

Prescribed Fire Preserves Loess Hills Special Resources

Western Iowans aren't the only ones who believe the Loess Hills are something special. The National Park Service has designated the landform as nationally significant. They describe the area as the best example of loess topography in the United States.

The rugged Loess Hills topography creates a diverse grassland ecosystem that is home to over 700 kinds of plants. Grassland animal species are plentiful too. Over 30 have been designated by the National Park Service as a special concern. However, the native prairie that these plants and animals can be found on is rapidly disappearing. "About 1500 acres of native prairie are being overrun each year by woody plants such as sumac and cedar," comments Suzanne Hickey, Loess Hills Protection Specialist with The Nature Conservancy. The Conservancy estimates only 3 percent of land within the Loess Hills remains as native prairie.

The Nature Conservancy and other natural resource organizations throughout western Iowa are urging landowners to use prescribed fire on their pastures and native prairie remnants. Prescribed fire is one way landowners can guard against losing their grasslands to invasive woody plants. Fire also can be very effective in restoring native plants in over-grazed pastures. Prairie fires occurred regularly prior to Iowa's settlement. Intense fires allowed grasses to flourish and restricted woodlands to areas with natural fire breaks such as draws and steep ravines.

Bill and Doty Zales of Westfield, Iowa have burned their prairie land eight times in the past five years. Prior to burning, the Zales' land was becoming heavily invaded with trees and shrubs.

"Once you see a prairie before and after a burn, you're convinced of the value of burning. You see so many more plants blooming. They've always been there, but the fire released them. We've seen as many as 30 new forms and the grasses grow higher than your head," Bill says.

Dean Lord, a Hornick-area cattle producer, also understands the importance of prescribed fire in the Loess Hills. About 60 percent of the grass his cows graze is native prairie. He uses a combination of mechanical brush clearing and prescribed fire to control woody vegetation. "If you don't have good grass, you can't grow good calves. And without good calves, I'm out of business," Lord comments.

This project is sponsored by the Loess Hills Alliance and funded by Iowa Department of Natural Resources, Resource Enhancement and Protection program. To learn more about the benefits of prescribed fire, contact Matt Grave, Loess Hills Burn Crew Leader: (402) 490-7036.

Loess Hills Landowners and Prescribed Fire

How can you restore native prairie, increase wildlife habitat, and improve your livestock grazing operation? By letting it burn.

Yes, that's right, with fire. Commonly associated with destruction and loss, prescribed fire can actually produce the opposite. Prior to settlement, prairie fires were the key to the health and survival of Loess Hills plants and animals. Fire kept the ecosystem "in check" by controlling woody vegetation and reviving prairie grasses and forbs. Wildlife and grazing animals depended on fire to preserve their native habitat.

In recent decades, fire has disappeared from the horizon, largely due to fear and misunderstanding of its role in the ecosystem. Invasive woody vegetation, such as eastern red cedar, has since been steadily taking over the Hills, choking out native plant communities, reducing wildlife habitat, and decreasing livestock grazing.

We can't expect to let fire sweep across the land as it did before settlement. We can, however, use prescribed fire. Prescribed fire is the controlled use of fire under specific conditions and boundaries. With proper planning and implementation prescribed fire is safe and can yield results that will help landowners reach their land management goals.

Approximately 97 percent of the Loess Hills is privately owned, putting acceptance of prescribed fire in the hands of landowners. And acceptance begins with a clear understanding. Fire can be a scary thing, but used correctly, the benefits far outweigh the risks.

The Loess Hills Alliance would like to invite Loess Hills landowners to hear more about how prescribed fire can improve their land. Several informational meetings will take place throughout the Loess Hills region that will focus on the benefits of prescribed fire, cost-share opportunities, and available burn crews and landowner training. Meetings are currently scheduled in Fremont, Harrison, and Monona counties for early December. For more details call 1-866-792-6248 and ask for Julie.

This project is sponsored by the Loess Hills Alliance and funded by the REAP Conservation Education Program.



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News Release

USDA Field Offices Look to Restore and Preserve a Few Good Prairies

As you drive south on Interstate 29, just north of Hamburg, you might notice something horrid: hundreds of cedar trees lying dead on the sides of the Loess Hills. This is not intended to insight activists into picket-lines, holding signs saying "Save the Cedars. It is, though, a great way to draw the general public's attention to one of the greatest issues concerning one of our most unique resources.

