FRIENDLY FIRE

Ranchers reclaim rangeland with prescribed burning.

by ***Troy Smith***

►Ranchers in southwestern Nebraska use prescribed burns to target Eastern Red Cedar trees that are encroaching on rangeland.

PHOTOS COURTESY DOUG WHISENHUNT, NRCS PRESCRIBED BURN SPECIALIST

It's kind of like an old-fashioned cow-country branding. Some planning and preparation must take place prior to the chosen date. Meanwhile, the host rancher frets about the weather. When the big day finally arrives, the neighbors show up to help get the job done. They share a meal and fellowship afterward. And it happens again and again as neighbors take turns hosting similar events throughout the season.

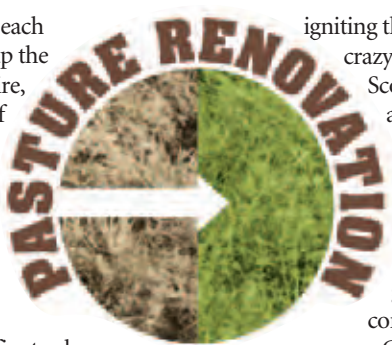
But we're not talking about ranchers coming together to mark calves. These neighbors kindle fire, but not for heating branding irons. For several days each year, they are all about heating up the landscape. They foster friendly fire, confining it to specific patches of acreage, using prescribed burns to improve the range.

►Rancher Scott Stout, left, acts as "burn boss" for a Loess Canyon Rangeland Alliance crew.

Burning with purpose

Intentional burning of grassland is nothing new. Long before the arrival of European settlers, Native Americans used fire to shape landscapes and promote habitat for wildlife species they hunted. Ranchers learned how fire could be used to combat invading woody plants and stimulate the growth of grasses and forbs more favorable for grazing livestock. In some regions of the country, such as the Flint Hills of Kansas, carefully controlled fires have long been used to make prairie pastures more productive.

Of course, not all graziers have embraced fire as a management tool. Many have experienced wildfire — a fearsome and destructive force. To them, purposely igniting the range seems like a crazy notion. Rancher Scott Stout says some area landowners thought he was crazy when he started burning pastures in 2008.



Stout's family grazes about 500 commercial Angus cows near Curtis, Neb. The ranch is located in the southwestern part of the state, in the loess canyon area so-named for its loess (clay silt) soil and deeply creased terrain. For the last few decades, the region's rangeland has seen steady encroachment by Eastern Red Cedar.

Historically, area graziers figured it took 8-10 acres to feed a cow-calf pair for a summer grazing season of 5½ months. However, Stout says thickening cedar trees had shaded out so much grass and reduced forage production so much that it took 13-15 acres to carry a cow and her calf.

"Based on pasture lease rates ranging from $15 to $17 per acre, it was costing about $224, on average, to graze a cow-calf pair for 5½ months," says Stout.

On some area ranches, fully half of the historic carrying capacity had been lost to cedar encroachment during a period of about

40 years. According to the Natural Resource Conservation Service (NRCS), a cedar canopy covered about 40% of the area's rangeland. Theoretically, unchecked encroachment at the estimated 2% per year could have extended the canopy to nearly 100% in another 40 years.

Battling back with axe, saw and skid-steer or tractor-mounted tree shears slowed the advance a little, says Stout, but mechanical efforts to control trees are laborious and expensive. That's why he turned to fire. To use fire to best advantage, Stout joined the Loess Canyon Rangeland Alliance (LCRA).

Reclaiming grassland

NRCS Prescribed Burn Specialist Doug Whisenhunt helped guide the establishment of LCRA. He describes early participants as "courageous and committed" to helping each other use prescribed burning constructively, despite criticism by skeptics.

"Most had no experience and we had very little equipment for our first burn, in 2002, on about 500 acres," recalls Whisenhunt. "It was a safe, controlled burn, but only mildly successful. There weren't as many trees killed as we had hoped. A lot of the trees over 6 feet tall survived."

Whisenhunt says nearly 1,300 acres were burned that first year, but drought made it hard to plan burns during three subsequent years. Still, the group prepared for the future. They also sought and received grant money for the purchase of equipment, including drip torches and multiple 250- to 300-gallon water tanks with motorized pumps and hoses. When burning could be resumed, members became more skillful and results improved. Now, says Whisenhunt, a successful burn often results in 75% mortality among all cedar trees within a burn area.

