Summer 2010

Accredited Veterinarian Newsletter

New York State Department of Agriculture & Markets—Division of Animal Industry

Animal Welfare

By Dr. David C. Smith, Acting Director, Division of Animal Industry

A number of "undercover videos" released by animal activist groups and the mainstream media over the past year have led many people to question how well animals in agriculture are cared for. As veterinarians we often find ourselves conflicted on what to do when we see farm animals receiving sub-par care or even outright abuse. When I first started veterinary college over 25 years ago, I was explicitly told that reporting such situations to the responsible authorities was a betrayal of client trust and should never be done. The teacher who told me this was not a crank; he was an outstanding authority on food animal medicine and production. But times have changed, and I believe as veterinarians, we share a responsibility to reassure the public that farm animals do receive proper care and that the agriculture community can and will keep its own house in order.

As veterinarians, I believe we have to be advocates for the animals *and* the clients we encounter and serve every day. When we advise a farm owner that we witnessed his/her employees handling livestock inappropriately, we do a service not only to the animals, but also to the farm owner and the industry as a whole. If this action results in the employee's behavior being corrected or if that isn't possible, the employee being dismissed, we may have avoided the next debacle that shakes the public's faith in animal agriculture. And we definitely have improved the health and well-being of the livestock on that farm.

But what can be done to prevent things from even getting to the point where the vet has to speak up about improper actions on the farm? I suggest that we should be encouraging all producers to adopt animal well-being assurance plans appropriate to the animals they keep. Nearly every animal industry has a program that helps farmers establish and document procedures and precautions to protect animal health and well being. Examples include:

National Milk Producers Federation *United Egg Producers* *American Humane Association*

New York State Cattle Health Assurance Program

If the question still remains: "*What do I do when I see what I believe to be cruelty and the owner is either unable or unwilling to correct it?*" Here in New York, animal cruelty complaints are handled by local law enforcement and/or duly authorized local SPCAs. For reference, here is a link to New York's animal cruelty statute. Also, here is the broader Article 26 of New York Agriculture and Markets Law.

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European Starlings Bring Disease and Economic Loss to Strained NY Dairies

It's no secret that the New York dairy industry has had a tough time the last few years. When you add high feed and fuel bills with low milk prices the results are dismal to say the least. To make matters worse, European starlings often congregate on dairies during winter in New York and cause damage by consuming and contaminating feed and potentially transmitting harmful diseases to livestock. Jeff Homan, a research scientist with the National Wildlife Research Center estimates that a starling will consume 1 oz of feed per day in the winter. At that rate, 16 starlings could consume 1 pound of grain per day. The average flock size typically found on NY dairies is 2,500 starlings. A flock of 2,500 starlings could potentially consume 156 pounds of grain each day. It would take that same flock of starlings about 14 days to consume 1 ton of grain. Thus the typical dairy farm in New York loses approximately $2,100 dollars during the winter months due to feed consumption by starlings. With additional losses to milk production of up to two pounds a day per cow and the possibility of losing livestock to several disease starlings are able to transmit like Johne's disease and Salmonellosis, it's not difficult to understand how starlings negatively affect NY dairies.

To assist with this problem, the United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services has developed a program to reduce the damage caused by starlings at dairies. If requested, Wildlife Services can visit the producer's operation to make a number of recommendations that can be used by the producer to reduce damage caused by the starlings. In addition, Wildlife Services can use the toxicant DRC-1339 (which is registered for use in these situations) to expediently reduce the number of starlings on the farm. Starlings that consume it begin to show signs of lethargy in about 6 to 8 hours and die within 24 hours. By that time, virtually all of the toxicant in their body has been metabolized and excreted, effectively eliminating the possibility of secondary poisoning. Therefore, there are no hazards to pets or other wildlife. USDA notifies appropriate authorities, but requires producers to notify adjacent property owners as the birds do not always die at the treatment site. On average, treated farms experience a reduction of between 75% to 95% in most cases. The program fee is $750 and covers the costs associated with the pre-bait, pesticide, personnel, and vehicle use.