When Lewis and Clark first entered Iowa, they noted the "Golden Hills" that stretched upward from the Missouri River Valley. These were called bald pated hills that "parrelel to the river & at from 3 to 6 miles distant from it, and extends as far up & Down as I Can See," according to William Clark. The hills were free from trees, as was much of Iowa, and a diverse mixture of grasses and flowering plants covered these hills. Trees could only be found in draws and on a few north or east-facing slopes.

Since those times, settlers have carved the land into small sections across Iowa, converting those rich prairie ecosystems into farm fields that out-produce any others in the world. One adverse-effect is the loss of more than 99.9% of the native prairie that once covered most of the state. Most of that 1/10 of 1 percent lies in the Loess Hills. This makes our "Golden Hills" an important area for not only the state, but the nation. Nowhere else can the tall native grass prairie species be found in such close proximity to species, like yucca, which are more common to the Great Plains short-grass prairies.

Our last few remnant prairies keep disappearing; not because of our actions, but because of our lack of intervention. Since the exclusion of natural and human fires on the landscape, invasive woody species have overtaken much of the area. These species include Eastern redcedar, smooth sumac, but also include elms, locusts, cottonwoods, and other species that were not found on the hills before fires were excluded from the area.

Local USDA field offices have a variety of programs to help landowner maintain and establish native ecosystems on their land. These programs are funded by conservation agencies like the United States Department of Agriculture's Natural Resources Conservation Service, the Iowa Department of Agriculture and Land Stewardship-Division of Soil Conservation, the Iowa Department of Natural Resources, and the US Fish and Wildlife Foundation, and also The Nature Conservancy.

Practices that can be cost-shared include prairie plantings, removal of undesirable woody species, such as redcedar and honey locust in native prairie areas, and prescribed fire to enhance native vegetation and set-back woody encroachment. Other practice included in these program (not in prairie areas) are tree plantings, timber stand improvement (removal of undesirable species), and shelterbelt/windbreaks. These practices are eligible for up to 75% cost-share from the partnering agency.

If you own land within the Loess Hills and are interested in restoration, if you would like to return your land to a more-native vegetative community, or if you would like more information about our natural resources; please contact the Malvern USDA Service Center at (712) 624-8606, extension 3.

Going ^{for the} BURN



Submitted photos
Participating in a recent prescribed burn on the property of David Zahrt, of Turin, are from left, Scott Beacham, National Park Service; Matt Graeve, The Nature Conservancy; Zahrt and J.P. Mattingly, National Park Service. Graeve directs the burn crew, a project dedicated to restoring parts of the Loess Hills to its natural state.

RESTORATION OF PRAIRIE HARDER THAN IT LOOKS

TOM MCMAHON
Staff Writer

TURIN — Southwest Iowa landowners looking to burn land tracts and restore natural prairie grass and flowers now have a professional burn team to assist them.

Matt Graeve, land steward with The Nature Conservancy, has been working since January as the organization's burn boss. He heads up a four-person crew, whose expertise and training can facilitate prescribed burns.

"It's a lot harder than it looks, Graeve said.

David Zahrt took advantage of the burn crew's expertise in November. They burned 50 acres of his Loess Hills property outside of Turin. That was phase one of a two-part burn that will eventually result in 700 acres being restored to its natural state.

"I had a group of nearby landowners over for a pot luck. Matt was there, too," Zahrt said.

The seven property owners agreed to have Graeve's crew burn the 700 acres in the spring. Graeve said the November burn on Zahrt's land helped prepare the area for the larger burn next year.

"It will make it safer to do the larger burn next spring," he said.

Zahrt said the 50-acre burned was land closest to nearby Turin and will reduce the risk fire would make its way to town when the larger burn is undertaken.

He said the Nov. 6 burn was "textbook. It went perfectly," Zahrt said.

He was part of the burn team and said the initial step was to walk the two-mile perimeter where the burn would take place. After lunch, Graeve's crew got their

gear on and started the land on fire.

"It lasted about four hours," Zahrt said. Conditions were favorable but not perfect, he said.

"We were hoping for a 5-to-10-miles-per-hour wind but it was only 3 to 5 miles per hour," he said.

He said a low-level wind is helpful because you know which way the fire will move.

Zahrt said the burn crew walked the charred property when the burn ended, making certain no burning embers remained.

