



# Texas Agricultural Extension Service

The Texas A&M University System

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## Planning a Prescribed Burn

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If you are thinking about burning rangeland for the first time, a detailed planning process may seem largely unnecessary. You may be thinking: "I'll wait until after frost and burn out the southwest 40 acres of the Section Pasture. If I burn when there's no wind, I won't need any help. I can drive the cows to the other side of the pasture and shoot a few times to scare out the deer so they won't burn up. And the belly-high broomweeds should burn hot enough to kill most of the mesquite, whitebrush and prickly pear." Wait a minute; there are at least eight misconceptions in this thinking. They deal with proper timing, size of burn, wind, help, fuel, expected kill, grazing management and wildlife impact. If you went ahead with burning, it is doubtful you would ever burn rangeland again on purpose because of the risks you are taking and the potential for disappointing results.

Effective planning is absolutely necessary to achieving beneficial effects from prescribed burning. A fire plan should be developed well in advance of the planned burn. Elements of a plan are described in B 1310, "Prescribed Range Burning in Texas" (available from your county Extension agent). Checklists developed by the Soil Conservation Service are used in working with ranchers on burning plans. These cover everything. I have included here a briefer checklist. With the ninth or tenth burn some of the items on the checklist become almost automatic; however, it is a good idea to go through the checklist and plan each burn as if it were the first.

Prescribed burning in Texas is usually scheduled for January, February and March, with the exact timing dependent on weather, ranch operations and the purpose of the burn. Because burning is most effectively used in conjunction with other management

techniques such as chaining, bulldozing, spraying, goating, etc., it is wise to plan ahead for such a combination effect.

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### Planning for Adequate Fuel

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One of the most difficult things to accept is that it takes a lot of dry grass for an effective burn. We have grown up believing dry grass on the ground is better than hay in the barn. To see grass go up in flames in the middle of winter is hard to take. However, no other vegetation works as well as grass as a source of fuel. Broomweeds flare and go out without an understory of grass to maintain a continuous flame. Other forbs may look rank and dense enough to burn, but by mid-winter they often have broken down. Woody debris and standing dead trees are little help in spreading the fire.

The first objective in planning is to make the necessary management arrangements to have adequate grass fuel at the right time. On ranges in good condition, a deferment the last half of the growing season in an average year may be adequate. On ranges in fair or poor condition, especially those which are low production sites, a deferment of several years may not be adequate to accumulate enough fuel. About 3,000 pounds per acre of grass fuel (air-dry) is desirable for prescribed burning, but in some situations half that amount will produce satisfactory results. Wildfires during hot summer conditions may burn fiercely with little fuel; however, prescribed burns require high fuel loads and good continuity of fuel to burn adequately during winter conditions.

Some approximate values for different kinds of grass cover in mid-winter are shown below. Except for the first two, the values were measured on sites ungrazed during an average growing season.

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	<u>Lbs./acre</u>
Closely grazed buffalo grass	300
Curly mesquite and buffalo, mowed lawn	650
Buffalo grass	1,000
Texas wintergrass	2,000
Sand dropseed	2,200
Tobosa	2,300
Sideoats grama	3,000
Kleingrass	5,000
Little bluestem	6,200
Johnsongrass	7,000

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Deferment to retain enough fuel for effective burning is almost always necessary. Almost as important as the quantity of fuel is the coverage or continuity. Often on tobosa dominated ranges there is adequate tobosa grass to burn effectively, but the more palatable buffalo grass in between the tobosa patches has been grazed out. Therefore, the fire doesn't carry well. This is a problem that should be avoided.

By November you can determine whether there is adequate fuel on the ground to continue planning for a burn.

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## **Planning for Controls**

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The second objective in planning is to arrange for appropriate controls. For physical control of the fire, pumpers and other equipment need to be in working order, firelanes cut, access roads checked out, fire retardant chemicals arranged for and communication equipment lined up. Although there is considerable flexibility in timing these arrangements, it is important not to wait until the last minute. Firelane construction should be delayed until after frost and until you are fairly certain that a burn will be carried out.