For additional information or to enroll in the program for next winter please call one of the USDA offices below:

USDA Wildlife Services in NY: Castleton (518) 477-4837 Brewerton (315) 698-0940 Potsdam (315) 267-2288

NVAP Deadline is Nearing! (AUGUST 2, 2010)

By USDA-APHIS-VS Office in Albany

In previous issues of this newsletter you have been informed of the recent changes in this program. Here is a brief Overview and Status report:

OVERVIEW: If you are a previously accredited veterinarian you must submit a VS 1-36a form, the submission of which means you have "Elected to Participate" in the revised program. This includes selecting a category under which you will be performing accredited duties in the state(s) where you have been authorized to perform accredited duties. You will be assigned a National Accreditation Number (NAN) and a renewal date which will be 3 to 5 years in the future. As you approach this renewal date you will then be required to take courses that will be offered online, on CD or on paper. All of this information will be explained and forwarded to you once your application has been processed.

If you have not submitted the form, you are encouraged to do so soon. The form is available on our website: http://www.aphis.usda.gov/ Click on "Find vet accreditation information". To assist in the processing, NY accredited vets may fax, email or mail the VS 1-36a directly to the New York area office even though the website directs you to send them to MD. Fax: 518-218-7545; Email: vsny@aphis.usda.gov; Mail: APHIS USDA, 500 New Karner Rd., 2nd Floor, Albany, NY 12205. Please do not submit your form more than one time, and please understand that we are unable to acknowledge receipt of your forms.

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Sheep Virus Life Cycle that Causes MCF Explained

Editor's Note: The following article came from Science Daily. Due to the periodic diagnosis of MCF in New York State, I thought that this article may be of interest to readers.

Microbiologist Hong Li and veterinary medical officer Naomi Taus at the ARS Animal Diseases Research Unit in Pullman, Wash., collaborated on the research with Lindsay Oaks at Washington State University and Donal O'Toole at the University of Wyoming.

MCF, a viral infection that is a leading cause of disease in American bison, is usually transmitted from sheep to bison and cattle. Vaccine development has been stymied because the virus won't grow in cell culture.

The ARS scientists and their university colleagues have shown that the virus undergoes several changes inside the animal's body, targeting specific cell types at different stages of its own life cycle. This process is called "cell tropism switching."

The viral replication in sheep can be divided into three stages: entry, maintenance, and shedding. The virus enters the sheep through its nasal passages and reaches the lungs, where it replicates. Replication in the sheep lung is required for the virus to change its cell tropism for the next stage: the infection of lymphocytes, a type of immune cell.

During this maintenance stage, the virus stays in the lymphocytes that circulate through the whole body, with little replication. This type of infection is referred to as a "latent infection." During the shedding stage, the virus reactivates from the infected lymphocytes and targets specific cells in the nasal area to complete its replication. The virus is then shed through the sheep's nasal secretions.

Now that they understand these viral changes, scientists can begin to find the right cell types to grow the virus in cell culture, according to Li.

USDA/Agricultural Research Service. "Sheep Virus Life Cycle That Causes Malignant Catarrhal Fever Explained." ScienceDaily 5 April 2010. 12 May 2010 <http://www.sciencedaily.com/releases/2010/04/100405122304.htm>.

OIE Press Release: Health of Bees May be Due to Multiple Factors

Editor's Note: The following press release is from the OIE website http://www.oie.int/eng/press/en_100428.htm

Paris, 28 April 2010 - Arthropod parasites such as Varroa mites as well as virus and bacteria infections, pesticide exposure, and poor nutrition resulting from other environmental issues linked with human behaviour, are all concomitant factors which threaten the survival of certain bee colonies worldwide. Similarly, the causes of honey bee Colony Collapse Disorder (CCD), a recently described phenomenon leading to global extensive losses of bee colonies, are unquestionably multi-factored, concluded experts of an OIE ad hoc group on diseases of honey bees.

"Honey and royal jelly are examples of precious food that we owe to bees but foremost we owe them abundant harvesting of fruits and vegetables since they contribute to pollinate the flowers which will produce the harvest," Dr. Bernard Vallat, OIE Director General said and "thus, bees contribute to global food security and their extinction would represent a terrible biological disaster. That is why the OIE considers bees' mortality and bee diseases to be a priority in its Strategic Plan 2011- 2015," he added.

A world review of honey bee health confirmed CCD occurs in bee populations of North America, Europe and Japan. Experts agreed that the irresponsible use of pesticides might have an impact on bee health in particular by weakening bees and increasing their susceptibility to different diseases. However pesticides can not be considered

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as the only factor affecting bee health. Biological factors, lack of biosecurity measures to be implemented by beekeepers and climate change might also have detrimental effects on bee health.

"Resources to establish increased surveillance and registration processes, inspection, diagnoses and research capacity are missing in many countries and regions of the world," Dr. Wolfgang Ritter, chair of the ad hoc Group commented and "there is an important need for more international guidelines for bee disease surveillance and disease control programmes," he added.