"They also came back the next day to check on it," he said.

Graeve said his crew provides a safe option for landowners who want to restore their Loess Hills property to its native state. He said in the past, landowners would sometimes enlist volunteer firefighters to help. He said he also draws on this resource if the fire requires more people.

"Us doing it helps relieve the volunteers of that burden," Graeve said.

His core crew has held training on conducting prescribed burns, and everyone who assists must have some level of training. "We offer training during the winter months," he said.

Graeve said burns stimulate native prairie vegetation's growth by decreasing the number of cedar trees that block such growth.

He said he likes to get multiple owners to participate whenever possible because then his crew can utilize natural fire breaks, such as roads or rivers, to stop the burn instead of stopping it at an owner's property line.

Graeve said owners pay part of the burn

costs.

He said there is a 50 percent match administered through Golden Hills Resource Conservation and Development. Graeve said financial contributors include the U.S. Fish and Wildlife Service, U.S. Forest Service and Iowa Department of Natural Resources.

Susanne Hickey, The Nature Conservancy Loess Hills project manager, said she is impressed by the many groups working together on the project.

She said, in addition to those funding sources, county conservation offices have also assisted and the Golden Hills Resource Conservation and Development oversees the program's grants.

"No one entity could do it alone," Hickey said.

She said it is challenging to implement large burns and takes a lot of planning. She said the burn crew conducted seven burns this fall and they all went well.

"We expect to do from eight to 10 next spring," Hickey said.

Zahrt's was one of the successful fall burns. He said he has conducted burns prior to the burn crews formation, but it was much easier having Graeve's team involved. "I never had this much equipment or help," he said.

Zahrt said overuse of his property for cattle grazing accounts for some of the loss of natural vegetation.

"They got as many cattle as they could and let them eat as much as they wanted," he said.

The outcome is a pasture full of weeds. He said cedar trees took over much of the land, as well.

"I have a picture of the property from

1916 and there were no cedars in it," he said.

Zahrt said when he purchased a previous tenant's piece of land that had been used for cattle grazing, the retiring tenant remarked, "You can't graze as many cattle, David — there's not as much grass as there used to be."

Zahrt said a more honest statement would have been, "You can't graze as many cattle, David, because I used conventional grazing practices and mined the hills."

He said 160 acres of hill pasture which was perhaps 10 percent covered by woody vegetation in the 1950s was 75 percent tree covered when he started his restoration effort.

Zahrt began rotating the cattle through the pastures. He said within three years the paddocks which had consistently been dominated by non-native thistles were filled with native brome grass which crowded them out.

Zahrt said he hopes to market prairie seeds once he gets the land in its natural state. He said the natural landscape will also provide a scenic view for patrons of the bed and breakfast he operates.

"I am frustrated with my attempts to reconstruct prairie," Zahrt said. "I have difficulty absorbing the fact that it took 45 years to degrade it, and I want to recover and reconstruct it in two or three years."

"Certainly one of the components involved in maintaining prairie was fire. We have suppressed fire and that, too, has contributed to the succession of woody vegetation over the prairie.

"Those of us who expect to recover prairie are beginning to use prescribed fire as one very important management tool."

Doak: Save the Loess Hills by setting them on fire

Trees and shrubs are choking out native grasses, flowers of the prairie

By RICHARD DOAK
REGISTER COLUMNIST

Walking the trail along Badger Ridge on a September morning gives the impression of strolling a high wire. The hillsides fall away so steeply that the narrow trail seems balanced atop the ridge, and the eye surveys not the immediate surroundings but the deep ravines and the broad Missouri River floodplain far below.

This sensation is the essence of being in the Loess Hills.

In the distance, the fields have turned golden, in pleasing contrast with the still-green hills. Down below, a parade of wild turkey emerges from a corn patch, oblivious to the humans observing from high above. Farther above, raptors soar on the updrafts from the hills. From this vantage, up to 1,000 have been counted in a single day — bald and golden eagles, kestrels, merlins, falcons, vultures, hawks.

But on this day humans have come not to watch birds but to learn about the invasion. They're here to study the tactics in the war to repel the invaders — a war in which the chief weapon is fire.

At Hitchcock Nature Center near Council Bluffs, park ranger and land manager Chad Graeve explains that to save the hills, they must be burned.