For some financial control, it is wise to upgrade the liability coverage of your insurance. The landowner carries the burden of liability for damages resulting from a prescribed burn if the fire goes beyond the intended boundaries. Damage may occur to fences, utility poles, trees, buildings, feeders, hunters' blinds, vehicles, livestock, etc. Smoke crossing public highways may obscure the vision of passing motorists and contribute to serious accidents. The courts have determined liability on the basis of what "a reasonably prudent ordinary person would do in the situation." Be-

cause there have been few test cases, there are very few court decisions to guide the landowner in determining what precautions he should take. The landowner could be the object of a lawsuit if a neighbor can show significant damage or if a motorist can show damage as the result of the fire and smoke. Also, it has been suggested that the cost of stopping an escaped fire should be assumed by the landowner.

One way to reduce the risk of escape is to enlist all the neighbors as part of the fire crew. Neighbors need to be informed at an early stage of your planning so that they can choose whether or not to be involved in the burn.

One of the best arrangements for prescribed burning occurred during the burning season of 1982 in Schleicher County. Six ranchers worked with Soil Conservation Service personnel to develop a plan. The county Extension agent arranged a workshop before the burns were scheduled. An Extension range specialist was in charge of the 4-day burn. The ranchers helped each other and gained a great deal of experience. They seemed to enjoy the feeling of successfully accomplishing a difficult and controversial treatment for prickly pear control. A more recent arrangement in Gillespie County involved the Doss Volunteer Fire Department as part of the prescribed burning crew.

It would be wise to participate in conferences and workshops on prescribed burning and to assist in prescribed burns with someone else in charge before trying one on your own place. You should examine the results of burning on range sites similar to your own to get some idea of the results you can expect. Because each burn is different, as are growing seasons following a burn, results can be very different from year to year on the same range site, even with similar fuel conditions. The more information you have, the more realistic you can be in anticipating results from your own burn.

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## **Communications**

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The third objective in planning is to notify local authorities of your intentions and to arrange for communications during the day of the burn. Every county is a little bit different in its handling of emergency calls. In some counties all calls go through the sheriff's office, which then notifies the fire department. In other counties fire emergency calls go directly to the fire department. In either case, the rancher should notify all authorities ahead of time as to the date and location of a planned burn. Also tell them who will call in should an emergency arise. Otherwise, they might respond to a false alarm called in by someone who sees the smoke.

The Department of Public Safety (highway patrol) should be called when a prescribed burn is scheduled next to a highway or close enough that smoke could be easily visible (about 1 mile). The rancher is responsible for providing personnel to flag traffic if smoke is expected to cross the road. A sign indicating that it is a prescribed burn of rangeland is often helpful in informing concerned passersby. A potential traffic fatality or serious injury associated with smoke from a prescribed burn is a risk that should be taken quite seriously.

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## **Burning**

The fourth objective in planning is to be ready for the burn itself. Weather changes which could alter plans cannot be forecast with much accuracy more than 2 days in advance. National Weather Service information the day before and the day of the scheduled burn can give you reasonably good estimates of wind direction and velocity, temperatures, pressure and relative humidity. Instruments to measure wind, temperature and relative humidity should be used to monitor local conditions and to see how they compare with the forecast. With crew members in place, equipment ready, fireguards checked out and local authorities contacted, you are almost ready to strike the first match. But have you gone through the checklist and covered such things as: drinking water for the crew (carbonated drinks and beer are best used when it's over); water or fire retardant in the pumpers; gasoline for the pumpers; diesel fuel and gas for the drip torches; lunch for the crew (a cooler with sandwich makings is handy); first aid kit; keys or combinations for locked gates; wirecutters; contingency plans for an escape; water locations for refilling pumpers; radios in order and cameras with film to record the historic event?

The burning procedure is spelled out in the fire plan. Any changes in the plan and the specifics of the procedure should be explained by the fire boss to the crew on a map of the pasture. The fire boss should explain how each person fits into the overall plan. By this time many individuals may have contributed to the fire plan, but it is the fire boss who is finally responsible for carrying it through to a successful burn. The fire boss must be confident enough to assert authority over the crew and guide the operation, and experience helps.

