

HorseReport

FALL 2023



**Caring for
Older Horses**

THANK YOU TO OUR CONTRIBUTORS

Dr. Nicola Pusterla

A diplomate of the American College of Veterinary Internal Medicine and the American Veterinary Dental College, Dr. Pusterla is a professor in the School of Veterinary Medicine's Department of Medicine and Epidemiology. He is the chief of the Equine Dentistry and Oral Surgery Service at the UC Davis veterinary hospital.



Dr. Claudia Sonder

Dr. Sonder is a Director Emeritus of CEH. She is an owner of Napa Valley Equine, an equine clinic that offers in-hospital and mobile services throughout Napa County and surrounding areas.



Liat Bachar

Liat worked at CEH as an under-graduate student. After receiving her degree in Animal Science, she has been working at veterinary clinics and is applying to veterinary schools.



DIRECTOR'S LETTER



Welcome to the fall issue of the Horse Report, focused on caring for older horses!

When I was a 2nd year veterinary student, I purchased my now 24-years young horse, Kaiden, off the track. For 21 years, he has been my eventing partner and friend, traveling with me from Minnesota to UC Davis, back to Minnesota, and back again to UC Davis as I have navigated my career.



With the help of our amazing coach, Yves Sauvignon, we were able to compete in 20 events at the Preliminary level. At the age of 19, I brought him back down to Training level. Since he has no interest in retirement, he is now half-leased by a junior and competing at the Beginner Novice and Novice levels. It is amazing to watch him "show her the ropes".

Our shared journey and the lessons that this horse has taught me are beyond compare. Kaiden has survived two colic surgeries, two street nail procedures, and various injuries over the years. Keeping him healthy and sound, with the help of my husband Dr. Scott Katzman, is one of my proudest accomplishments.

At CEH, we have a large population of older horses that are among the most beloved horses in our program. Many have been CEH residents for years, and have taught hundreds of students and residents.

As always, we rely on the expertise of our colleagues to bring you the latest information. We are grateful to Dr. Nicola Pusterla for sharing his expertise in equine dentistry. A special thank you to former CEH undergraduate student Liat Bachar for writing about this topic. Thanks also to CEH Director Emeritus Dr. Claudia Sonder for a thoughtful discussion of how to make end-of-life plans for our beloved equines.

We hope the information in this issue helps you navigate the equine aging process and enjoy many happy, healthy years with your horses.

Best wishes,

Carrie J. Finno, DVM, Ph.D., Diplomate ACVIM
CEH Director

EQUINE TRIBUTE AND MEMORIAL FUND

Horses have special places in our lives, and we feel their losses deeply. The Equine Tribute and Memorial Fund provides a unique and thoughtful way to show support for a friend or family member grieving the loss of a special horse. It can also be a distinctive way to pay tribute to an individual equestrian, group, or program. Contributions can be made in any amount.

Memorial donations support cutting-edge equine research and valuable advances in equine veterinary care. A personalized letter is sent to the friend or family member acknowledging the contribution (the amount is not disclosed) in honor of their horse.

For veterinarians and veterinary clinics, the Equine Tribute and Memorial Fund is a meaningful way to pay tribute to special patients and support clients during difficult times. Clients receive personalized letters acknowledging contributions in honor of their horses.

Donations are applied to research areas including:

- Anesthetic and medication safety
- Colic prevention and treatment
- Genetics
- Imaging
- Infectious disease
- Laminitis
- Neonatology
- Neurology
- Orthopedics and lameness
- Regenerative medicine
- Reproduction
- Welfare

Research supported by contributions to the Equine Tribute and Memorial Fund support horses in California and beyond, today and into the future.

Donations in any amount can be made at <https://give.ucdavis.edu/vceh/v407E31>. Please direct questions about giving to the UC Davis School of Veterinary Medicine Office of Advancement at (530) 752-7024, svmadvancement@ucdavis.edu.

Thank you for your support of the Center for Equine Health!





