

The Florida Forest Service and Controlled Burning

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LAST NIGHT I was very relieved that I wasn't called upon to finish this part of the program after that fish fry because I felt too well satisfied and I felt that the group was not inclined to listen to anything more about fire ecology or the controversy involved in the attitudes toward fire in the woods. So I'm in much better condition this morning to say what I feel about this subject that I'm to speak about, and also I feel that you people are probably in a better frame of mind to argue with me or to side with me as the case may be.

I regret very much that my boss, Mr. Hux Coulter, cannot be here and give this talk since he is intimately acquainted, as you all know, with the Florida Forest Service from its early days and familiar with the changes in policy regarding fire in the woods. I will say this, from working with him: he is an avid woods burner—he can string fire with the best of them when it comes to controlled burning. He expressed his regrets at not being able to be here and I will do the best I can to substitute.

Yesterday, in listening to these various papers on fire ecology, and then listening to Mr. Stoddard and Dr. Harper, I felt I was in the wrong place. I began to wonder whether Mr. Komarek hadn't made a mistake in asking me to participate

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in this program because somehow or other they were talking about things about which I knew little and for many years I was in the "total protection group," the foresters, if you will, who were dedicated to a program of exclusion of fire. But after a while I got philosophical about it and thought about the story about the man who suspected his wife of infidelity and rushed home one evening, opened the door, dashed into the house, opened a closet door and found in the house a beatnik and he said "What are you doing here?" The beatnik looked at him, twirled his watch chain, and said, "Like man, everybody's got to be someplace." Delving into the history of the Florida Forest Service and its relation to the use of fire in the woods, I found many interesting facts. I went through the biennial reports, which the legislature has us prepare every two years, starting with the first report that included the fiscal years of 1928 and 1930. In looking at those old photographs in these reports showing the type of equipment that our employees were forced to use in the suppression of wildfire, whether we were right or wrong in our concepts, I was proud of the organization that could do as effective a job of protection as they did with such equipment at their disposal. When we look today at our tractors and plows and our rolling stock and our bulldozers, it's amazing what they were able to accomplish with backpack pumps, fire swatters and fire rakes and, more than that, by working the good neighbor policy and winning the good will of the people.

With the strong difference of opinion on burning which Mr. Stoddard so aptly described, it's amazing that so much progress was made in the control of the fire. I think that regardless of the fact that we must recognize today that fire plays an important part in the pine forests of the South and has for years and years and will continue to do so, we must recognize that fires can be constructive or destructive—that there can be dangers from fire as well as benefits. I think the photograph which I would like to project on the screen that was in this first biennial report sums up why the Florida Forest Service launched into a program of fire exclusion as being the necessary approach to getting the forest lands of Florida restocked. This

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picture shows a typical area that had been destructively logged, very few trees left, burned annually for various purposes until it was completely bare as far as the eye could see. And the cut line under it says "Florida's Forest Land Problem—Overcutting and annual woods fires have made this land a burden to the owner, county and state." And that was true. The timber had been too heavily cut and there again we can excuse the lumberman—it was a question of economics. It was burned over continually and there again we can excuse the cattlemen because, as we later came to recognize—and some of these more keen observers like Mr. Stoddard and Dr. Harper learned years ago—it was necessary to burn in order to make the wiregrass palatable to cattle. But nevertheless, the Slash Pine lands of Florida which comprised the area in which interest in timber growth and timber management first began, required the exclusion of fire to reproduce a new stand of timber. Perhaps because of the European influence, which Mr. Komarek spoke of, on foresters in this country, and because of knowledge of destructive fires in the north plus the fact that most of the foresters at that time who came into the South had been trained in the North, it is easy to understand why the complete exclusion of fire was recommended and became a policy of the Florida Forest Service. But note this: Throughout the literature of the Florida Forest Service, beginning with the first biennial report, it refers to exclusion as "fire control." It does not say forest protection, it does not say anything regarding fire suppression—it says "fire control." And from an early bulletin there is this long paragraph discussing the turpentine operators' use of fire in what is described as "light burning" the woods after the turpentine faces have been raked. It recognizes the fact that this is something the turpentine operator feels he must do because of insurance against wildfires and destruction to his turpentine faces. However, in order to carry out the cooperative fire control agreements, which the Florida Forest Service entered into with private landowners at that time, it was necessary to stipulate the exclusion of fire, or funds would not be made available and the Florida Forest Service would be subject to criticism. I also would like to point out another thing—

