

Prescribed Burn Control of Red Cedar on Rangelands

10 Common questions and answers for ranchers

(Answers compiled from South Dakota NRCS and SDSU Rangeland Management Specialists and ranchers experienced in prescribed burns to reduce red cedar.)

Q: Why do we see red cedars invade South Dakota?

A: Cedar trees or woody encroachment began as an issue in the southern plains, moving north like a green glacier, according to Rod Voss, rangeland management specialist with the USDA Natural Resources Conservation Service (NRCS) in Mitchell, SD. South Dakota sees a slow but steady northward movement of red cedars, especially along the Missouri River but also along the other river corridors in the state. Pasture encroachment also occurs due to seed spread by wind and birds from red cedars used as effective shelterbelts or windbreaks to protect ranches and provide cattle, livestock and wildlife shelter. Unless you control red cedars, ranchers can lose from 30% to 75% of grazing capacity, damaging cattle, bird and ranch resiliency.

Q: When should I consider a prescribed burn to reduce red cedar?

A: If you have a pasture with 2- to 3-foot tall cedar trees, fire will take care of them for 8 to 10 years, and it'll be much more cost-effective than trying to clip them mechanically, says Sean Kelly, SDSU Extension Range Management Field Specialist at Winner, SD. While fire is still a relatively new management tool in South Dakota, prescribed burns have been used effectively in Texas up through Nebraska to keep red cedar in check. Kelly says we need to use this vital tool to help keep pastures, cattle and ranchers resilient.

Q: What type of pasture damage is caused by red cedars?

A: Eastern red cedar encroachment is often overlooked because the pasture encroachment is slow. But once established, this juniper species can reduce forage for livestock and wildlife by 75 percent or more. Profits for ranchers decline, upland game animals and grassland birds are displaced, and the highly flammable red cedars increase wildfire risk. Pastures with high amounts of eastern red cedar are also more likely to have erosion issues, and reduced soil health due to the displacement of fibrous-rooted grass species.

Q: How do my neighbors and I overcome a fear of using fire as a management tool?

A: Fire should be respected but not feared, as it is Mother Nature's way to rejuvenate native prairie plant populations by suppressing invasive species like red cedar, smooth brome grass, Kentucky bluegrass and other species. While it's ingrained in human nature to put out fires and respect trees, red cedar removes valuable food for cattle and wildlife when they take over a pasture. A prescribed burn management plan, the right weather, and trained fire management personnel will reduce risks and fears.

Q: What is the purpose of a prescribed burn management plan?

A: The overriding purpose of a [prescribed burn management plan](#) is to accomplish your invasive species control goal safely and effectively. When writing the prescription, many factors are considered: the fire intensity needed, the terrain, proper fuel load and what weather conditions will safely accomplish the burn. SDSU's Kelly says the plan can take up to a year to develop. Three to four site visits may be needed

to GPS-map the area, figure out hazard spots and escape routes, an ignition plan and fuel needs, locate gates and watering facilities, and figure out optimum wind and weather.

Q: What kind of prep work is involved in getting a pasture ready for a burn?

A: A completed prescribed burn plan will outline needs for a successful and safe burn, along with the purchase of liability insurance. Ranchers usually defer grazing the pasture one to two years before a scheduled burn to develop a fuel source. An optimum of 4,000 to 5,000 lbs. of biomass per acre can create the needed fuels to accomplish certain burn objectives. If you have a heavy population of tall (>8 ft.) red cedars, then mechanical clipping of some trees pushed into the base of larger trees will be needed to serve as a ladder fuel for efficient burn of taller red cedars. Firebreaks should also be planned well in advance of a burn.

Q: What kind of results can be achieved with a burn?

A: Results vary given the size of red cedars and fuel load available for the burn, but experienced ranchers say they have doubled or tripled their grazing capacity following a burn and recovery. Three to four-foot red cedars are much easier to control with a regular burn. Taller red cedars can be burned by building ladder fuel (stacked cedar carcasses trees) underneath. Along with preventing the growth and spread of invasive red cedars, a prescribed burn can also be used to control invasive grasses like smooth brome grass, Kentucky bluegrass and other species. A spring burn, properly timed, will also improve the renewal of native grasses while removing thatch to help cycle nutrients and improve soil health and water retention. Pheasants and other birds have improved nesting habitat with increasing native grasses like switchgrass and bluestem. Find more information in the SD NRCS Tech Note "[Burn Plan Objectives.](#)"

Q: Will a one-time prescribed burn take care of my red cedar problem?

A: Unfortunately, no. Research shows red cedars spread their seeds up to 100 yards away, and in the first four to five years after a burn, cedars are small and manageable. However, if left uncontrolled past eight years, cedar growth is exponential and soon becomes a forest—which becomes expensive and hard to manage. NRCS's Voss says a good range is five to 10 years for a fire return interval, depending on regrowth.

Q: What other control tools are available besides burning?

A: Mechanical control (digging, cutting or mowing) of red cedars does eliminate small areas of small trees, but unfortunately, this management tool also spreads seeds that develop into many more trees. For best success, follow mechanical treatment with a prescribed burn. Chemical control can be effective on <1-ft. tall trees, but control declines rapidly on taller trees.

Q: What kind of help can I get to write a plan and conduct a prescribed burn?

A: Your local NRCS office can help you or put you in contact with people who can help. If your land is in Gregory, Charles Mix, Brule or Lyman County, you may get direct assistance from the [Mid-Missouri River Prescribed Burn Association](#). It was established in 2015, as a South Dakota rancher-led organization to help landowners develop detailed burn plans and conduct the prescribed burn. Locally led efforts of neighbors helping neighbors and community support is the most successful approach including development of local prescribed burn associations.

For More Information:

[South Dakota Prescribed Burning Plan Example and Template](#)

[Mid-Missouri River Prescribed Burn Association](#)

Rod Voss, rangeland management specialist with the USDA NRCS in Mitchell, SD, 605-280-9116,
rodney.voss@usda.gov

Sean Kelly, SDSU Extension Range Management Field Specialist in Winner, SD, 605-842-1267,
sean.kelly@sdsu.edu

[Great Plains Fire Science Exchange](#)

[Integrated Management of Eastern Red cedar](#) (University of Nebraska-Lincoln)