DENTAL CARE:

A Crucial Aspect of Equine Longevity

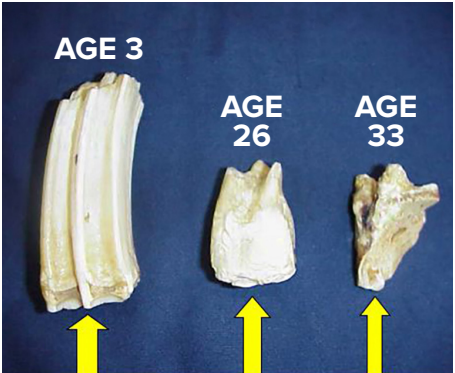
By Liat Bachar

As equine veterinary care advances, some of us are privileged to care for horses well into their sunset years. One important aspect of managing senior horses is caring for their teeth. Attention to oral health is essential to maintain proper nutrition.

Horses have hypsodont (high-crowned) teeth that continuously erupt from the gum line throughout life, allowing horses to maintain adequate grinding surfaces to break down forage. This characteristic also enables a rough estimation of a horse's age based on the appearance of its teeth. As teeth wear down over time, the dental reserve crown becomes depleted. With increased lifespans, horses are beginning to "outlive" their teeth.

Fortunately, there are steps that owners can take to extend the life of their horses' teeth. "Older horses can be transitioned to feed products with processed forage (complete feed, pellets, cubes, etc.) as their base, which makes eating and chewing easier," said Dr. Nicola Pusterla, chief of the [UC Davis Equine Dentistry and Oral Surgery Service](#). "Additionally, soaking feeds such as concentrates or cubes is a great way to increase hydration while simultaneously softening the feed."

Even with softer foods and a complete pellet diet, many ailments associated with the horse's mouth are overlooked. The mouth is the first organ in the digestive tract, so



The appearance of a horse's teeth can provide a rough estimation of its age.

issues in the oral cavity can result in devastating consequences further down. It is important to have a veterinarian evaluate the horse's mouth at least yearly; this can be coupled with a yearly physical exam. However, there are also many things to look for that are good indications that your horse needs to be seen by a veterinarian or equine dentist. "Prevention is always better than a cure," said Pusterla.

One of the easiest ways to assess a horse's dental health is to simply watch the horse eat! Determining the normal eating pattern and monitoring it over time can provide veterinarians with important information.

When watching your older horse eat, look for the following:

1. Signs of abnormal chewing
Horses normally chew with the lower jaw moving in an oval-shaped motion as it grinds against the upper jaw. Changes to this pattern can indicate discomfort.

2. Quidding
This occurs when horses appear to "spit up" their food. This is evident in the presence of a food bolus, or ball of forage, that the horse is unable to grind down and consume.

3. Amount consumed
If your horse appears to be eating less than normal, losing weight, and/or you notice undigested long pieces of forage or grain in the feces, it could be an indication of dental problems.

4. Discharge, bumps/lumps, draining tracts, excessive salivation, and bad breath
The presence of any of these could be an indication that something is wrong in the mouth and a thorough veterinary examination of the oral cavity is warranted.

Dental Diseases Commonly Associated with Geriatric Equines

As horses age, there is increased likelihood of damage and infection to the teeth and mouth. Damage to the tooth can vary from fractures to uneven grinding surfaces to infection. Damage to structures that support the tooth can result from accumulation of food in between teeth, causing inflammation of the gingiva and surrounding tissues. Foreign bodies, such as foxtails, can also damage soft tissues.

One particular disease that affects older horses is equine odontoclastic tooth resorption and hypercementosis (EOTRH). This disease mainly affects the incisors (front teeth), the canines, and occasionally the premolars (first few teeth that are part of the grinding surface). The exact mechanism of the disease is unknown. "As the disease progresses, there is inflammation at the roots of the teeth, possibly as a result of the forces at play as older horses, with longer teeth, chew," said Pusterla. "The inflammation triggers absorption of the

root structures, which is the body's way of responding to the insult." Weakening of the root structures compromises tooth integrity. This results in an excessive production of cementum (hypercementosis), the outermost layer of the tooth that helps to protect and stabilize the tooth in the gum line. Hypercementosis commonly leads to the tooth fracturing due to its brittle nature, and often results in infection. Clinical signs of EOTRH include weight loss, inability to eat hard treats, head shyness, avoiding contact with the bit, quidding, and dullness.

The Center for Equine Health has supported research, led by Dr. Pusterla and Dr. Verena Affolter, to learn more about how EOTRH develops. A greater understanding of the underlying mechanisms of EOTRH could enable advances in dental care for older horses and may aid the development of future treatments.

