

KAUAI COUNTY LIVESTOCK NEWS

What's In the Works

Several research and extension projects are in development on Kauai



In May, I returned from my semester at Utah State University and I couldn't be more excited or energized to apply what I've learned. I am really impressed with the ranchers, extension staff, researchers, professors, and students I met there and am indebted to them for what they taught me. As much as I liked being in the classroom again, I am much happier back home in the field. Here's some of the ongoing and upcoming projects currently in the works:

Training Livestock to Eat Weeds

As was introduced in the last newsletter, the 3 year project to train livestock to eat weeds is in the monitoring phase. Cattle, sheep, and goats on Kauai, Maui, and the Big Island have gone through their training course and we are now checking the pastures to see if there are any noticeable effects on the target weeds. In the photo above, Kauai goats are trying out wedelia. I've got my fingers crossed, but you just

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“The acquirement of an education does not consist of a certain number of years spent in school or college... [It] is closely correlated with the life activities of [one's] environment, and is independent of age, sex, or the period of acquirement.”

John W. Gilmore, President of the College of Hawaii, 1910



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never know how these things will turn out.

Homestead Pastured Poultry

Feed costs continue to rise and affect large and small-scale operations alike. To better understand the potential for forages and other alternative feeds to replace commercial feed for backyard hens, I set up a small trial at the Kauai Agricultural Research and Extension Center (KARC) in Wailua Homesteads. Four groups of 6 hens each were set up with different feeding regimes: battery cage with 100% commercial pellets, pasture + 50% commercial scratch and pellet mix, pasture + black soldier fly larvae and later kitchen scraps, and 100% pasture. The pasture was made up almost entirely of perennial peanut (*Arachis pintoii*) and the 3 pastured groups were kept in grazing cages that were moved onto fresh peanut every day. The project wrapped up in May, and I am currently going over results and

should have an extension publication out by the end of the year.

Secondary Effects of Behavior-based Livestock Management

The USDA Western Sustainable Agriculture Research and Education program selected another of our proposals to follow-up on the work we started training livestock to eat weeds as well as other behavior-based management happening in Hawaii. In partnership with Utah State University, we will study the effects, if any, training animals to eat weeds will have on livestock pasture use and internal parasite loads. We will also study the effects bonding livestock species has on foraging behavior.

Livestock Bonding: A Maui Case Study

Never heard of livestock bonding? That's okay, neither had I until last year. Greg Friel of Haleakala Ranch on Maui has been applying the 30+ years of bonding research by Dr. Dean

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GUY CHOY YUKE (CHINESE MUSTARD GREENS WITH BEEF)



Photo: Badagnani, wikimedia.org

From: Kathryn J. Orr, "Cooking Chinese Festival Foods", University of Hawaii Home Economics Series #84, Agricultural Extension Service, Territory of Hawaii, 1955

- 1 1/2 lbs. mustard greens, Chinese cabbage, spinach, or chard
- 2 T. peanut or salad oil
- 1/2 lb. flank or round steak cut 1" thick, then cut in 1/8" strips
- Sesame oil (optional)
- 1/2 t. salt and pepper
- 2 t. soy sauce
- 1 c. chicken stock
- 1 T. cornstarch
- 1/4 c. water

Separate greens. If using mustard greens, peel stalks; cut greens in 2 1/2" wide pieces. If stalks are thick, slash crosswise in 4 sections, cutting to within 1/2 inch of the end of stalk; let stand in cold water until ready to use.

Heat oil in a wide frying pan; add beef strips and toss and cook over high heat until meat is browned. Add 2 or 3 drops sesame oil, if desired, and sprinkle with half the salt, pepper, soy sauce; stir, remove meat.

Add enough additional oil to make 2 T. in pan; add well drained greens, stir and cook for 5 minutes, or until greens are crisp-tender. Season with the remainder of salt, pepper, and soy. Add stock. Blend cornstarch with the water; pour into pan and cook and stir until slightly thickened. Turn off heat and return meat to pan; toss lightly; place in a serving bowl and serve at once. Serves 4 to 6.



RESEARCH ROUND-UP

This section briefly summarizes current and historical livestock and pasture research that may be of interest to Kauai's producers. These synopses are provided for information only and inclusion or exclusion of research articles here is not meant as an endorsement or rejection of referenced material.

Pasture finishing steers in 1930s Hawaii

In the late 1930s, L.A. Henke, S.H. Work, and A.W. Burt of the University of Hawaii conducted 8 feeding trials for finishing steers on Oahu, Maui, and the Big Island. They found cane molasses supplements fed free choice greatly improved gains and slightly improved beef carcass grade on koa haole pastured Angus steers; protein (fish meal) supplements were not profitable unless the majority of grass was mature; pigeon pea (*Cajanus cajan*) pastures were superior to grass pastures in beef produced per unit area and time. This is really a fascinating read from both historical and current industry trend standpoints.

Henke, L.A. et al. 1940. *Beef cattle feeding trials in Hawaii*. Hawaii Agricultural Experiment Station, Bulletin No. 85.



Figure 8.—Steers feeding on broken-down koa haole—Waianae Company Experiment II (1938)

Sheep self-medicate in response to parasite burden

Utah State University researchers showed in a feeding experiment that sheep strongly increased their preference for condensed tannin

containing feed when parasitized by gastrointestinal worms. The condensed tannin feed was avoided by the same sheep before being infected. Condensed tannins effectively reduced their parasite load, and therefore the results suggest sheep can and will adjust their diet preference according to their health status. This study has obvious implications for attempts to use condensed tannin containing forages to aid in parasite control.

