



*The Newsletter for  
the BEHAVE Research  
and Outreach  
Program*

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## Learning to Mix Diets

Livestock can learn to mix nutrients and toxins to lessen effects of toxins. Unfortunately, most grazing systems let livestock to eat the most preferred plants and avoid the unpalatable ones. These systems don't encourage livestock to mix foods high in nutrients with those high in toxins. Livestock repeatedly encouraged to eat all plants in an area, in a high-intensity

## Where's my BEHAVE Newsletter?

You may have noticed it's been awhile since you received a BEHAVE Newsletter. I'm afraid I've had trouble prioritizing since starting my new job. We have lots of news to report about the project. I will be sending out several more newsletters before year's end.

## Teaching Cows to Eat Big Sagebrush

Chuck Petersen successfully defended his thesis this past May. His research focused on training cattle to eat sagebrush in the fall to improve plant biodiversity on rangelands. Chuck conducted his study at the Cottonwood Ranch in NE Nevada. Trials began in late October and ended in early November from 2007 to 2009. Plots were a half-acre in size. Each year cattle spent 11 to 14 days in an adaptation pasture until they were eating sagebrush. Then they spent 5 to 7 days in the trial pastures.



**Experienced cow eating  
sagebrush.**

During the adaptation and trial phases, cattle were supplemented with grass hay and a protein-energy pellet, to lessen the effects of the terpenes in big sagebrush. In 2007, all cattle used in the trials were naïve to sagebrush. In 2008 and 2009, experienced cattle (sagebrush eaters) and naïve cattle foraged together in the same pasture.

In 2008 and 2009, animals with experience eating sagebrush consistently ate more sagebrush and lost less weight, or actually gained weight, compared to naïve animals. Cow/calf pairs, bred yearling heifers, and first-calf heifer/calf pairs were used in the trials and most ate sagebrush as a significant portion of their diet. Over three years, Chuck taught 98 cattle on the ranch that sagebrush was food. One observation that surprised both Chuck and his committee was the amount of time cattle spent eating bark from sagebrush.

Fall grazing by cattle also reduced the abundance of big sagebrush and promoted the growth of grasses and forbs in the understory compared to control pastures. Fall and winter are

grazing system for example, may learn to eat mixtures of nutritious and toxic plants in ways to lessen toxicity. For more information read the fact sheet on [Diet Mixing](#).

## Nutrients and Toxins

An animal's ability to eat plants high in toxins depends on their nutritional status. The body must change the structure of most toxins before they are excreted from the body, which requires additional nutrients. Excreting toxins may also disrupt the body's acid/base balance forcing it to use even more protein and energy. In short, as animal's ingest more toxins their need for nutrients also increases. For more information, read the fact sheet on [Nutrient and Toxin Interactions](#) and their influence on diet selection.

ideal times for grazing big sagebrush because typically terpene levels in sagebrush are low and perennial herbs and grasses are dormant. [Click here for more information](#).

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## Let Them Eat Sagebrush

After Chuck's success at getting cattle to sagebrush, Agee Smith applied for and received a Western SARE Producer Grant to teach his herd to forage on sagebrush in winter. Kody Menghini works at Cottonwood and was in charge of the project.

In 2010 and 2011, bred cows were turned out on sagebrush-dominated rangeland and fed half their normal ration of meadow hay from January to March. Cows were in their second trimester of pregnancy. There were no problems with abortion or percent calf crop. Cows seemed to maintain their body condition but because they were bred, it was hard to determine actual weight gain or loss during the period cows browsed on sagebrush.

Many ranchers in the Intermountain West feed hay in winter. Using sagebrush steppe vegetation as forage will likely enable ranchers to feed their cows roughly half the hay they usually feed. This represents a huge savings in winter feed costs. In addition to the a financial savings, grazing sagebrush-dominated rangeland in winter improves rangeland condition and productivity of the understory resulting in long-term habitat and vegetation improvements for both livestock and wildlife.



**June 2011: This pasture was grazed by cattle the prior winter**

The goals of this project are to: 1) cut winter feed costs, 2) create a locally adapted herd of livestock at Cottonwood, and 3) to use management practices that ensure long-term health of sagebrush steppe.

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## Field Day at Cottonwood

On June 24th this year, Agee Smith hosted a field day to demonstrate the benefits of using sagebrush as a winter forage. Thirty-six people attended the event.



**Chuck Petersen discusses his research design and results during the Western SARE Field Day at Cottonwood Ranch.**

The morning started with a talk from Beth Burritt about animal behavioral principles related to teaching cattle to eat sagebrush. Chuck Petersen followed with his research results on teaching cows to eat big sagebrush to

improve biodiversity. Kody Menghini rounded out the morning by talking about cutting winter-feed costs by encouraging cattle to eat sagebrush in winter.

After lunch, workshop participants viewed Chuck Petersen's research plots and discuss his results. Then, we traveled to the pastures where Kody Menghini supplemented cattle on sagebrush-dominated rangeland. The field day was sponsored by Western SARE.

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Other than get it to you on time, let me know what I can do to improve the newsletter!!

**Sincerely,**

Beth Burritt  
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Utah State University is an affirmative action/equal opportunity institution.



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