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Rejuvenating Landscapes Through Managing Livestock Behavior:

Animal Behavior Specialist Fred Provenza Provides Tips

By Jason Schmidt, Kansas Rural Center

Holton, Ks. - "Palatability is more than a matter of taste," challenged Fred Provenza to the audience at the Livestock Behavior-based Management Workshop in Holton, KS on September 25. Provenza, who is an Animal Behavior specialist with Utah State University, spent the day giving wisdom on how to manage animals to rejuvenate landscapes while also meeting the nutritional needs of the animals. Palatability is directly connected to the body's feedback to meet the need for energy, protein, and various minerals as well as to self-medicate to treat maladies that Provenza has labeled the "Wisdom of the Body." This concept of the "Wisdom of the Body" has implications for managing and manipulating animal's diets and grazing behavior to eat undesirable plant species while avoiding other desirable plant species.

Provenza explained that by simply creating negative or positive feedback experiences after eating certain plants, animals can be trained to select or avoid these plants. For example, by adding lithium chloride to grape vines, which will make sheep sick after eating the grape vines, sheep will quickly learn to avoid grape vines. This allows vineyards to utilize sheep to graze without the fear of damage to the vines. Likewise, by spraying molasses on undesirable weeds, animals can be trained to select these weeds. Similarly, cattle supplemented with Polyethylene glycol, a compound that ties up tannins, leads to cattle eating twice as much *Sericea lespedeza*.

Provenza said the U.S. has the highest number of herbicide resistant weeds of any country. He believes rather than relying on herbicides, "we must learn to love them [weeds] to death with herbivores" that have been trained to eat these weeds. These examples demonstrate Provenza's concept of the "Wisdom of the Body" which tells the animals what to eat or not eat. Provenza claims that if animals are given appropriate choices, animals can successful self-medicate and balance their diets.

Provenza challenged that we do not give enough credit to the wisdom of the body in either animals or humans. He challenged producers to consider offering mineral cafeterias of individual minerals that are deficient to specific locations and allowing animals to individually select the minerals they need. This can be

an economical decision reducing the overconsumption of a mineral mixture. Also, a diverse plant community allows animals to select plants that draw minerals from different soil profiles. In addition, Provenza spoke about cultural wisdom that develops over time and allows animals to become locally adapted. Offspring learn from mothers what to eat and how to survive in specific environments.

Natal experiences in vitro also affect the food and habitat preferences of animals. For example, lambs exposed in vitro to sheep grazing salt brush in Australia were able to better utilize salt brush, which has an unusually high salt content. Understanding the cultural influence on animals' diets has many implications including the need to understand the learning curve that animals will go through when introduced to a new environment. Provenza challenged attendance to select management practices that mimic natural adaptations. These include matching production cycles with seasonal changes in forage growth and quality, and managing offspring to learn from their mothers.

Provenza said nothing is more important from a health perspective than providing variety for animals. Animals grow tired of eating the same thing over and over. Also, combinations of forage species enhance intake and digestibility. For example, cattle perform better on mixtures of endophyte-infected tall fescue and clover pastures than on pastures of monocultures of either fescue or clovers. These forage species have complimentary toxins with cyanogenic compounds (causing bloat) in clovers, and alkaloids in endophyte-infected fescue that when combined increase forage intake and animal performance. Provenza challenged that dietary choice actually increases efficiency, which opposes the philosophy of feeding a total mixed ration (TMR) diet. In research trials, animals offered a free choice diet consumed less while still performing at the same level as animals offered a TMR diet.

Provenza concluded the workshop challenging participants to create management strategies that increase the health of the land and are sustainable. We have become increasingly reliant on fossil fuels for our food production, stated Provenza, which has enabled us to select animals that no longer have the ability to thrive on foods and habitats of many environments. In addition, in 1940 it took 1 calorie of fossil fuels to produce 2.3 calories of food. Today it takes 10 calories of fossil fuels to produce 1 calorie of food leading to a far less sustainable system. Provenza concluded saying we need to "create landscapes that promote healthy soils, plants, herbivores, and people.... not pills and procedures that treat the symptoms of ill-health and ill-being."

This event was sponsored by the Jackson County Conservation District, the Kansas Rural Center, Middle Kansas, Delaware and Banner WRAPS, Kansas Department of Health and Environment, NRCS, and the Meadowlark Extension District.