Caring for the older horse population is becoming increasingly important. Yearly exams to monitor the comfort of senior horses is critical to providing healthy later chapters in a horse's long, full life.



Dental examinations can help diagnose health issues, but should also be part of horses' annual veterinary examinations.

AGING AND THE EQUINE IMMUNE SYSTEM

Across species, aging has significant effects on many of the body's prominent biological systems. In particular, advancing age weakens the immune system and makes it slower to react to threats. Overall, horses show similar, but milder, age-related changes in immune function than those observed in humans.

Immune dysfunction due to age is known as immuno-senescence. It results in reduced immunity and increased inflammation. In elderly people, this contributes to chronic health conditions such as cancer, heart disease, and neurodegeneration. Interestingly, horses do not have many of the same risks for these age-related diseases. Although the reason for this is currently unknown, diet, genetics,

physiology, exercise, and the absence of negative lifestyle habits are likely involved.

Research into the specific causes of age-related immune function decline in horses is difficult for several reasons. Among these is the arbitrary definition of “old” or “aged”, which may be 15 years of age in one study and 20 in another, for example, making comparisons across studies challenging. Many older horses also have subclinical diseases with no obvious clinical signs, such as metabolic abnormalities, that can complicate results. Additional confounding factors can include diet (including supplements), exercise, medication, and environment.

Inflammation

The process of inflammation is essential to the body's ability to heal. White blood cells travel to the site in the body affected by infection or injury. Chronic inflammation occurs when those inflammatory cells overstay their welcome. Chronic inflammatory stimulation related to aging is termed inflamm-aging.

This low-level systemic inflammation is characterized by increased cytokine production. Cytokines are chemical messengers that point immune cells to the site of infection or injury. Research has shown that aging and obesity can result in increased cytokine production, and consequently increased inflammation. In horses, inflamm-aging contributes to conditions such as degenerative joint disease and reactive airway disease.

Factors such as nutrition and age-related muscle wasting may be associated with inflamm-aging in horses, but more research is needed as the overall causes are largely unknown.

Infectious Diseases

Although it is widely assumed that geriatric horses as a group are more broadly susceptible to infectious disease, that is actually not the case. It is true, however, that certain pathogens, such as [West Nile virus \(WNV\)](#) and [equine herpes virus 1 \(EHV-1\)](#), tend to cause more serious problems for older horses. Older horses that are infected with WNV tend to exhibit more severe disease than younger adults. Previously unexposed older horses in particular have a higher case fatality rate. Aged horses are also more susceptible to developing neurological signs (i.e. equine herpes virus myeloencephalopathy or EHM) due to EHV-1 infection (Zarski et al., 2021). In fact, with recent EHV-1 outbreaks, EHM cases have occurred in older horses at home barns that became infected by younger, healthy horses returning from shows.

Vaccines

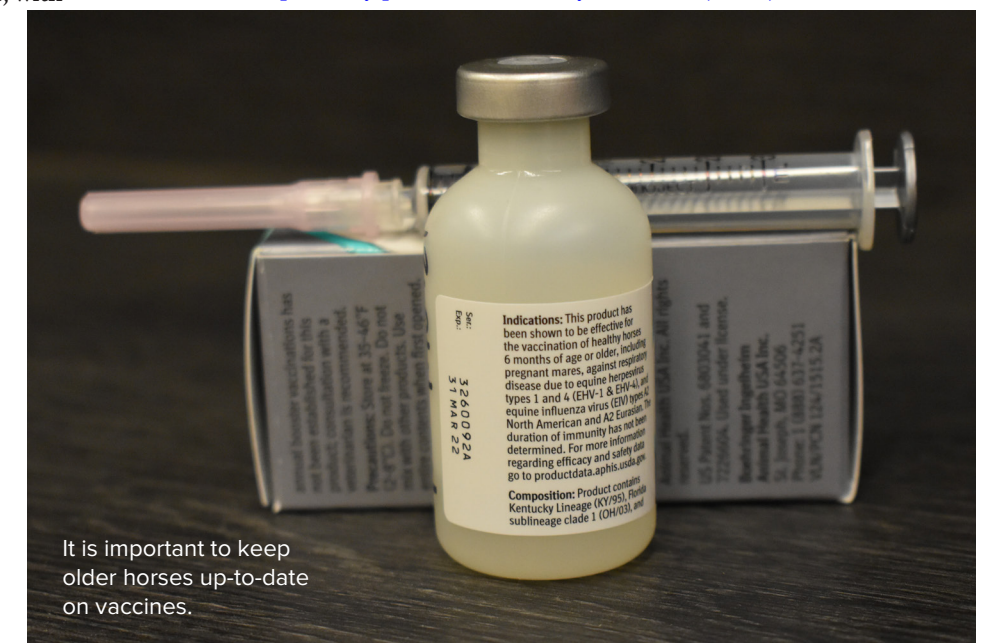
Since older horses likely experience less travel and fewer interactions with horses outside of their home barn, there is a perception of reduced disease risk. Owners may also assume that older horses that have had years of vaccinations have lasting immunity. As a result, many older horses are not up-to-date on core vaccinations. One study reported that with every year in

