

Organize, Plan and Prepare for Control Brush Burning

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BRUSH density has been increasing in California's foothill areas. About 15 per cent of the state's land area is covered with brush—approximately 15 million acres. Probably 10 million acres of this brush-choked land can be improved. The objective is replacement of undesirable, relatively valueless plants with more desirable types.

Ridding your land of brush means, more feed for livestock, more water for livestock and people, more game birds, deer, and other wildlife, more return per acre, and more security from wildfire. A control burn is an effective tool for removing brush.

Should You Burn?

Your first decision is whether fire is the best tool for clearing brush on your land. A bulldozer or chemicals may do the job better on some ranches.

Talk over brush clearing with your farm advisor, your local California Division of Forestry ranger, or county fire warden. Consider possible gains. Balance the gains with the cost of a burn: organizing crew, renting equipment, exchanging labor, and providing

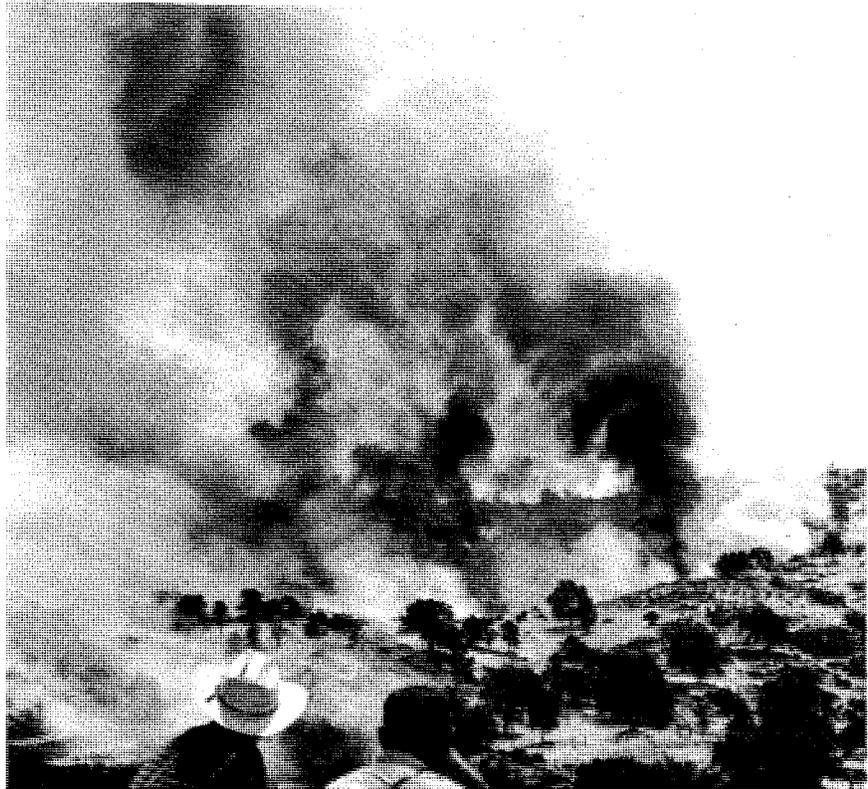


FIG. 1. Good preparation makes a hot, successful burn.

supplies and food. Discuss the brush problem of your ranch with your local brush range improvement association.

If you decide to burn

Select an area that is worth improving, one with soil that will grow grass after the burn. Select a size and shape that can be conveniently burned over in one day. Select for natural barriers, such as open, wide ridges, meadows, and creeks, where good fire control lines can be built.

The Brush Range Improvement Association

Most successful control burns are conducted through rancher-organized brush range improvement associations. Working with public agencies, the association provides leadership in the county. Members acquire skills and the necessary tools for brush burning. The association will advise a rancher with a brush problem, give

ORGANIZE, PLAN AND PREPARE FOR CONTROL BRUSH BURNING

him the benefits of member knowledge of burn preparation, and help him organize a team of volunteers with equipment for his burn.

If there is no association in your county, work to organize one with your farm advisor of the University of California Agricultural Extension Service and your district ranger of the California Division of Forestry. Obtain a copy of the Brush Range Improvement Organization Plan of the State of California from your CDF ranger.

Visit a county where a brush burning program is well established. Get a group of interested ranchers together and attend one of the planning meetings or planning inspection rides. Spend a day on a control burn. Cooperation of ranchers in your neighborhood and your county is the first essential of a brush control program. Brush burning is a team job. It means working with forestry agencies and your farm advisor. It means staying with the program after your own place has been cleared.