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that everybody, even if they were born and raised in Florida, was not wholeheartedly sold on this business of the need for fire, by any means. Rightly or wrongly some of them felt that there was too much burning and too little timber growing. The Florida Forest Service was formed by a group of citizens, natives of Florida, old residents of Florida, who formed the Florida Forestry Association and were the prime movers in getting legislation passed in 1927 which set up this agency in 1928, and hired its first state forester. So these people felt the need of fire control, and that is what they called it at that time.

A philosopher made this statement, "the longer you are in the presence of a difficulty, the less likely you are to solve it." And perhaps that is the reason that changes in policy regarding the use of fire moved slowly with our agency as it did with others. I think also that it would apply to those people who were violently opposed to the efforts of keeping fire from the woods for the purpose of fostering reproduction in growing timber. And I think that it is usually the case where the people have strong customs and old customs and strong opinions—usually there is a certain period of contention in which both of them go their separate ways, failing or not intending to see the other side of the picture. Perhaps that is the reason that it took us so long to get to this point, this meeting of the minds, on how fire must play an important part in growing timber as well as serve other purposes.

Going back to this business of Florida Forest Service policy, this statement appeared in a biennial report: "Because of the fire risks, the turpentine operator may deem it necessary to follow the practice of raking his cup trees and burning. Such uncontrolled fire defeats the purpose of the fire protection unit and the Service cannot continue to cooperate in the protection of property if this condition permits." Instead the Florida Forest Service got equipment and soon it was able to plow fire-breaks, and systems of breaks, were worked out with land-owners. The success of this approach, regardless of the difficulties involved, the contention, and the incendiary burning, is reflected today in the young stands of timber in the flat-woods. While it was recognized by foresters that there was some

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question about the exclusion of fire in Longleaf, this agency was concerned largely with the protection and fostering of reproduction of Slash Pine and I think that perhaps is why we were particularly one-sided for so long a time. The reasons I've mentioned, I think, was the reasoning of the people advocating exclusion of fire. The previous training of foresters and the attitude of those people who had sponsored the Florida Forest Service perhaps was the only way to break away from this acceptance and this custom of burning the woods. There was another thing that entered into the picture, which has not been mentioned, and that was a lack of regard for property owners' rights. Their right to do as they pleased on their own property. This I think comes from tradition and is something you outgrow in any frontier state and in any frontier of the country. Our big contention, at least during my time with the Florida Forest Service was not a quarrel with the cattleman about why he burned or why he didn't. Our quarrel was with the cattleman who was being forced out (as Mr. Stoddard pointed out) of his range by the purchase of lands, by his refusal to accept the fact that the landowner who took over the land wanted to keep it rough (right or wrong). The lack of respect of property rights was the bone of contention between our men and between many of the people whose cattle grazed the woods. Another thing I would like to mention here, to digress a little and to call upon my own experience, is that I had the highest regard for many of the cattlemen I knew. Some of them had a high regard for me but there was an incentive to burn much stronger there than any personal feeling or liking. I do give one particular man credit for having a conscience—at least I think that's what motivated him. When I managed a piece of property for a paper company, we had grazing agreements with the cattlemen. At that time the company's policy required the exclusion of fire. In fact the turpentine operator who had previously owned the land and sold it to the company had excluded fire. He was one of the victims of the propaganda that these foresters were putting out. This cattleman was a good friend of mine but he had to burn a little in the spring. He was very considerate. He only burned the

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woods once in the pasture area and he was careful to go out late at night so he wouldn't disturb my sleep. But, brother, I mean he got his burn. The next day he would come by the house, down the highway, blow his horn; my wife would come out and there was usually a bundle of turnip greens or some garden produce or a ham out by the gate. But though I liked those people I didn't like the attitudes that some of them had of trying to prescribe for the landowner what he should do in his woods even when the landowner was ignorant of the facts.

We are growing out of that and with the fence law and with the passing of the open range, those big difficulties have been overcome. Our incendiaries are people with no fundamental valid reason for burning the woods such as the cattlemen had.

