# A Change in Foraging Behavior

All plants contain secondary compounds (PSC). These compounds can be toxic at high doses or can act like medicines at low doses. PSC often provide benefits to plants such as increased pest resistance, drought tolerance or competitive ability. Unfortunately, many of these compounds are toxic to animals (from insects to mammals) and reduce intake of plants.

The objective of this study was to determine how different PSMs might affect the diet selection of sheep grazing forages with different PSMs: 1) alfalfa (saponins), birdsfoot trefoil (tannins) and tall fescue (alkaloids).

Lambs were dosed each morning with tannins, saponins or an alkaloid (ergotamine) then were grazed a pasture that contained birdsfoot trefoil, alfalfa, endophyte-infected tall fescue, and orchard grass.

**Trial 1:** Lambs gavaged with tannins spent more time grazing birdsfoot trefoil and tall fescue.

**Trial 2:** Lambs gavaged with saponins spent more time grazing tall fescue and the least time grazing alfalfa.

**Trial 3:** Lambs gavaged with ergotamie (alkaloid) spent more time grazing birdsfoot trefoil and the least time grazing tall fescue.

Lambs minimized the negative impacts of PSC by changing their foraging behavior to avoid over-ingesting any one PSC and by selectively increasing their preference for forages containing other PSMs.


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# The Desert-Friendly Cow

By Cally Carswell, High Country News

Alfredo Gonzalez manages a modest herd of 200 beef cows on the Jornada Experimental Range, near Las Cruces, New Mexico, where grass is scarce, and water scarcer. Occasionally, he says, fellow ranchers ask: "What the hell are you doing?"

The question is directed primarily at the animals he raises. They are speckled and streaked with brown, black and white, have horns that spiral as they age, bony frames, and a name that is endlessly fun to recite. These
In this study, fifth instar tobacco hornworm caterpillars received an electrical shock paired with the odor of ethyl acetate to create a conditioned odor aversion. Larvae learned to avoid the odor, and the aversion was still present in adult moths.

Larvae trained in the third instar still showed odor aversion after two molts, as fifth instars, but did not avoid the odor as adult moths.

Apparently, post-metamorphic recall involves regions of the brain that are not developed until later in the caterpillar's life.


But Gonzalez sees only potential: an animal that could rescue ranching and rangelands in the Southwest. Criollo require little water, live on sparse forage, and can withstand hot weather. Texas longhorns, Florida cracker cattle, and corriente sport ropers are among their descendants.

In 2000, Ed Fredrickson, a former researcher at the Jornada, became convinced that with the landscape beaten up, feed and fuel costs and global temperatures rising, Southwestern ranchers needed to change, raising smaller animals that could tolerate heat, eat less, forage more broadly, and move often more to minimize overgrazing of native grasses.

Fredrickson showed that criollo spend less time near water than British breeds, graze fewer hours and over more diverse terrain, and remain active during extreme heat. That might be because they store fat around their kidneys, rather than only under their hide, and thus retain less heat.

Dennis Moroney, of The 47 Ranch in southern Arizona, is converting his whole herd to criollo. Drought and the changing climate caused Moroney to cut his herd in half a decade ago to help maintain vegetation. Raising criollo, which he finishes and sells without a middleman, has kept him afloat despite the reduction in numbers. They range well over Moroney's rugged terrain, browse shrubs, cactus, trees and grasses, calve easily, are rarely ill and get little supplemental feed. "But the acid test for our business," says Moroney, "is do our customers like the meat?"

It's tender and beautifully marbled, Moroney reports, and farmers market and co-op customers accept smaller cuts—a 7 or 8 oz. ribeye. Moroney tells them about the animals' historical relationship to the Southwest, "but the main pitch is that it tastes fabulously," he says.

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Beth Burtett