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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

BEHAVE Principle of the Month:

Nature vs. nurture – When it comes to diet selection, which is more important nature or nurture? Often it's an impossible question because many dietary preferences are likely shaped by interactions between genes and experience. The field of epigenetics focuses on how environment affects gene expression further blurring the nature-nurture debate. What does this mean for producers? Keep replacement females from dams that have traits and behaviors you want in your herd. If your animals won't eat a specific plant then try training them to eat it, provided it's safe to eat. Which is more important nature or nurture? From a practical stance, does it matter?

Nature Versus Nurture

Mamber and Damascus goats evolved in the same areas of the Middle East, yet Mamber goats show a lower preference for tannin-rich browse than Damascus goats. It's unknown whether these preferences are due to physiological differences between the breeds or experiences early in life.

Perevolotsky, Ungar and Dvash record bites by Damascus kids during a feeding trial.

In a cross fostering experiment, groups of Mamber and Damascus kids were reared either by their biological mothers or by foster mothers of the other breed. A third group of kids was reared on milk replacer with no adult role models. At weaning, kids and their mothers were exposed to tannin-rich (*Pistacia lentiscus)* and tannin-poor (*Phillyrea latifolia)* browse.

During intake trials, kids from all groups ate both tannin-rich and -poor browse readily. In the preference test, experienced kids had a higher preference for tannin-rich browse than naïve kids. Preference for tannin-rich browse by orphaned kids (61%) or kids reared by Damascus does (55%) were higher than kids reared by Mamber does (41%). Kids learned to consume tannin-rich browse readily even without an adult role model. Kid breed did not affect preference for tannin-rich or poor forage.

Damascus goats browse lentisk (Pistacia lentiscus) which contains 20% tannin

In this study, learning was more important than breed in determining goat kid preference for tannin-rich browse.

Glasser, T.A., E.D. Ungar, S.Y. Landau, A. Perevolotsky, H. Muklada, J.W. Walker 2009. Breed and maternal effects on the intake of tannin-rich browse by juvenile domestic goats (*Capra hircus*). Appl. Anim. Beh. Sci. 119:71-77.

BEHAVE Outreach Program

Impact of Pasture Variety on Cattle Performance and Behavior

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Over the past year, we have highlighted research projects at USU that focus on the effect of pasture variety on diet selection, forage sequence, digestibility and intake. Though there may be many benefits to pasture variety, performance is key for many livestock producers.

Several studies report livestock eat more, and have better feed efficiency when grazing a variety of forages than livestock grazing a pasture with a single forage specie. This spring graduate student, Brody Maughan, plans to study how cattle behavior and performance is affected when cattle graze two grass-legume mixtures. During his study, fall-born calves will be finished on mixtures of tall fescue, which contains alkaloids, with either sainfoin, which contains tannins, or alfalfa, which contains saponins.

The study will run May through September. Cattle will be weighed at regular intervals. They will strip-graze pastures with electric fences moved daily to allow access to fresh forage. Each day, cattle will have free access to strips of grass, legume and a mixture of grass and legume. Brody will record where cattle graze to calculate the proportion of grazing time and sequence of use of each plant species in the alfalfa-fescue mix and the sainfoin-fescue mix.

Cattle grazing at USU's Research Farm near Lewiston, UT

In September, steers will be slaughtered and carcasses evaluated for grade, quality and flavor. An economic assessment of the production cost per unit of retail beef will also be conducted.

This research will enable us to better understand how livestock behave and perform on simple pasture mixtures with forages containing different secondary compounds.

UtahState University COOPERATIVE EXTENSION

BEHAVE Behavioral Education for Human, Animal, Vegetation & Ecosystem Management