A particularly successful technique is "cutting and stuffing" of trees growing near the perimeter of the area to be burned. Typically, all trees within 100 feet of the perimeter "line" are cut and pushed inward, toward the center of the burn area. When stuffed under other standing cedars and allowed to dry, they eventually help fuel a fire of the intensity needed to kill large trees.

Whisenhunt says one of the goals in organizing and mentoring groups like the LCRA is to prepare local member-landowners to handle prescribed burns themselves. NRCS personnel write a burn plan for each event, but members like Stout have stepped up to serve as "burn bosses" who coordinate the work of burn crews.

Many crewmembers are now veterans of prescribed burning, but novices are welcomed. That includes landowners and area farm and ranch employees who are

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►**Above:** This aerial photo was taken after grass green-up of an area burned a few months previous. Note the skeletons of killed red cedar trees in the burned area and the growing cedar canopy in adjacent areas. The photo shows a landscape typical of the Loess Canyon area of southwestern Nebraska.

►**Left:** Groups like the Loess Canyon Rangeland Alliance can qualify for grants to help pay for equipment needed to maintain control of fire.

►**Below:** Mid-summer grass regrowth, four months after an early-spring burn.

seeking experience. Burn events also serve as training sessions for NRCS personnel and members of volunteer fire departments. Local firefighters have been eager to learn and to help. Whisenhunt says many newcomers to prescribed burning are surprised to learn how much advance planning is required.

Preparation is key

"During a burn, controlling the fire must be the focus," adds Stout. "Preparation really is the key to safety and success. And the preparation takes a whole lot more time than the actual burn."

It starts with defining a burn area, which may include land belonging to just one party or the combined acreage of multiple landowners. In order to develop a burn plan, the area is mapped and a route for the fire is plotted, usually with the aid of global positioning system (GPS) technology.

Physical preparation involves the described clearing of the burn area perimeter. Cutting and stuffing is done to enhance the burning of bigger and thicker cedar mottes. Additionally, grazing should be deferred well in advance of a planned burn, to assure the presence of ample dried forage growth as fuel. However, the old-growth forage growing along the burn area border is mowed, to help keep the fire contained.

"What with establishing and clearing fire lines and building a fuel base, the planning often starts two years ahead of a prescribed burn," explains Stout. "The biggest cost to the landowner is the (physical) preparation — the cutting and stuffing, and the mowing of grass along the fire line. Just prior to a burn, the landowner needs to line up water storage tanks and make sure they are filled. The landowner provides fuel for drip torches and the burn-day meal for the crew."

Stout says most area landowners own some equipment for shearing trees and mowing fire lines. If a landowner had to hire all prep work done and paid wages to a burn crew, the cost might be near $20 per acre. Stout says the actual expense for LCRA members is about half that estimate. It doesn't include the cost associated with letting a pasture go ungrazed, in order to build up fuel. However, through the Environmental Quality Incentives Program (EQIP), qualified ranchers often receive

assistance with that expense and other prescribed burn costs.

Weather considerations

Even with long-range planning, careful preparation and organization of a skilled crew, the final decision to ignite a prescribed burn remains at the mercy of the weather. According to Stout, conditions for a safe but effective burn hinge on adequate relative humidity (must be greater than 20%) plus favorable wind direction and speed (20 mile per hour or less). Acceptable air temperature can range from 40° F to 80° F.

"If the conditions aren't right on the designated day, we don't burn. You can't take chances," emphasizes Stout, noting how the months of February, March and April generally offer the advantage of lower moisture content in the cedar trees.

"There's really a pretty narrow window, and only so many days when conditions might be right. Within our local area, we're lucky to conduct six or seven burns per year," he adds.

LCRA members are trying harder to coordinate burns involving adjoining parcels of land with different owners. To date, says Stout, a typical burn event has involved about 800 acres, on average. The group's largest prescribed burn project, involving 2,500 acres, is planned for spring 2012.

"For our family's grazing operation, prescribed burning is a cost-effective way to reclaim carrying capacity and reduce production costs," states Stout. "On the land where we've burned cedars, we're back to the old summer grazing rule of thumb — 8 to 10 acres per pair. Instead of $224, it costs $144 (per pair) for the season."

Whisenhunt says the success stories of ranchers involved in groups like the LCRA are changing perceptions of fire as a tool for range management. Range managers are seeing more and more evidence of how prescribed burning can be used to rejuvenate prairie grazing lands while removing trees and other invaders. More graziers are seeing fire as a tool for long-term use and, like Stout, plan to burn pastures every 4 to 5 years.

"We're on our way," says Whisenhunt, "to making prescribed fire a normal part of ranching culture."