Villalba, J.J. et al. 2010. *Selection of tannins by sheep in response to gastrointestinal nematode infection*. Journal of Animal Science, vol. 88, iss. 6, pgs. 2189-2198.

Heat stress and cattle coat color

UH Dairy Extension Specialist Dr. Chin Lee was part of a team of Cornell and USDA researchers evaluating coat color and length of time feedlot cattle spent in the shade. The percent of time spent in the shade by breed was 89% Angus (black), 81% MARC III (red), 57% MARC I (tan), and 55% Charolais (white). Gebremedhin, K.G. et al. 2011. *Body temperature and behavioral activities of four breeds of heifers in shade and full sun*. Applied Engineering in Agriculture, vol. 27, iss. 6, pgs. 999-1006.

Boer, Kiko, and Spanish meat goat carcass quality

Researchers from the southeastern U.S. teamed up to fill a large gap in small ruminant research: goat carcass quality by breed. Sire breed did not affect live, carcass, and primal weights whereas dam breed gave consistently significant variation in these traits. Kiko dams produced kids with heavier live, carcass, and primal weights than Boer dams with Spanish dams intermediate. Boer sires decreased dressing percent compared to the other breeds, but kids from Boer sires had better live evaluation scores. Proportional boneless meat yields did not vary by breed or parentage. The

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authors conclude, “Boer germplasm was not superior to Kiko or Spanish germplasm for carcass yield when semi-intensively managed on humid, subtropical pasture... These results suggest the need to reassess the often used depiction of the Boer breed as superior among goats for meat production.”

Browning Jr., R. et al. 2012. *Carcass yield traits of kids from a complete diallel of Boer, Kiko, and Spanish meat goat breeds semi-intensively managed on humid subtropical pasture*. Journal of Animal Science, vol. 90, iss. 3, pgs. 709-722.

Forage resource availability affects sheep distribution more than hunger

In a special issue on animal production in the tropics, Australian researchers published results from a small paddock experiment manipulating Merino sheep feeding status and pasture forage availability to better understand social behavior. Contrary to what the researchers expected, forage availability was a stronger influence on group formation than hunger. In other words, when forage quality and quantity were low, sheep formed tighter groups when grazing, and when forage resources were high sheep dispersed more regardless of whether or not they had eaten the night before. The authors concluded that when food is scarce, the sheep may be sharing information about food patches, and when food is abundant, the sheep move apart to maximize intake.


Freire, R. et al. 2012. *Spatial distribution patterns of sheep following manipulation of feeding motivation and food availability*. Animal, vol. 6, iss. 5, pgs. 846-851. 


PHOTO QUIZ



Last issue's quiz - What are these two Maui ranchers doing with all these peanuts?

Answer: This ranch is participating on a collaborative project to train livestock to eat weeds. The process is based largely on the methods developed by Kathy Voth (www.livestockforlandscapes.com) and involves introducing unfamiliar but nutritious feeds to livestock before introducing weeds. The cattle were doing so good at eating unfamiliar feeds, the ranchers tried peanuts. All that was left in the feed tubs were a few shells.



This issue's quiz - What's wrong with this goat, if anything? Send your ideas, comments, or sarcastic remarks to Matt at stevens@hawaii.edu for a chance to win a prize. Prizes go to the comments I like best regardless of accuracy. The answer will be discussed in the next issue. 

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Anderson of the USDA Agricultural Research Service in New Mexico. Normally, different livestock species tend to avoid each other in the same pasture. Bonded livestock are trained to work together as a cohesive group or flerd (flock + herd). This concept has tremendous implications for herding and predator protection as cattle turn and stand-off a threat whereas sheep flee until one is separated and caught. Bonded sheep and goats will hide among the cattle when faced with a threat and move as a group. Mr. Friel, Dr. Anderson, and I are currently working on an extension publication detailing the concept and Haleakala's experience. Look for it in the next couple months. For now, see the video online at: <http://www.youtube.com/watch?v=eBodDWfErSY>.



An Introduction to Sheep and Goat Parasite Management in Hawaii

Gastrointestinal parasites (including coccidia), or worms, are a chief health concern for small ruminant production in Hawaii. Worms directly impact ranch profits as well as increase secondary infections, reproductive problems, and management costs. Dr. Ashley Stokes, Dr. Lyle McNeal of Utah State University, and I are currently developing an extension publication for those new to sheep and goat production in Hawaii. Whether you are completely new to raising livestock, have kept other animals besides sheep or goats, or are an experienced producer but new to the tropics, this publication intends to give adequate background information and recommendations for developing an integrated parasite management plan. Look for this publication by the end of summer on the CTAHR website: <http://www.ctahr.hawaii.edu/site/Info.aspx>.



If you would like to submit events or other announcements for the next newsletter, please e-mail me at stevenson@hawaii.edu.

*****NOTE*****

To conserve resources, the Kauai County Livestock News is now a completely digital publication. However, if you do not have Internet access or do not use e-mail and would like to receive a hard copy of this newsletter, please send me your name and mailing address.

“If [range scientists] fail to address management related issues important to land managers, we have abrogated our responsibilities and minimized our impact.”

R. Teague, F. Provenza, B. Norton, T. Steffens, M. Barnes, M. Kothmann, & R. Roath, 2008



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