Graeve was the host at the Pottawattamie County preserve on Sept. 23 for a touring group of natural-area managers from around the country. They came to learn about the challenge facing Graeve and all who treasure Iowa's unique Loess Hills: how to re-establish the native prairie ecosystem that is starving to death in the shade of invading trees and shrubs, denied the sunlight needed for survival.

He is joined by Susanne Hickey, project director for the Nature Conservancy of Iowa, which has begun a long-term effort to encourage regular prairie fires throughout the hills. There's a lot of persuasion and a lot of education in fire management to be done before that will happen.

The Loess Hills that rim the Missouri Valley along Iowa's western border were originally almost treeless. Capt. William Clark in 1804 called the bluffs "bald pated," the land "covered with grass, entirely void of timber, except what grows on the water."

This was the prairie, which covered most of Iowa. It owed its existence to wind and fire. The native grasses and prairie flowers were adapted to fire and were renewed when blazes swept across the plains every three to five years, destroying most woody plants that dared to venture away from the streams and into the grasslands.

The exception in the Loess Hills were tough bur oaks, which could survive the fires under the right conditions. They established themselves in savannas, with the trees widely enough spaced to let sunlight reach the grasses.

It's estimated that less than 1 percent of Iowa's original prairie remains, mostly in tiny remnants. Only in the Loess Hills do sizable tracts cling to survival. They were spared from the plow because the hills are so steep.

But what was spared from the plow is being killed by the trees. The absence of fire in modern times has allowed woody plants to invade the hills, forming solid canopies that deny sunlight to the flowers and grasses. The sturdy bur oaks are threatened, too. They do not regenerate in the new forested environment, Hickey said.

In all, she said, some 49 species of plants and animals in the Loess Hills are listed as of "special concern," most of them associated with the prairie ecosystem. They have names such as prairie moonwort, cowboy's delight, ten-petal mentzelia, plains pocket mouse, prairie rattlesnake, Ottoe skipper, sharp-tailed grouse.

Every aspect of pre-set fires is planned

The diaries of early Iowa settlers and the archives of pioneer newspapers are filled with awe-struck accounts of prairie fires, of night skies turned orange by distant fires, of the terror of close infernos.

It is said the searing flames could reach 40 feet in height and be driven by the wind as fast as a horse could gallop.

Today's prescribed burns are tamer. In fact, it's argued that periodic prescribed burns can prevent heavy accumulation of underbrush, hence lessening the danger a wildfire might occur.

According to a Nature Conservancy pamphlet, prescribed burns earned their name from a literal "prescription" written to plan every aspect of the burn. If conditions aren't right on the day of the burn, it is declared "out of prescription" and canceled.

The Conservancy says controlling where the smoke will go is an important part of every prescription, as is the proximity of houses and roads. Local fire departments are notified, and burn permits are obtained. The burns are conducted by trained fire managers.

Historically, Iowa farmers often burned pastures in early spring to encourage new grass. Depending on the goals of a given burn, the Conservancy recommends certain burns in the summer and fall, too.

The Loess Hills are the eastern-most outpost of the western prairie, containing plants such as yucca that grow nowhere else in Iowa.

Park ranger Graeve has aerial photos taken in the 1930s that show much open prairie still existed then in what is now Hitchcock Nature Center. Today, it is almost all forested, except on those slopes where Graeve and his crews have begun the long, hard battle to reclaim the hills for the prairie.

They're in the seventh year of a projected 50-year effort. It's not as simple as lighting a match and watching the fire bring the prairie back.

First, the invading trees and brush — the dogwoods, the sumac, the pesky eastern red cedar — must be cut down and left in place to dry. The bur oak and basswood are left standing, but Graeve worries about them surviving. After they've grown used to being sheltered by surrounding forest, he's not sure how they'll cope when once again they stand exposed to the harsh prairie winds.

Only after the brush has been cut, and when the time and conditions are right, can a carefully planned fire be set. The process is labor-intensive, and only a small part of the 1,000-acre preserve can be done each year. The encouraging thing, Graeve said, is that the prairie seems to regenerate quickly. Once sunlight is available again, scrawny prairie specimens that barely clung to life in the shade become robust again and spread to reclaim their former habitat.

If the trees are allowed to smother the hills for many more decades, however, it's not known whether there will be enough prairie survivors left in the woods to reclaim the land even if the trees are cleared.