Where control brush burning has succeeded, cooperation of all concerned—ranchers and public agencies—has been continuous over many years.

Control Burning Calls for Cooperation

Your county brush range improvement association will begin the year's program with a winter meeting for election of officers and appointment of the year's burn planning and inspection committee. There should be at least six committee members. Ranchers will propose control burns, sometimes 2 or even 5 years ahead. The committee, consulting with the ranchers, will select a fire boss for each burn.

The fire boss is the "general in charge" of the burn from the day planning starts until the last spark is out. He will appoint sector bosses, who will carry out his decisions with full authority in areas of the fire assigned to them. Good teamworkers must be chosen for these jobs. The ranch owner or operator may be the fire boss on his own burn. Or, he may choose to have another rancher with more experience and proven "control-burn generalship" take the responsibility.

At the winter meeting, the committee will agree on a schedule for

WALTER E. EMRICK

preliminary inspections of all proposed burns by the committee and the fire bosses. The planning and inspection committee will include the association chairman, chosen from the ranchers with most experience in planning and conducting control burns. Alternates will also be named. If a committeeman cannot go on an inspection ride, he must see that an alternate goes in his place. The fire boss (and sector bosses, if possible) will go on all planning rides over the area to be burned.

The ranch owner should be able to advise the committee on wind directions at all hours of the day. Oldtime neighbors may be able to describe the burning patterns of wildfires that have gone through the ranch in the past. The planning and inspection committee will make a detailed fire plan with the ranch owner. On the preliminary planning ride, the group will determine locations of fire roads and note danger spots and measures to eliminate them. Before leaving the ranch that day, the committee will write out detailed instructions for work the rancher must do to make sure of good burn—and a safe one.

An example of instructions to a rancher

1. Strip on north side approximately 1,000 feet wide to be night-burned to assure safety of main burn.
2. All brush piles and logs within 150 feet of line to be winter-burned. Push back heavy material at least 100 feet and fell all snags within 150 feet of line.
3. Four-wheel-drive fire-control-equipment road completely around burn.
4. Cut double line on approximately 200 yards of southwest slope and preburn between lines before final inspection.
5. Undercut line on hillside to slope inward.
6. Secondary line to be constructed across from Sherman's house.
7. Brush piles and logs on outside of line to be winter-burned.
8. Discontinue grazing early in spring to allow good growth of grass to carry fire to the brush.
9. Remove dry grass around all fence posts in area to be burned.

ORGANIZE, PLAN AND PREPARE FOR CONTROL BRUSH BURNING

All committee members sign the instructions. From then until final inspection, preparation is the rancher's job. You can use surplus labor on the ranch during winter and spring months. You can hire a bulldozer and operator in most areas to build fire roads and crush brush to assure dry fuel for an effective burn.

Planning Starts Early

On the scheduled inspection date, the planning committee, the fire boss, the farm advisor, and a representative of the Division of Forestry will make their preliminary ride over the area proposed by the ranch owner or operator for a control burn. The Division of Forestry is always kept fully informed and is a source of technical advice. The preliminary tour may be made on horseback or on foot in a rough area not previously burned.

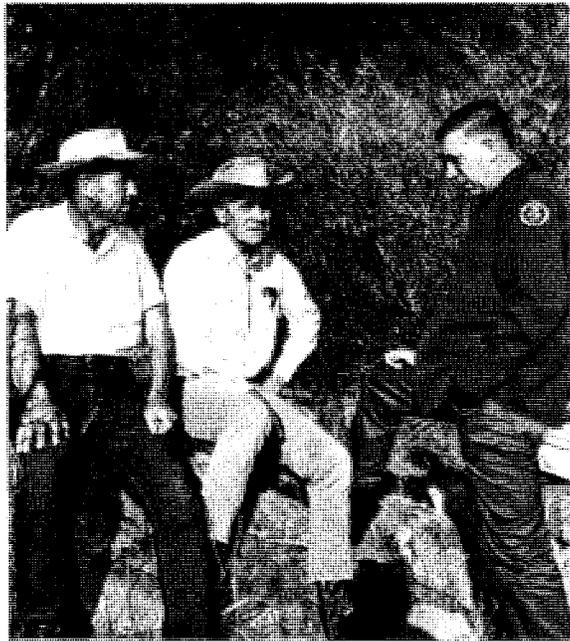


FIG. 2. Rancher, farm advisor, and ranger consult early.