In 1926 H. H. Chapman published his work on the use of fire in Longleaf in fire studies of the LaSalle Parish of Louisiana. This planted seeds of doubt in many foresters' minds about this business of the total exclusion of fire, particularly as it pertained to Longleaf. Those of us in the Florida Forest Service read this with interest but we were still wound up in this business of trying to reduce the fire occurrence in the Slash Pine woods. I think it was evident and I think it's been accepted that in the flatwoods of Florida the Longleaf predominated on the higher topography and the Slash was kept into the swamps by the use of fire. Of course this reversal of the use of fire encouraged Slash to extend out from the wet sites and gradually take over the Longleaf. But at that time, and today of course, the planting of Slash predominated. Probably only ten per cent of the planting was Longleaf, principally because of the difficulty of planting it in the seedling form. Frank Heyward in 1939 in the journal *Ecology* gave the results of his work in fire protection in Longleaf, and particularly in the control of hardwoods, and this again served to stimulate a change of thinking in foresters' minds. He stated as a direct result of fire protection a pure Longleaf Pine type may become a mixed pine-hardwood type. It seems obvious to many of us today—we've seen it—but back then it was news.

Most of these research studies by Heyward and others

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that were conducted by foresters were financed and sponsored by the U. S. Forest Service. Regardless of the former policies of administration in forest protection agencies, when research proved the points and changes became necessary, these were made in policy. I think, however, that probably the thing that changed policies more rapidly was the drought year of 1943. Up to this point the Florida Forest Service had gone along with this exclusion of fire although we found landowners and turpentine owners particularly were becoming increasingly alarmed with the accumulation of rough in their woods which they were not used to having.

I remember my early days with the Florida Forest Service. Talking with our men and talking among ourselves about what in the world we would do if such and such a tract or such and such a unit caught on fire. Remember all we had were pickups with 150 gallon tanks of water and Panama pumps driven off the fan belt. Staring at this accumulation of rough and considering the possibilities of a disastrous fire, we wondered what we'd do with it when we had it. The policy of the Florida Forest Service in 1942 recognized the need for a change in this business regarding controlled burning but we were firm. This policy was changed to recognize it and allow for it by our co-operators but we were firm in this stipulation, that if fifty per cent of the stand had fifty per cent crown scorch, it was considered destructive burning and subjected the co-operative agreement to cancellation. I don't recall that we ever found a stand that we considered so bad that we wanted to cancel the agreement. In the first place, we were still working for customers to sign these agreements and start growing timber, and that is a prime mover with a public forest protection agency—to get people to buy your proposition.

In 1943 "came the revolution." Prolonged drought throughout the south coastal plain area brought about the most disastrous fires that any of us had experienced in the history of protection in the South. I think the biggest fire was on the Osceola National Forest. As I recall, it was 70,000 to 80,000 acres. It was a tremendous thing. I was working for a paper company near Gainesville as resident manager and a pall

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of smoke hung over that area for days. We sat sleepless, worrying about our own piece of timber because things were so dry and the accumulation of rough was so great in many parts of the forest. In our Gulf County unit, which is a Florida Forest Service protective unit, I believe 20,000 acres burned over in one fire.

In that same year there was a conference called at Lake City by the Forest Farmers' Association and it was a conference on fire. To the best of my knowledge that was the first one that was called in this area concerned principally with a discussion by foresters as well as people who were intimately acquainted with the use of fire in the woods. At that conference, in looking over an old program which I dug out of the files, I found these names: H. H. Chapman, H. L. Stoddard, Frank Heyward, John Currey, Claude Bickford, Hux Coulter and many others that we recognize today as having had a great deal of influence on these changes. C. A. Bickford and John Currey of the Southern Forest Experiment Station published about this time a guide (they had been working on it for some little time) for the use of fire in the protection of Longleaf and Slash Pine forests. Those methods pretty much are what we use today—what the national forest uses. They gave instructions for the layout of fire lines, the weather conditions to look for, the type of fire to use, for principally the emphasis here was the reduction of hazards, the reduction of rough. These circumstances brought about drastic changes in policy and the perhaps slow-coming recognition that fire can be a useful tool or it can be destructive if kept out of the woods too long. The national forest changed its policy, immediately went to work explaining to their neighbors why they were reversing their stand. We felt there were going to be awful things happening, that all of our woods-burning friends would be out with their matches and help us, and I remember the feeling in the Florida Forest Service by talking to people (because I wasn't working for the agency then), that they were very hesitant and were very reluctant to adopt the same policy—but Hux Coulter was not and Henry Malsberger was not, and so the policy changed.