Getting rid of the trees not only gives the prairie a chance to grow back, but opens the vistas for visitors to enjoy as they hike Badger Ridge and other trails.

The hope at Hitchcock is to raise \$8 million to keep the restoration going, and Graeve is optimistic. "In another five years, it's going to be awesome," he said.

But Hitchcock is just a small pearl in the ocean of the Loess Hills, which encompass some 650,000 acres in seven counties.

Hickey said about 100,000 acres need to be burned every year on a rotating basis to restore the ecosystem. At present, only 5,000 to 8,000 acres a year are being burned.

About 97 percent of the land in the hills is privately owned, which means if the goal of 100,000 acres is ever going to be achieved, it will require cooperation from landowners, plus training a lot of people in the safe and proper methods of burning and educating residents throughout the region on the benefits of prescribed fire.

Obstacles abound. Natural fire breaks don't necessarily follow property lines, so a burn might require several neighboring landowners to work together. And "the insurance industry doesn't understand pre-set fires," Hickey said, so education is needed beyond the Loess Hills.

More volunteer fire departments need to be trained in how to conduct prescribed burns. One idea: Let celebrations of prescribed burns supplement chili suppers as fund-raisers for fire departments in prairie regions.

Prescribed burns can benefit landowners by restoring grazing, Hickey said. Plus, many older residents of the hills recall them as being grass-covered in their youth and would like to see them that way again.

She recalled one couple who had a prescribed burn on their farm, and they phoned her excitedly one day about an unusual flower that had made an appearance. Hickey said she doubted it was anything special, but drove out to the farm and was delighted to see a small, white lady's-slipper orchid. Somehow, a rare and endangered species came back in that particular spot.

Lots of people like Graeve and Hickey, groups such as the Loess Hills Alliance and Golden Hills Resource Conservation and Development, the DNR and other agencies are working to see that kind of delight return throughout the hills.

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PRESCRIBED-BURN BELIEVERS: Bill and Dotty Zales' prairie land that has been burned eight times in the past five years.

By NATHAN BETTS

ONCE they get past the preconceived notion of fire as a destructive force, an increasing number of farmers and landowners are discovering the positive effects controlled burns have on their land.

Fire plays an essential role in the overall health of prairie grasses. It helps keep brush in check and ensures a grassland ecosystem that lends itself to grazing and supports wildlife.

Here are stories of three operations that believe in burns.

Helping legacy thrive
Jim Baylor

It's been 20 years since he first burned his prairie in the bluffs near Thurman in southwest Iowa, but Jim Baylor says that first burn convinced him of what the practice could accomplish.

"Plants come on strong after a burn; it's an invigorating force," he says. "It causes seeds to germinate and it eliminates invasive species. We've burned all 25 acres of our prairie land several times and have become aware of what a growth stimulant fire is to the prairie."

Key Points

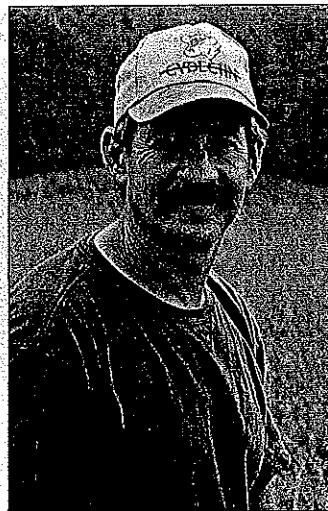
- Farmers are interested in using controlled burns on grazing land and prairies.
- Fire helps control brush and ensures an ecosystem to support grazing.
- In general, fire proves positive benefits for livestock grazing grassland.

The prairie has been in the family since 1849. Burning has played an important part in keeping the land in its original form. "I remember coming over here to the bluffs to play as a child 75 years ago. This prairie is a feature of our family heritage, but we didn't know what we had," explains Baylor.

His first prescribed burn was done in 1986 when a knowledgeable friend told him his sheep pasture was a pearl that ought to be developed. "He said to burn it, and he brought friends from Wisconsin to help," adds Baylor.

Baylor has had help for each of the three prescribed burns he's done.

"I've tried to do it by the book, making the firebreaks and hiring the Thurman Fire Department to stand by," he says. "There's a lot more science in burning now than years ago."



FEAR THIS: "I'm not afraid to use fire, but I certainly respect it," says Dean Lord.