increased age, older horses are 40% less likely to receive a regular [tetanus](#) vaccination (McGowan et al., 2010). Research has shown that, although aged horses have some pre-existing immune responses, they are generally insufficient to counter challenge by infectious agents in the absence of continued regular vaccination.

It is important to note that older horses are still susceptible to vaccine-preventable diseases, even if they never leave home. Horses coming and going from competitions, insect vectors, and even visitors that transport infectious agents on shoes and equipment can transmit infectious diseases. [Vaccination](#) in itself is important, but it is also worth noting that older horses may react differently to vaccines than in their younger years.

Immunosenescence in people is characterized by reduced antibody response to vaccinations. This is also true in horses, but appears to be milder than what is observed in people. A reduced response to [influenza](#) vaccination has been reported in older humans and horses. Interestingly, despite this altered immune response, a higher number of naturally-occurring influenza cases in older horses have not been reported. In contrast, the response to a rabies vaccine administered to naïve horses did not differ between young and aged horses. More research is needed to better understand unique responses of older horses to vaccinations.

With this in mind, it is important to work with your veterinarian to determine the best vaccination protocol for your older horse(s). Vaccination strategies should be based on general health, body condition score, and presence of endocrine diseases like [equine metabolic syndrome \(EMS\)](#) and [pituitary pars intermedia dysfunction \(PPID\)](#).



Older horses are susceptible to infectious diseases that may be brought home from competitions by younger, healthy horses.

CARING FOR HORSES AT THE END OF LIFE

Horses occupy unique positions in our lives, and losing them is heartbreaking. They deserve dignity in death as well as in life, and doing what is best often involves difficult decisions. Gathering information and making plans ahead of time can reduce stress for you and your horse when the time comes.

“Even when we know our horse is approaching the end of life, we are never prepared for the loss,” said Dr. Claudia Sonder, Director Emeritus of the Center for Equine Health. “The turmoil of having to make difficult decisions under pressure can open the door for self-doubt and regret. Walking through the end of life plan with your veterinarian in advance ensures a mutual understanding of quality of life signals, your hopes for those last moments, and a review of the logistical concerns of aftercare. One of the greatest gifts for a horse is a gentle exit to a life well lived.”

When Is It Time?

There are different reasons to consider euthanasia, or the humane termination of life. Sometimes the decision is in response to an emergency. Other times it is due to chronic and progressive conditions that worsen over time.

General humane endpoints include the development of conditions that result in untreatable excruciating pain, a 20% decrease in normal body weight, or the inability to reach food and water. Justification for euthanasia for humane reasons should be based on medical considerations and quality of life issues for the horse.

Quality of life is a uniquely individual experience. While health is an important aspect of defining quality of life, it should also include emotional or psychological discomforts such as fear, anxiety, boredom, frustration, loneliness, and depression. Conversely, pleasure derived from physical contact, eating, social companionship, and mental stimulation is relevant as well.

Owners often fear that they will not know when it is time. However, most have a threshold at which point the decision becomes more obvious.

“Horses are prey animals and their social awareness is key to their survival from an evolutionary perspective,” said Sonder. “They are aware of their herd mates and seek cues to understand the safety of their situation. One of the greatest gifts we can give them at the end of their life is confident leadership. I ask my clients to consider that

approach as a final gift to their friend. The feedback has been overwhelmingly positive. There is a sense of pride in summoning that strength when they need it the most.”

Disposition of the Remains

Practical considerations, such as how to dispose of the horse’s body, can be particularly challenging when dealing with loss. Make these arrangements ahead of time if possible. There are often local regulations regarding disposal procedures. Rendering, burial, and cremation are common methods, but may require special regulatory approvals.