WALTER E. EMRICK



FIG. 3. Committee on preliminary planning "ride."

When the area to be burned is near U.S. Forest Service land, it will be necessary that the district ranger make the preliminary planning ride. When Bureau of Land Management acreage is within the area to be burned, a BLM representative also will be on the ride.

PREPARATION MAKES THE BURN

You will benefit from a control burn by the amount of planning and preparation you put into it.

Locating fire lines:—Locate lines on level ground where possible. Use existing barriers: open roads and trails, creeks, rock outcrops, bodies of water, recent burns, open ridges, or bottoms of wide canyons. Cut lines in grass or light, low brush. *Do not* locate control lines in deep, narrow canyons. *Do not* locate control lines on ridges where prevailing winds will carry sparks outside the area to be burned. *Avoid* putting lines through dense clumps of high brush or liveoak, piles of dry brush, snags, stumps, or rotten logs.

ORGANIZE, PLAN AND PREPARE FOR CONTROL BRUSH BURNING



FIG. 4. Bulldozer crushes brush for fuel.

Constructing fire lines:—Run all lines as straight as practicable; make no sharp turns or corners that the fire might jump. Make lines suitable for four-wheel-drive vehicles to go around the burn in either direction. Construct at least a 6- to 8-foot fire line with a bulldozer or disk down to mineral earth; at the upper end of the burn, clear a wide area of heavy flammable material. The planning committee will recommend the width necessary for conducting a safe burn.

Avoid undercuts—lines on the downhill side of the fire. If unavoidable, trench undercuts deeply to prevent burning material rolling down across the line into the unburned area. If possible, locate lines for up-slope and in-wind burning to get best possible consumption of the fuel on the ground.

To insure safety:—Push dead snags, stumps, and dead brush to a safe distance inside control lines. Burn piles of dead fuel outside the fire break during winter months. Widen breaks through areas of

WALTER E. EMRICK

dense brush by winter burning. Fell live trees with dead limbs or clear around them so they will not burn. Build secondary control lines where advisable.

To provide fuel:—*Crush all* brush that can be reached with a bulldozer. Run the blade off the ground to avoid heavy disturbance of soil. On some types of land, the job can be done economically with an anchor chain dragged between two tractors.

Let brush lie at least a year. It will dry and lose its leaves, making the fire hotter, cleaner, and safer. A hot fire will kill young brush sprouts that have grown after crushing.

Kill bull pines (digger pines): Grass grows poorly under bull pines. Cattle won't eat grass that does grow there, because of accumulated needles and pine gum drip. Bull pines rob springs and creeks of water. They have little or no value for lumber.

Use the cut-surface method. You will need: An axe, a 1-quart pump-type oil can, and some 2,4-D amine. (One gallon will treat 200 to 300 big trees.) You will need a permit from your county agricultural commissioner to purchase 2,4-D. Start in late winter or early spring, when tips begin to grow. Chop frills through bark into wood, 6 to 8 inches apart around tree, not over 12 inches from the ground. Frills should be cut deep enough to hold fluid. Squirt about a teaspoon of 2,4-D amine in each frill. The tree should start to die at the tips in a few weeks. Most trees will die in the first year after treatment. The tree should start to rot in four to five years. Before burning, cut trees that haven't fallen.

Kill unwanted oaks:—Fell with a chain saw. Cut as close to the ground as possible. Paint the cut surface immediately with 2,4-D amine. Some firewood may be salvaged.

Let grass grow:—You need grass as fuel to carry fire into the brush. If you graze the area in the spring before the burn, take the animals off early enough for the grass to grow back.

Leave some trees for shade and beauty:—Your ranch will look better and will provide shelter and winter feed for livestock, if you leave some scattered oaks for landscaping. Limb up and clear around liveoaks and other trees you want to save.

ORGANIZE, PLAN AND PREPARE FOR CONTROL BRUSH BURNING

SPRING IS THE TIME FOR DECISION

Your burn date and the date for final inspection will be set at the spring meeting of the association. Some burns will be postponed to allow better preparation for next year. The committee will consider: The schedule of all burns in the area; possible weather conditions on the date set; availability of men and equipment.

Provide flexibility to allow for weather changes. Burning will be safe and effective *only if the weather is right*.

Be prepared to cancel the burn, if hazardous weather conditions develop at the time the burn is scheduled.

Be prepared to cancel the burn if burning conditions are too poor; when the temperature is too low or humidity too high. Attempting to burn under such conditions wastes the time of the men and wastes fuel needed for a good burn.