Each fire has helped the prairie thrive. After good rains this summer, "we have a bumper crop of grasses and forbs down there," says Baylor. "I found rattlebox that the fire caused to germinate. People who have been out here counting say I have 187 different plant species."

Burning good for business
Dean Lord

Invasive woody plants have a domino effect on his business. At least that's how Dean Lord sees it.

"Red cedars and brush will encroach on a prairie. They'll overtake it over the years and choke out the grass. If you don't have good grass, you can't grow good calves. And without good calves, I'm out of business," he says.

Lord uses a combination of prescribed fire and mechanical means to control brush and invasive woody species on his Loess Hills pastureland east of Hornick along the border of Woodbury and Monona counties. About 60% of his pasture is prairie grass on hilltops; the rest is brome grass and orchard grass.

Good for grazing

IN general, the benefits of fire are positive for livestock grazing, says Dave Engle, chairman of the Department of Natural Resource Ecology and Management at Iowa State University. He says studies have shown fire can increase summer gain in stocker cattle by 15%.

"It's the quality of forage after a fire, not the quantity, that makes the difference," says Engle, who has 35 years of experience with prairie grasses throughout the Great Plains. "After a fire, digestibility and protein content of ingested forage is higher. The fire eliminates the old, dead material from previous years."

Because cattle are selective eaters, they usually consume less of the high-quality forage in a nonburned area because each bite is smaller than in the burned area.

The exception, he says, is heavily grazed land. If you're grazing heavily, you may not want to burn and a fire may not spread anyway because your livestock haven't allowed dead material to accumulate.

Burning is also likely to increase forage quantity. "Many people have thought burning reduced forage production. That may be the case at times, but it's more likely to increase," says Engle. "In a higher precipitation area like Iowa, I'd expect an increase."

Lord burned 60 to 70 acres in two burns in one day last spring. "I did it early in spring because I wanted to promote growth of cool-season grasses, too. Later in the spring would set the cool-season grasses back, and I didn't want that. Timing the burn is important in a grazing system," he says.

"You have a healthier stand of grass after a fire. Ash puts some nutrients back into the soil, but the big thing is getting rid of woody competition so the grass gets sunlight," notes Lord.

Surprised by the results
Noel Mumm

On about 25 acres of prairie land 18 miles north of Missouri Valley in Harrison County, Noel Mumm uses prescribed burns. "I knew the prairie would be healthier after a fire, from observing results of other burns. But I was still surprised at just how well it worked on my land," he says. "It was like you had fertilized the grass. It must have grown 40% higher after the burn."

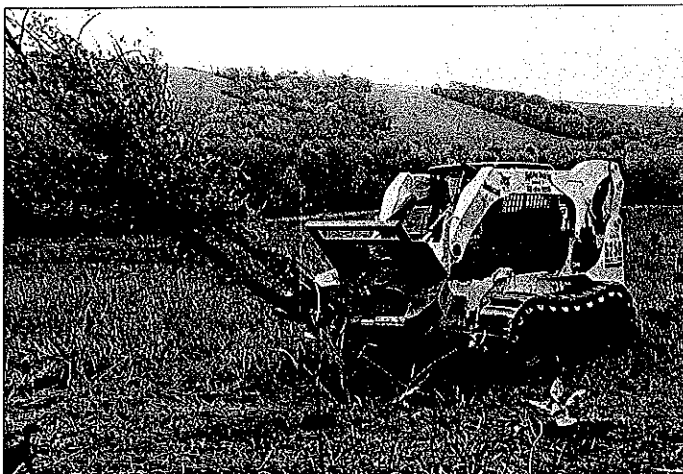
Mumm worked through the Harrison County office of USDA's Natural Resources Conservation Service to get a burn plan and reimbursement of 50% of the cost of the burn. "It's an ongoing thing, prescribed burning of a prairie," says Mumm. "I'm going to continue a burn program. I'm very satisfied."

Betts is a writer from the Midwest.

■ Get tips on burning on page 63.

Learn before you burn

THE Loess Hills Alliance sponsors a project to inform landowners on the benefits of fire for prairies, with funding from the Resource Enhancement and Protection Program. For information, call Agren Inc. at (712) 792-6248.



CLEARING OUT: In addition to fire, Dean Lord also uses mechanical methods to get rid of woody competition on his grazing land.