In 1950 the policy of the Florida Forest Service shows

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a change of thinking to this extent. They extended this policy about the use of fire to include other things: for stand sanitation, for the preparation of seed beds, for the control of hardwoods. Up to that time the literature shows only that it was concerned with the reduction of rough and the prevention of fire through these methods.

In 1956 the Florida Forest Service published a bulletin, "Using Fire Wisely in the Woods,"—this leaflet that we have here for any of you who care to pick it up and have not seen it before. Here again it's interesting to recall the discussion then about that publication. It's like Mr. Stoddard said about his chapter on fire. We had a manuscript I think for two or three years which came up periodically and then everybody shuddered and put it down again and rewrote it, and I think that finally Hux got his dander up and decided that we would quit pussy-footing around and get to work on it. We eventually came out with it but it was restricted as to distribution. In other words, we were to give it to landowners who were engaged in forest protection or growing timber but if the general public got ahold of it, all hell'd break loose. That was 1956.

I have to eat a lot of crow without salt because we were so reluctant, and one looks back today and laughs. The public memory is short at best and the public was not as greatly concerned as we thought they should be or would be in this matter. It involved landowners, people growing timber or growing cattle or growing game, and only those people. Generally they were familiar enough with the subject to realize the changing times and the changing trend. So now we have it out here. Anybody can pick it up. You don't have to certify you are a landowner.

There is still a reluctance on the part of many men, including ones in our organization, to accept this use of fire. It is not that they debate with us the reasons or the fact that it can be done, but there is still a feeling that in the hands of the uninformed or in the hands of the careless person more harm will be done than good. This is to a large extent true. We frequently, each year, see evidences of controlled burning or the use of fire carelessly handled in the wrong-age stands

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and at the wrong time. We have also experienced situations in which controlled burning for the sake of hazard reduction, particularly in south Florida, was not a year-long safeguard or insurance against wildfire. During a peculiar set of circumstances in a drought condition in south Florida I have seen an area burn over three different times during the year because of the warm, then dry conditions; immediate growth after the burn was followed by a dying of the vegetation. This year, for example (I hate to say this because we *never* make a mistake on what we do in our state forests), a controlled burning got away from us in an extremely rough area and because the previous burn adjoining it had been burned under supposedly ideal conditions but had been followed by drought, fire ran through the controlled burn and did more destruction there than in the burn in which it originated. That is an unusual set of circumstances but it can happen. It is one reason that our people are careful and somewhat reluctant sometimes to recommend to a landowner that he use fire for his own protection or for silvicultural needs. But it is our policy to prescribe fire to landowners as we see their conditions warrant it and need it, and we intend to pursue that policy. We intend, I hope, to continue training programs in which non-professional people will be better informed as to what to recommend and not be so hesitant about recommending it.

This generally outlines or summarizes the historical background of the Florida Forest Service and its relation to this problem of fire in the woods, and I can only say again that, right or wrong, in the beginning a great deal was accomplished in the young stands of timber today, particularly in the flatwoods of Florida where it shows. Whether we could have accomplished more by an acceptance of the need and the presence of fire in the woods I cannot answer and neither, I believe, can anyone else. We changed with the times, though sometimes with reluctance.

The following bulletin "Controlled Burning: Using Fire Wisely" referred to by Mr. Bonninghausen is reprinted through the courtesy of the Florida Forest Service.

