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# Oh BEHAVE!

Behavioral Education for Human, Animal, Vegetation & Ecosystem Management

BEHAVE Outreach Program • 435-797-3576

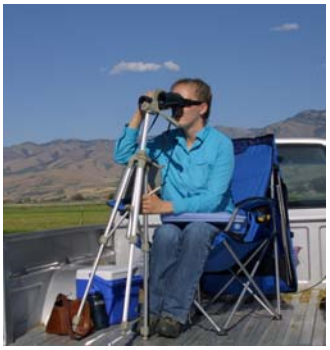
*The Newsletter for the BEHAVE Research and Outreach Program*

**Congratulations !!!**
Larry Lisonbee successfully defended his thesis fall semester

## *BEHAVE Principle of the Month:*

**Toxins influence palatability.** Why do herbivores refuse to eat certain plants? One reason might be toxins. Virtually, all plants contain toxins but most do not cause obvious harm to grazing herbivores because many toxins simply limit the amount of a food herbivores can eat. In general, offering variety improves intake and reduces the likelihood of herbivores over-ingesting any one toxins. In addition, eating the right combinations of toxins may also reduce their toxicity allowing herbivores to eat more forage and gain more weight. For more info see the fact sheet.

## Another Case for Variety



Variety is the spice of life especially when it comes to pastures. Variety enables herbivores to meet nutritional needs while also limiting their intake of any single toxin and by ingesting toxins in ways that lessen their harmful effects. When discussing the possible benefits of variety at workshops, we are often asked by producers, "What forage mixtures should I plant?" Our research program at USU is just beginning to discover how secondary compounds or toxins and the sequence in which they're eaten may interact to influence intake and foraging behavior.

USU graduate student, Emily Lockard investigated if the sequence in which lambs ate endophyte-infected tall fescue (alkaloids), birdsfoot trefoil (tannins), and alfalfa (saponins) affected their foraging behavior. She found lambs grazing a variety of forages ate fewer alfalfa pellets in drylot than lambs grazing a monoculture, indicating they were better at meeting their nutritional needs on mixtures than monocultures. But lambs grazing monocultures or mixtures spent similar amounts of time grazing regardless of the forage species they grazed.

*Lockard's sheep in holding pen look on as their buddies graze during the trial.*

Lockard's trial contrasts results from USU graduate student, Tiffany Lyman. Lyman found when cattle grazed fescue first followed by legumes (trefoil and alfalfa), the time they spent grazing fescue decreased from 40% to 15%. When the sequence was reversed, the same group of cattle increased their time spent grazing fescue from 15% to 50%. Differences between the trials may be due to differences between cattle and sheep or experimental design. Lockard's study is a first step in understanding how sequence and variety affect foraging behavior of grazing lambs.

Continued On Page 2

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# A Spoonful of Tannins May Help the Alkaloids and the Saponins Go Down

Virtually all plants contain secondary compounds and many of these compounds limit intake of forages due to their toxic nature. Unfortunately, we know very little about how these compounds may interact and how they might affect grazing ruminants.

USU graduate student, Larry Lisonbee investigated how ingestion of tannins might affect forage preferences of lambs grazing on pastures with forages containing saponins (alfalfa), alkaloids (endophyte-infected tall fescue) and tannins (birdsfoot trefoil). Lambs were given a solution of tannins or water using a stomach tube then sent out to graze. Lambs receiving tannins increased their preference for the high-saponin variety of alfalfa and the high-alkaloid variety of tall fescue compared to lambs receiving water. Lambs infused with tannins and offered choices among the three forages with high concentrations of secondary compounds had a higher preference for the high-alkaloid variety of tall fescue than control lambs. In contrast, lambs infused with tannin reduced their preference for the high-tannin variety of birdsfoot trefoil.

Planting mixtures of forages with complementary secondary compounds may increase forage intake and improve animal performance. Especially when your pastures already contain grasses high in alkaloids.

## Coming soon:

- New students join the BEHAVE project
- Sagebrush helps an Oregon rancher make it through the winter
- Alfalfa and birdsfoot trefoil help cattle eat more endophyte-infected tall fescue

Your Source for All Things BEHAVE


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