Final inspection:—A month before the scheduled control burn, the committee, fire boss, and his sector bosses make a final planning and inspection ride over the ranch. The farm advisor, Division of Forestry ranger, and representatives of other agencies involved will accompany them.

The committee will: Check roads for easy movement of four-wheel-drive pickups and pumpers; make detailed plans for conducting the burn, such as starting time, place, equipment necessary, location of water for pumpers, locations of standby equipment, and observe any danger spots: snags, unburned brush piles, fuel too near lines.

The committee may: Order last-minute widening of lines; prescribe night burning of danger areas, such as the top of the burn; cancel the burn for the year, if instructions from preliminary rides have not been met.

After final inspection:—In the last month before the burn: Take last-minute safety precautions and make any changes along fire lines called for by the inspection committee; obtain a burning permit from the California Division of Forestry fire control officer and the U.S. Forest Service district ranger, if that agency is involved.

Get official recommendations on safe burning weather. Arrange

WALTER E. EMRICK



FIG. 5. Pumpers mounted on four-wheel-drive vehicles are key to safety.

for insurance to cover your liability. (You, the ranch owner, are responsible for injury on the burn or damage, if fire gets away through negligence.) Notify all adjoining property owners in writing at least two days before the burn is started. Notify all co-tenants at least 15 days before. (Notice is required by law.)

Encourage newspapers and radio and television stations to announce the date and location of the burn. Keep your whole community informed at all times. See that new residents and non-farm people living in the area know what you are doing, why you are burning, what safety precautions are being taken, and how all residents will benefit in better protection of their homes from wildfire. Brush is a fire hazard. Fire can be stopped in grassland.

Arrange to rent or borrow extra equipment, such as bulldozers, four-wheel-drive trucks with water tanks and pumps, back-pack pumps, shovels, and rakes. Make sure water is available for pumpers; use tank trucks, if needed, in addition to natural ponds, springs, and stock ponds. Have pumps at the water sources.

Make sure you have enough manpower:—The Division of Forestry officer will tell you how many men you will need and what

ORGANIZE, PLAN AND PREPARE FOR CONTROL BRUSH BURNING

equipment. Send out a notice on the starting time and place to all association members, interested groups, friends, and sportsmen. On each sector, help will be needed for firing, holding, patrol, mop-up, and communications.

Communications:—Make arrangements to have men and radio equipment available for communications at all times. The fire boss must know what is going on in all parts of the burning operations. He should be able to send messages to any crew or person at any time. Inexpensive walkie-talkie radios serve this purpose well.

Firing crews:—Each sector boss will need one crew. This crew's job is to fire the area according to the schedule set ahead of time and as ordered by the fire boss.

Holding crews:—There should be as many holding crews as firing crews and enough men on each crew to keep the fire from crossing over the fire line. Each crew should be equipped with at least two pumpers and adequate hand tools. Holding crews should discover and extinguish all spot fires across the control line and not move on until all material is burned to a safe distance inside the line.



FIG. 6. Fire boss communicates with walkie-talkie.



FIG. 7. Patrol pumper crew.

Mop-up:—All crews, backed by four-wheel-drive pumpers, should help in general mop-up work. The job is to burn out or extinguish brush islands burning near the lines and to extinguish smoldering logs, stumps, and the like. The mop-up team should make sure no burning material rolls across the line. It should fell all burning snags, which could throw sparks across the line.

Patrol:—This job starts after the fire has burned away from the control line and the holding crew has moved on with the firing crew. Enough men will be needed to cover all of the lines. Each pumper and its crew of men should be assigned to a definite sector of line. They have responsibility of patrolling their sector to make sure spot fires do not develop outside the line and that no fire is burning near the line.

The fire boss and the ranch operator should arrange to have a fresh crew to patrol the burn all during the first night following the day of the fire. Patrol work should be maintained until all

ORGANIZE, PLAN AND PREPARE FOR CONTROL BRUSH BURNING

fire is dead out. After continuous patrol is no longer necessary, the area should be examined several times a day for several weeks to detect any possible flare-up.

Food and water:—A supply of fresh water and food should be taken to the men on the fire lines, so they will not have to leave their jobs. *Midday is a critical time on a burn.* Serve food only when the fire boss says it is safe to take a break. Nothing must interfere with the fire boss's job.