Global state of health of honey bees

Independently from CCD, the Group concluded that knowledge on the clinical signs and modes of action of most bee viruses and other pathogens is still insufficient and recommended research continues to try and unravel the multiple factors that threaten the health of honey bees and other pollinators. Various bee arthropod parasites have been pinpointed as active in different parts of the world among which, infestation with Varroa, Nosema and Tropilaelaps mites are identified as the most frequent sanitary issue of beehives globally.

In addition, a new form of Varroa, *Varroa jacobsoni*, that is pathogenic to *Apis mellifera* was detected in Oceania in 2008 and now presents a new threat to beekeeping in the region as well as globally.

"The OIE will propose to the international community to intensify the research on the causes of the mortality of bees and to better control and fight against the numerous emerging and already known diseases on the basis of the standards and guidelines adopted by the organisation, including in the field of biosecurity of global and regional trade of bees between countries, which is a major cause of global contaminations," Dr. Vallat further commented.

NIH News Release: Researchers Identify New Steps In Spread of Malaria Parasite Through Bloodstream

Editor's Note: The following news release excerpt dated June 10, 2010, is from the National Institutes of Health. You can view this short article at http://www.nih.gov/news/health/jun2010/nichd-10.htm

Researchers at the National Institutes of Health have observed two previously unknown steps in the spread of the malaria parasite through the bloodstream. And in laboratory cultures, the researchers interfered with one of these steps, raising the possibility that new drug treatments could be developed to combat the disease.

In 2008, malaria is estimated to have caused as many as a million deaths worldwide. (http://www.cdc.gov/malaria/about/facts.html)

Malaria is caused by a single-celled parasite from the genus *Plasmodium*, which is transmitted to humans through the bite of an infected mosquito. The parasite infects red blood cells and reproduces inside them. When the infected cell bursts, the new parasites spread, infecting more red blood cells.

In their study, the researchers focused on how the new parasites escape infected cells. They also discovered they could, in effect, seal the membrane of an infected blood cell with a surface-acting compound, halting the release of the parasites.

The study was published online in Current Biology.

The study's authors were Svetlana Glushakova, Glen Humphrey, Evgenia Leikina, Amanda Balaban and Joshua Zimmerberg, all of the NICHD, and Jeffrey Miller, an investigator from the National Institute of Diabetes and Digestive and Kidney Diseases.

To conduct the study, the researchers examined red blood cells from volunteers with sickle cell *(Continued on Pg. 5)*

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anemia, an inherited disease in which these cells have a curved, or sickle shaped, appearance. The misshapen cells can clog blood vessels and hinder blood flow. The mutation that causes sickle cell anemia is prevalent in parts of the world where malaria is common. Although having two copies of the mutated gene causes sickle cell anemia, having only one copy confers a resistance to malaria.

In normal red blood cells, the rupture of cells and subsequent release of the parasites proceeds almost instantaneously, and is very difficult to observe. However, the researchers found that in sickle cells, this process occurs at a much slower rate — slowly enough, in fact, to allow the researchers to observe it. By following the progression of the disease in infected sickle cells, the researchers were able to document stages in the process that had not been observed before.

Dr. Zimmerberg explained that, typically, a malaria parasite reproduces inside a sac within a red blood cell. In two days, the parasite multiplies, filling the sac until the new parasites burst out of their host cell. Many researchers believed that the pressure of the growing parasites inside the sac increased until the cell burst.

But in their observations of infected sickle cells, the researchers uncovered a more complex process. Several minutes before rupturing, the parasite-filled sac inside the cell swells and the remainder of the cell shrinks. Moreover, seconds before the infected cell bursts, the cell membrane turns porous, like a leaky plastic bag.

"It is not the simple explosion people thought it was," said Dr. Zimmerberg, senior author and director of the Program in Physical Biology at the NICHD. "It appears to be more like a ballet — an elegantly choreographed, regulated process."

Dr. Zimmerberg and his colleagues discovered that a sealing agent known as poloxamine prevented cells from rupturing and releasing the parasites. The researchers plan to study the effects of poloxamine and similar compounds on the bursting process in hopes of developing a new malaria treatment.

"Every step in this process is an opportunity to intervene and stop the disease from advancing. Identifying new stages in the release of parasites provides new leads in the search for anti-malaria drugs," said Dr. Zimmerberg.