CONTROLLED BURNING DATA SHEET

Temperature _____ Humidity _____

Wind Direction _____

Wind Velocity _____

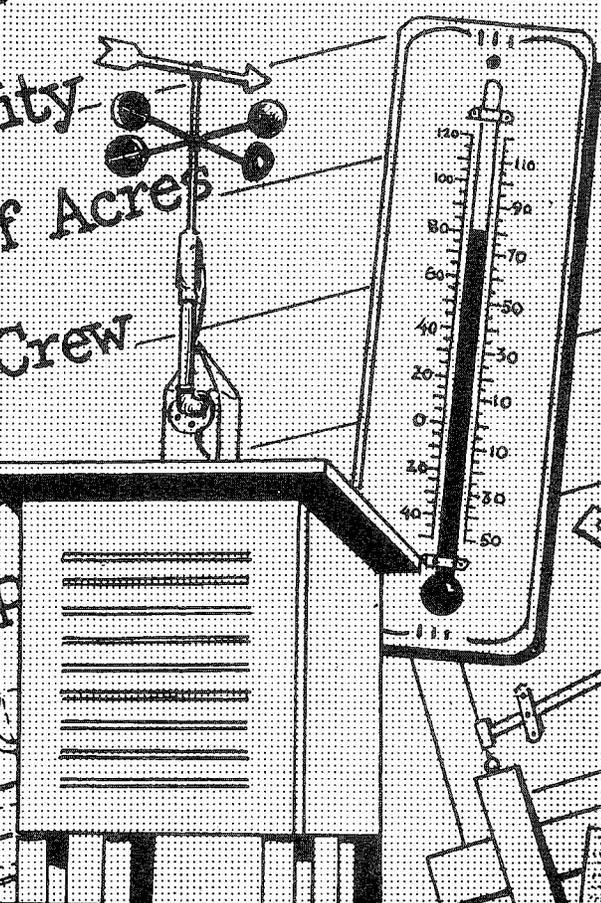
Number of Acres _____

Size of Crew _____

Fuel Moisture _____

No. of Personnel _____

Plan
obj



USING FIRE WISELY

Dear Woodland Owner:

Controlled burning — also called prescribed burning — can be very useful in forest management in the slash — longleaf pine type. The majority of Florida's commercial timberland is composed of this type.

The results of the fire protection efforts of the State and cooperating landowners are showing real benefits in restocking and in timber growth. The effective protection necessary to get a stand established and growing brings with it, in many areas, a build-up of heavy ground cover and underbrush. During prolonged periods of drought, this rough is a virtual powder keg and the control of fires in these areas under certain conditions is extremely difficult.

This bulletin has been prepared with the view toward aiding the landowner or woods manager in reducing this fire hazard in areas where the timber stand is such that controlled fire can be used. The use of controlled fire also is an important management aid for Brown Spot removal in longleaf pine. It is desirable to use fire to reduce heavy grass rough prior to natural (or artificial) seeding. Use of fire in the removal of scrub hardwood can help reduce costs.

Careful consideration of these problems and careful application of controlled burning where it is needed will greatly benefit the woodlands of our State.

C. H. COULTER

State Forester

Florida Forest Service

CONTROLLED BURNING: USING FIRE WISELY

Burning your woods can be useful . . . if you *control* burn right!

For many years, foresters advocated no fire in the woods . . . but research and practice have demonstrated that the wise use of fire is a good forest management tool and a great help in forest protection.

Potentially dangerous forest conditions such as heavy, hazardous rough can be reduced by the wise use of fire. As a forest management tool, controlled burning can be helpful for seed bed preparation, elimination of Brown Spot disease in longleaf pine, and timber stand improvement.

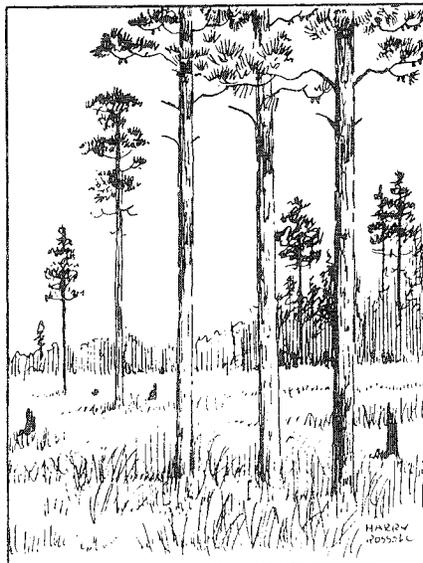
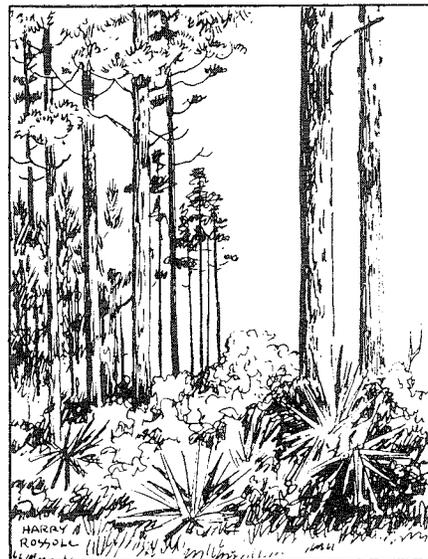
You must make the decision. Controlled burning, if done properly, will benefit your woods. Get the advice of a professional forester. Be sure that burning is the best method to get the results you want. There are dangers involved — runaway fires, killed or damaged trees — and the precautions cannot be over-emphasized. Yours is the decision . . . we'll tell you how. First, ask yourself these questions:

- WHY BURN? Do you have a heavy rough to reduce . . . getting ready for seed catch . . . Brown Spot on your young longleaf?
- WHAT TO BURN? Is your longleaf and slash the right size . . . will it stand a controlled burn? If good hardwood, DON'T BURN!
- WHEN TO BURN? Is there a steady moderate wind . . . is the sap down . . . cold weather . . . has it rained recently?
- HOW TO BURN? Don't guess. Learn the right way. See the men who know . . . your Florida Forest Service district forester or farm forester. It's their business and their privilege to serve you.

Control Burn The Right Place . . .

FIRE INSURANCE . . .

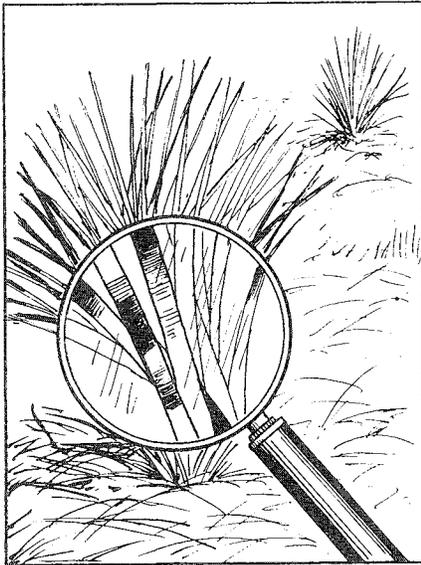
Use controlled burning to get rid of dense rough that could mean the end of your trees if a wildfire should ever get started. A carefully controlled fire, backing against a steady wind, can eliminate this hazard and cause little or no damage to the trees. However, if your trees are slash pine, don't control burn until the saplings are at least twelve feet tall! Longleaf seedlings in the grass stage are able to withstand fire if their root collar diameter is $\frac{1}{2}$ " or more. After they start height growth, however, don't allow any fire until they've reached a height of at least eight feet. Even the best controlled burn will cause some mortality.



NATURAL SEEDING . . .

sometimes needs a helping hand. Use controlled burning to clear away rough that may keep the seed from reaching the soil and may compete with the tiny seedling when it first begins reaching for nourishment. About a month before seed fall is the best time for this type of controlled burning as it reduces rodents. Usually early August for slash pine and September or early October for longleaf is best. This type burn can be made as much as six or eight months ahead of seed fall.

... At The Right Time



FOR REMOVING BROWN SPOT . . .

from your longleaf seedlings, when they're two years old or older and their root collar diameter is $\frac{1}{2}$ " or more, controlled burning is the best method. This should be done in the winter, under the same conditions that apply for rough removal with one exception: A sweeping head fire with the wind is best as it causes less damage to the seedling stems while burning off the infected needles. Proceed with caution on this, as on the other types of controlled burn. Be sure to back fire a wide strip before setting your head-fire.

Sometimes the cure is worse than the disease. Get a forester's professional advice. Remember only sturdy longleaf seedlings in the grass can take this treatment.

WEED OUT YOUR SCRUB HARDWOODS . . .

with controlled burning. Catch them when they're young and tender. A judicious use of fire, followed by tree poison, can turn a worthless field into a fertile place either for natural seeding or planting. Don't use fire for the large scrub trees, however, as it will not kill them and will definitely damage any small pine saplings that may be on the area. Be sure you contact a professional forester for advice before you use fire as a remedy for weed trees. Poison may be the answer, rather than controlled burning.



