unfortunately there's no magic bullet, but there are some management techniques they can use to fine-tune their operations and increase their chances of profitability," Thaler said. "We may not be able to change the price that we pay for feed, but if we make those animals more efficient, it will help with profitability. Also, we need to be able to optimize the use of limited resources in our livestock production systems."

Rosie Nold, North District director for SDSU Extension, said Extension educators and specialists will work with producers in several key areas.

- They'll focus on calculating unit cost of production and identifying ways to decrease this both in "lower input" operations as well as in intensified production systems.
- They'll identify ways to make production as cost-efficient as possible, including strategies such as calving distribution; managing calves for improved efficiency; identifying winter feed needs now; and managing reproduction in dairy cows by evaluating body condition.
- They'll look at ways to optimize grazing potential through grazing management techniques. In some areas of

western South Dakota, that may include helping producers who are recovering from drought. In other areas of the state it may be looking at alternatives to deal with the rising cost of pasture.

- They'll work with producers to manage risk through marketing strategies.

"This is a statewide effort," Nold said. "Even though production systems are different in different parts of the state, this issue affects all types of producers in all locations."

Student News - SDSU Veterinary Science Department

SDSU Pre-Veterinary Students Admitted to Veterinary Colleges for Fall 2008

Iowa State University: Michelle Monson, Webster; Jamie Gosch, Denison, IA; Lori Rotert, Salem; Derek Peterson, Ipswich; and Michael Swann, Sioux Falls.

University of Minnesota: Jenna Fier, Minneota, MN

Kansas State University: Ryan Tollefson, Murdock, MN

2008 – 2009 Vet Science Scholarship Award Recipients

J. Michael Robbie Scholarship in Pre-Veterinary Medicine: Recipients: Rebecca Lutter, Gann Valley; and Andrew Rogan, Brandon.

Dr. J. B. Taylor Memorial Scholarship: Recipient: Teresa Henrickson, Piedmont

RTI Veterinary Science Scholarship: Recipient: Stacy Erickson, Sioux Falls

Freeman J. Lewis Memorial Scholarship: Recipients: Nicole Hansen, Tracy, MN; Alexa Vandenbosch, Edgerton, MN; Kelsey Peterson, Harrisburg; Tyler Grussing, Chamberlain; Anna Petrowiak, Fairmont, MN; Jennifer Olsem, Westbrook, MN; and Cari VanEssen, Inwood, IA.

Dr. Harry Halverson Memorial Scholarship: Recipient: Anthony Donelan, Garretson

Richard and Carol Dierks Scholarship in Pre-Veterinary Medicine: Recipient: Amanda Beyer, Winona, MN

Harbarth Scholarship in Veterinary Science: Recipient: Megan Mathews, Glencow, MN

Calendar of Events

August 13-16, 2008

South Dakota Veterinary Medical Association Annual Meeting, Ramkota Inn, Rapid City, SD

Large and small animal sessions: Finding, hiring, and keeping new associates in mixed practice; effective vaccination for the young calf and pregnant cow; equine & companion animal radiology & imaging; population medicine for cattle; DNA markers in the beef industry; canine reproduction, companion animal dentistry; SDSU case reports, much more. 605-688-6649 or www.sdvmed.org

July 31-August 2, 2008 – Academy of Veterinary Consultants Summer Meeting, Westin Calgary, Calgary, AB <http://www.avc-beef.org/>

August 3-5, 2008 – North Dakota Veterinary Medical Association Annual Meeting, Holiday Inn, Fargo, ND <http://www.ndvma.com>

August 14, 2008 – George A. Young Swine Health and Management Conference, Marina Inn, South Sioux City, NE. <http://georgeyoungswineconference.unl.edu/>

August 23-26, 2008 – Central Veterinary Conference Kansas City, MO <http://www.thecvc.com>

September 4-5, 2008 – Montana VMA Fall Symposium, Best Western GranTree Inn, Bozeman, MT www.mtvma.org

September 11-12, 2008 – Iowa VMA Annual Meeting, Scheman Center, Ames, IA, <http://www.iowavma.org/>

September 20-23, 2008 – Allen D. Lemman Swine Conference, RiverCentre, St. Paul, Minnesota <http://www.cvm.umn.edu/outreach>

September 25-27, 2008 – American Association of Bovine Practitioners, Charlotte Convention Center, Charlotte, NC <http://www.aabp.org/meeting/default.asp>

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Calendar of Events

The SDSU Veterinary Science Department conducts research, teaching, professional service, and extension service to South Dakota and the surrounding region. Entities within the department include the South Dakota Animal Disease Research and Diagnostic Laboratory, the Olson Biochemistry Laboratory, and the Center for Infectious Disease Research and Vaccinology.

The South Dakota Animal Disease Research and Diagnostic Laboratory is a full-service, all-species diagnostic laboratory accredited by the *American Association of Veterinary Laboratory Diagnosticians (AAVLD)*. The AAVLD accreditation program complies with international expectations for quality diagnostic services under the guidance of the *World Organization for Animal Health (the OIE)*. The ADRDL collaborates with the USDA National Veterinary Services Laboratory on many federal disease monitor and eradication programs and is a member of the National Animal Health Laboratory Network. For information regarding the laboratory's Quality System, contact Rajesh Parmar – ADRDL Quality Manager, at 605 688 4309.

Editor: Russ Daly, DVM

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