Anaplasmosis in NY Dairy

By DAI Field Veterinarian

A seven year old home raised cow presented to the herd veterinarian with a history of having been treated for two days previously with Excenel since she was "breathing hard", had a temperature of 104, and presumed to have pneumonia. She had not responded to the treatment. Upon examination from afar, the herd veterinarian noticed that the cow's muzzle was pale. The vulva was also pale and the cow was presumed to be anemic. Her temperature was 102.4 with increased respiratory rate but no abnormal lung sounds. The herd veterinarian concluded that the cow was breathing hard secondary to the anemia most likely secondary to a bleeding abomasal ulcer. It was expected that the cow would pass bloody (or black tarry) feces by morning. The recommendation was to continue the Excenel along with MagOx boluses and remove the cow from any fermented feeds. The possibility of a blood transfusion or referral to Cornell University was considered. Blood was taken for a HCT (hematocrit) and that was found to be 9.2! The next day, the herd veterinarian called to check on the cow. The owner said the cow seemed to be improving but had not passed any bloody manure. It was decided to give her a couple of days and then check the HCT again. Four days after initial presentation, the cow was improved, eating better and had a temperature of 101.8. There was still some labored breathing and the HCT was up to 11.5. The herd veterinarian was pondering the origin

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of the apparent blood loss and it occurred to him to check for anaplasmosis, even though it is not thought to be endemic in the Northeast. A younger cow (three years of age) was also showing signs of depression and lethargy for about a week. Her vulva was pale also; her HCT was 12.5. Both cows were tested for anaplasmosis using the c-ELISA test. Both cows were test positive and had exhibited signs of acute infection. These cows presented with clinical cases of anaplasmosis in an area of the country where this disease has historically not occurred. The rest of the herd was tested; an additional 14 cows were positive, but none with clinical signs. All of the heifers tested negative. Heifers and dry cows housed at a brother's farm were also negative. So far, all the calves that have been born and tested have also been negative. It is unknown when the organism first entered the herd. Carrier animals are common and they do not present with clinical signs; they are "persistently infected". It is likely that such an animal was imported to the herd at some time in the past, as this is an open herd. The only consistent finding with the positive animals is that all were given oxytocin at milking and common needles were used. The clinically affected animals had to have been acutely infected. The history indicates that these two animals just started on oxytocin and were infected via the common use needles resulting in a clinical presentation.

Anaplasmosis is spread by ticks in what has traditionally been known as the endemic area in the United States which is in the south and southeast. *Anaplasma marginale* is the causative organism and can multiply in the ticks and spread through this tick vector (biotransmission). Mechanical transmission also occurs through the use of common needles or biting flies. In utero transmission can occur as well and the calf is then persistently infected but never shows clinical signs of the disease. The organism parasitizes and multiples in the red blood cells. Acute infection only occurs when >1% of the RBC's are parasitized.

The cows that tested positive were placed under quarantine on the farm. Some of them went directly to slaughter. The more valuable remaining cows are undergoing treatment with an off-label protocol of tetracycline administration. The test will be repeated once the treatment is done. If the test is negative, then the quarantine will be released for that individual animal. In parts of the country where this disease is endemic, it can be managed during the vector season by using a tetracycline product in the feed (for beef cattle or dairy heifers). This would not be feasible in a milking dairy herd.

So, in conclusion, sometimes it is a wise decision to look "out of the box for zebras", especially when you don't readily see the "horses." The herd veterinarian did indeed diagnose a disease most of us would never have even considered in our differential; this case illustrates the importance of a complete physical exam and an outstanding understanding of the nature of infectious disease.

(NVAP-*Continued from Pg. 2*)

STATUS: The following statements are taken directly from the APHIS USDA Website regarding the status of forms already submitted: *Please be assured that if you have submitted your VS Form 1-36a application, it has been received and securely filed. A team of data entry personnel are currently entering all the information into the NVAP database. You will be contacted by phone or email only if there are irregularities with your application. Kindly be patient as the NVAP staff anticipates processing as many as 60,000+ applications. Once your application has been processed and approved, you will receive a letter or email containing your renewal date and your national accreditation number. Until then, you may continue to perform accredited duties. Your current accreditation status remains unchanged.*

You may direct any questions to the NVAP office in Maryland or the NY area office as follows:
Maryland NVAP Phone: 301-734-6827; OR Email: NVAP@aphis.usda.gov
New York Area Office Phone: 518-218-7540; OR Email: vsny@aphis.usda.gov