If your horse is euthanized at a veterinary hospital, you may elect to have a necropsy performed to reveal the cause of death and contribute to science and education.

The Grieving Process

Keeping horses happy and healthy is a team effort that includes trainers, riders, grooms, veterinarians, farriers, and others. All of these providers can experience grief from the loss of a horse. The stages of grief associated with human loss, including denial, anger, bargaining, depression, and acceptance, can occur following the loss of a horse. Some may also feel guilt, relief, isolation, withdrawal, and loneliness. Pet loss programs or counseling can offer support. Pet loss resources, including a support group, are available through the UC Davis School of Veterinary Medicine.

“Our Pet Loss Peer Group attendees share stories of their beloved departed pets, current struggles, thoughts on their feelings and their loss,” said Soli Redfield-Martin, Pet Loss Grief Recovery Specialist at UC Davis. “While navigating through the grieving process, it can be comforting to know you are not alone, and that you have support in a non-judgmental, caring atmosphere.”

Often, the barn environment creates a strong social support network. Barn members can provide support by:

- Sharing photographs, poems, or planting memorials
- Making a donation as a memorial
- Reaching out to talk, share stories, and listen

Life for all living creatures comes to an end. While it is easier to avoid thinking about it, we have the ability to make that end lovingly easy for our cherished animals.

This content originally appeared in the October 2013 Horse Report. [The full resource is available at https://ceh.vetmed.ucdavis.edu/caring-horses-through-life-and-death](https://ceh.vetmed.ucdavis.edu/caring-horses-through-life-and-death).

How to Prepare an Advance Directive for Your Horse

- Create a document with the horse’s name, age, and description. Include a photograph.
- If relevant, include the name of your insurance company, policy number, agent’s contact information, and type of policy (i.e., major medical vs. mortality).
- Designate an emergency contact and provide multiple contact numbers.
- Include contact information for your primary care veterinarian and a backup veterinarian if available.
- State your intentions for your horse in the case of injury or illness if you are unreachable. Include details regarding referral for intensive care and a financial cap.
- Designate your emergency contact and veterinarian as agents who can authorize humane euthanasia if you are unreachable, your horse is suffering, and stabilization or transportation to a referral center are not possible or humane.
- Indicate your aftercare preferences.
- Indicate if you wish to keep a memento (shoe, piece of mane or tail).
- Provide your barn manager with a copy of this information.
- Schedule time with your veterinarian to talk about these plans. Provide a copy of the advance directive for their records. Update the document annually.

10 THINGS

You Might Not Know About Caring for Older Horses

The average life expectancy of horses is around 20 years, but some survive into their 40s. Horses 20 years of age and older increasingly account for a larger percentage of the population, in part due to advances in veterinary care.

Older horses still need routine care. Fortunately, owners are becoming more aware and committed to life-long care and management. **Here are 10 things that are important to know about caring for older horses.**

1 Older and/or retired horses still benefit from grooming. Horses usually enjoy the interaction and grooming is a great way to spend time with your older horse(s). Brushing, currying, etc. is good for horses' coats, promotes circulation and skin health, and provides opportunities to look over the horse and note any issues. Grooming removes dirt and debris that can harbor bacteria, dead skin cells and stimulates natural oils in the skin.

2 Older horses still require regular hoof care. Degenerative changes, subclinical disease, and nutritional considerations influence [hoof](#) problems that are common in older horses such as imbalances, cracks, and reduced horn quality. Joint disease or arthritis can make it difficult for older horses to stand comfortably during farrier visits. Limited or delayed farrier care in older horses can make hoof problems worse, lead to abnormal biomechanics, and exacerbate musculoskeletal disorders. Consult with your veterinarian about ways to make farrier visits more comfortable for your older horse(s).

3 Older horses still need to be dewormed. Although more research is needed, age does not appear to significantly influence shedding [endoparasites](#). Interestingly, one study reported that aged horses affected with pituitary pars intermedia dysfunction (PPID) had greater fecal egg counts than young or healthy aged horses. Since PPID is difficult to diagnose in the early stages, fecal egg counts and associated deworming are important to routine care of aged horses.