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## **Follow-Up**

The final objective in planning is to arrange for follow-up management. Grazing animals removed from a pasture to allow grass accumulation for fuel will also need a place to go for 60 to 90 days after the burn. But if soil moisture is low and it doesn't rain, it may be a year before they should return. High quality forage can be expected in an average rainfall year following a burn. Livestock and wildlife quickly recognize this. If a small area is burned in a large pasture or if deer from a large area are attracted to a burn, the recovery of desirable grasses, forbs and browse can be slowed considerably because of excessive grazing pressure. On the other hand, if prickly pear is abundant in the burned pasture, cattle may be turned in immediately after the burn for 2 weeks to consume some of the singed pads. The pads turn sour soon after burning. Goats could be turned in temporarily when prickly pear pads are resprouting to obtain additional control. Ordinarily, grazing should be restricted until May or June. At this time full recovery of the better grasses should be expected in an average rainfall year. Spraying prickly pear with picloram (Grazon PC) in the spring following the burn will result in a good kill; otherwise many plants will resprout.

If I have been successful in explaining how to plan a prescribed burn, and you are the rancher thinking about burning for the first time, you should say: "I'll plan to burn the Creek Pasture this winter when weather conditions are right and get some control on the prickly pear and mesquite sprouts from that dozing job I had 5 years ago. To grow some grass, I can put the cows in the Section Pasture until next summer and spray the broomweed if it comes on strong like it did this year. I'll get some help from the neighbors with the burn since I've helped them on fence building and shearing, and the county Extension agent wants to use this as a county demonstration on prescribed burning. I'll spray in April with picloram to knock out my prickly pear." Now you are heading in the right direction.

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## **Other Reading**

Getting Started in Prescribed Burning. Management Note 9, 1986. Texas Tech University, Range and Wildlife Management.

*"Prescribed Range Burning in Texas."* B-1310. Texas Agricultural Extension Service.



**F. Preburn construction and patrols (1 week to 1 month preburn)**

- \_\_\_\_\_ Construction of firelanes according to fire plan
- \_\_\_\_\_ Removal of remnant livestock
- \_\_\_\_\_ Facilities protection
  - \_\_\_\_\_ feeders
  - \_\_\_\_\_ pens
  - \_\_\_\_\_ highline poles
  - \_\_\_\_\_ oil and gas structures
  - \_\_\_\_\_ fences
  - \_\_\_\_\_ hunting facilities
  - \_\_\_\_\_ inspection of completed firelanes (if constructed more than 30 days preburn)
- \_\_\_\_\_ Condition of ranch roads

**G. Weather information and final inspection**

Telephone Numbers

- \_\_\_\_\_ 3-day-forecast - national weather
- \_\_\_\_\_ 24-hour forecast - local weather
- \_\_\_\_\_ Final inspection (firelanes, facilities protection, etc.)

**II. Just before the burn**

**A. Last minute calls**

Telephone Numbers

- \_\_\_\_\_ National Weather Service
- \_\_\_\_\_ Sheriff
- \_\_\_\_\_ Fire department
- \_\_\_\_\_ Highway patrol
- \_\_\_\_\_ Check with spouse

**B. Equipment and supplies**

- \_\_\_\_\_ Diesel fuel and gas for drip torch
- \_\_\_\_\_ Gas for pumpers
- \_\_\_\_\_ Fire retardant or water in pumpers
- \_\_\_\_\_ Hand tools (garden rakes, axes, shovels, wire cutters)
- \_\_\_\_\_ Matches
- \_\_\_\_\_ Keys and combinations for locked gates
- \_\_\_\_\_ Camera
- \_\_\_\_\_ Weather instruments (wind, relative humidity, recording pad, pencil)
- \_\_\_\_\_ CB radios
- \_\_\_\_\_ Warning signs and flags on public roads

**C. Crew support**

- \_\_\_\_\_ Drinking water and cups
- \_\_\_\_\_ Lunch cooler
- \_\_\_\_\_ First aid kit

### III. After the burn

#### A. Postburn patrols of burned areas (immediately postburn)

- \_\_\_\_\_ Fire-brands, hollow logs and trees near edge of burn
- \_\_\_\_\_ Poles and posts
- \_\_\_\_\_ Smoldering piles
- \_\_\_\_\_ Livestock access, prickly pear cleanup
- \_\_\_\_\_ Observations on effectiveness of burn

#### B. Grazing control (to 1 year or longer postburn)

- \_\_\_\_\_ Deferment period provided
- \_\_\_\_\_ Observations of vegetation changes
- \_\_\_\_\_ Decision to restock pastures, stocking rate, grazing period

#### C. Spraying for prickly pear control

- \_\_\_\_\_ Adequate fire damage to prickly pear for reduced rate of picloram
- \_\_\_\_\_ Adequate soil moisture

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