Wives and daughters of participating ranchers are usually willing hands in preparing the food and manning the chow truck. The fire boss, sector bosses, and the firing crews should make at least one final planning ride over all the fire control lines the day before the burn. They should discuss in detail—on the ground—how each situation and possible emergencies will be handled.

THE DAY OF THE BURN

The fire boss and his sector bosses will: Organize the crews; review the firing plan and schedule with all crews; explain to each man exactly what he is to do and to whom he is responsible; provide a map for every man on the burn, showing roads, firebreaks, locations of sectors, likely danger spots, water sources for pumpers, the firing plan, and locations of extra equipment such as bulldozers. He will check weather reports and consult the Division of Forestry fire control officer about the weather outlook for the day. Do not hesitate to postpone the burn if weather conditions are too hazardous or too damp for an effective burn. Hold all the crew until fuel is consumed and danger of escape is past, a skeleton crew can then take over. Public roads bordering the area will be posted to notify the traveling public: "This is a control burn."

When a standby crew of the California Division of Forestry, with a pumper truck, is available, it will remain until the ranger considers the danger has passed. The CDF crew will be there solely to protect adjoining property.

In case fire breaks out after the burn, immediately notify the California Division of Forestry and neighboring ranchers.

Management Brings The Payoff:—What your ranch gets out of a control burn depends on what you do after the fire is out.

Seeding:—You will have to seed with grass in most cases, because: you need grass for livestock feed; you need grass to use surface soil moisture, so new brush seedlings cannot become established; you need grass to reduce soil erosion; you will need grass later as fuel for a reburn. See your farm advisor or CDF range technician. He can recommend adapted seed mixtures.

Reburning:—Reburning the third or fourth year after a control burn is the key to successful brush range improvement. A reburn is necessary to kill new brush seedlings before they choke out the grass or produce seed. A reburn done in time will top-kill sprouts of liveoak and other sprouting types of brush, making further chemical control easier. *When you reburn*, go through the same procedures as on the original burn: Plan with your range improvement committee; inspect; recruit fire bosses and crews of neighbors to help on the burn.

Get a burning permit from the California Division of Forestry. Notify property owners in the area. Take animals off the land early in the year of the burn, to let grass grow up for fuel to carry the fire. Re-disk firelines to the original burn. Re-cut sections of fire road that have deteriorated. Remove dry grass at the base of fence posts so they will not catch fire.

Reseeding:—Reseeding after a re-burn may not be necessary, but it may be worth the money.

Chemical treatment:—Sprouting brush can be killed by chemical treatment. This can start the first year. It will make a re-burn more effective. Your farm advisor or Division of Forestry range technician will give you advice on chemical control of sprouting brush types and on reseeding.

Decide when you can burn best—in summer for the hottest, most complete burn; or in fall, winter, or spring when hazard is less. A fall, winter, or spring burn should be considered. This can be safer with a less experienced crew, and less help is needed around the firelines. Air pollution regulations may make off-season burning the only burning in some counties. Careful preparation is still essential: firelines, brush crushing, and time for drying.



FIG. 8. A well-planned burn should look like this two years later—natural oak-studded grassland range.

ADVICE AND AID ARE AVAILABLE

See your county farm advisor. He will help you: Plan the land use on your ranch; select areas that will return cost of improvement; plan future reseeding, brush sprout control, water development, livestock management, use for game or recreation.

See your local ranger and range specialist of the California Division of Forestry. They will: Plan your burn for safety and effectiveness; advise you on necessary equipment; obtain a permit to burn when you have met the requirements; provide technical advice on preparation and follow-up measures.

See your district ranger of the U.S. Forest Service. He is a further source of technical advice, based on Forest Service practices and research.

WALTER E. EMRICK

See the chairman of your county brush range improvement association. Join the association and help your neighbors with their control burns. Learn the principles and techniques of control burning.

See the manager of the Agricultural Stabilization and Conservation Service; the local work unit conservationist of the Soil Conservation Service; the range technologist of the Bureau of Land Management; and the Vocational Agriculture instructor in your local high school.

Control burning is one of the most effective and economical tools for brush clearing, but every control burn is an individual case. Each burn must be planned on the spot by persons experienced in control brush burning or fighting wildfires under a wide range of conditions.

Each burn must be directed by someone experienced in fire control and skilled in making on-the-spot decisions. Each burn requires cooperation and teamwork of your community and public agencies.

You can expect to spend some money, but less money than more land would cost you. Some of the cost but all of the pay-off comes after the burn. Reseeding, grazing management, and future control of brush sprouts will determine your gains from the burn.