4 There is no set age to retire a horse. Horses do not think about retirement in the same way that people do, but most reach a point where they need to slow down and enjoy the easy life. Soundness or other health issues force some horses to retire early, whereas others compete at high levels well into their twenties. A change in attitude - sudden sourness or unwillingness to go forward under saddle - may indicate that a horse is ready to retire from ridden work. Retirement also does not have to be all or nothing. Some horses are retired when they are still performing well and go on to lighter riding or groundwork.



Regular hoof care is important to keep older horses happy and healthy.



"Retirement" may look different for every horse.

5 Sidewinder gait in older horses can have neurologic or musculoskeletal causes. Sidewinder is an unusual gait characterized by disjointed movement of the front and hind limbs in which the hind limbs drift to one side but the front limbs move normally. Severely affected horses may spin or circle in place. Trauma, [equine protozoal myeloencephalitis \(EPM\)](#), intervertebral disc disease, viral diseases, and other neurological causes have been reported in affected horses. Osteoarthritis, pelvic fractures, and ligament ruptures have been implicated as musculoskeletal causes for sidewinder gait.

6 Horses aged 15 years and older should be monitored for pituitary pars intermedia dysfunction (PPID). Research has shown that 21% of horses 15 years of age and older have [PPID](#), an age-related neurodegenerative disorder, and the prevalence increases by 18% with each year of age over 15 (McGowan et al. 2013). However, this may be an underestimate as clinical signs such as reduced muscling, potbelly, and a long hair coat/failure to shed are considered normal signs of ageing and owners may not seek veterinary advice or pursue a diagnosis. Clinical signs may be subtle and early detection of PPID is difficult. Regular veterinary visits and appropriate blood testing can inform management plans.

7 Older horses may benefit from intermittent phenylbutazone (bute) or firocoxib (Equioxx®) if they suffer from arthritis. Non-steroidal anti-inflammatory drugs (NSAIDs) may alleviate pain and inflammation associated with osteoarthritis. They are generally non-toxic if given at appropriate doses but can be toxic, causing issues such as stomach ulcers and kidney damage, if administered long-term and/or at high doses. A veterinarian should prescribe NSAIDs and horses should be monitored for side effects.

8 Horses that have dental issues associated with aging may need complete feed or chopped hay. Although horses with dental issues can do well when pasture is available, they may struggle when presented with hay as the only forage option. When fresh grass is not accessible, chopped hay or grass or hay cubes can be fed two to three times daily. Complete and pelleted feeds are also options, but be sure to soak them prior to feeding to prevent choke.

9 Diseases related to aging, such as Alzheimer's and dementia, have not been documented in horses. Although studies have identified a range of age-related changes in the brains of older horses, there is no clinical evidence for dementia in horses. Older horses may experience neurodegenerative changes and cognitive decline, but the underlying biological processes are unique from those associated with Alzheimer's disease and dementia in humans.

10 Older horses may have trouble regulating their body temperature. Just like humans, body composition changes as horses age. Reduced body mass, changes in fat distribution, and variations in how fluids are compartmentalized can make older horses less efficient at regulating their body temperature. Blanketing, stabling, and clipping are important management considerations for older horses.



32-year-old CEH Teaching Herd horse Django receives regular management for PPID.

<https://ceh.vetmed.ucdavis.edu>

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CEH TEACHING HERD HORSE ANISETTE

Our cover model, Anisette, is a 31-year-old Arabian mare. Donated in 2006, she has been an integral part of the CEH herd for almost 20 years. This sassy lady may be small in stature, but she has a big personality. She has many opinions and is not afraid to share them!

Anisette was an important part of our contagious equine metritis (CEM) federal import quarantine testing program for many years. In her retirement, she teaches veterinary students about basic horse handling, as well as how to perform physical exams. She is currently living her best life out in a paddock with her best mare friends.

Anisette is one of a number of horses over the age of 20 that are part of the CEH Teaching Herd. These individuals are especially well suited to teaching first year veterinary students and are essential to our programs. They are beloved by our staff, students, residents, and faculty.

As we have shared in this issue, older horses often require specialized care as they age. The CEH Teaching Herd fund provides support for medications, blankets, grain, supplements, and more to help keep them happy and healthy. Anisette and her friends appreciate your support through the Teaching Herd Fund. (<https://give.ucdavis.edu/VCEH/V407THS>) They are firm believers that age is just a number and they have a lot more teaching to do!