SEEDLING PLANTING . . .

A good controlled burn before planting will clear your land of the heavy grass or rough which causes planting difficulties, and also protects the young seedlings against wildfire for at least a year. The best time is about a month before you plan to plant. Take precautions to keep the burn on the area to be planted by plowing firelines.

GREENING UP YOUR UNIMPROVED PASTURE . . .

for the spring, with controlled burning, should be done in the winter months when your trees are dormant. A good controlled burn won't kill the older trees but annual burning, even if controlled, will slow down their growth and your young seedlings will be killed for the most part. This means postponing the natural restocking of the area.

FLORIDA GAME . . .

such as turkey and deer, need small open areas as well as dense cover for best results in game management. Controlled burning, at the right time and with the right technique, can open up small areas in your woods for better hunting. Remember, though, a large area burn destroys the food for game and drives it away. Keep your controlled burn small.

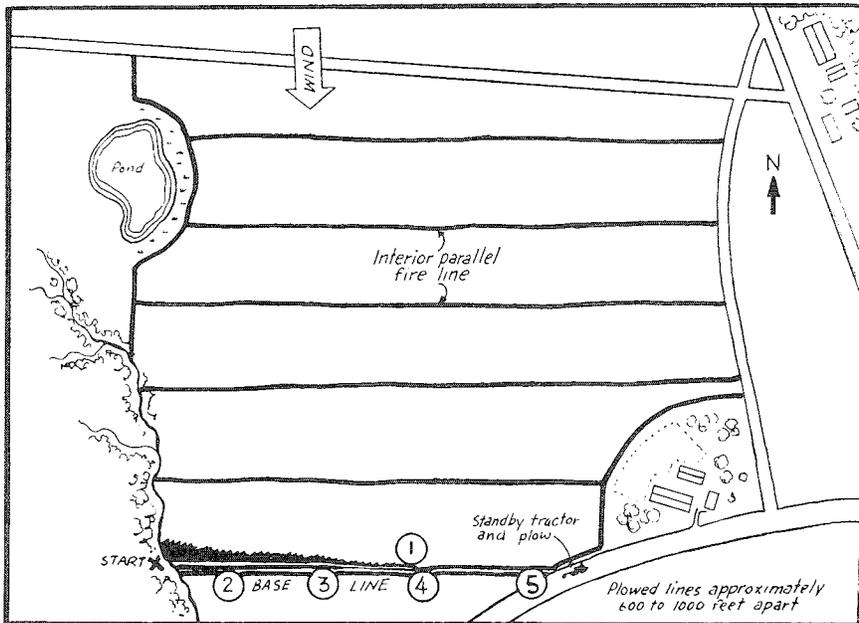
How to Control Burn

First, Florida law requires you to notify neighboring landowners of your intention to control burn at least one but not more than ten days in advance. Be sure that you have enough men and equipment to keep the fire under control and on your own land as you will be financially responsible for any damage done on surrounding woodland if your fire should get out of control.

The Florida Forest Service should be notified of your controlled burn so that valuable fire fighting time will not be wasted in sending equipment to a false alarm. Contact your local unit before burning, and get the latest fire weather forecast.

The next step is to plow a fire break around the entire area you plan to burn, using any natural barriers (ponds, roads, streams) as part of your line. Make sure to clear a wide break at the southern boundary of the area, if you plan to use a north wind, or on the opposite side of the area from the direction of the wind. This is your base line and should be adequate to prevent a stray gust of wind from blowing fire out of the burned area and onto unprepared land.

Your large acreage should be broken up into tracts of 300 to 1000 acres. If you own a smaller tract, the procedure is the same. Interior



Beginning controlled burn.

Circled numbers show placement of men and their movements during burning.

firelines must be plowed in each tract, parallel to each other and at right angles to the direction of the wind. This usually means east and west lines in most of Florida as the best controlled burning wind is usually from the north.

The distance between the interior parallel lines should be governed by the amount of fuel on the ground which will affect the rate of burn and probable risk involved. On the average, a fire will burn against a suitable wind at the rate of a chain to a chain and a half per hour (66-100 feet). As you want the lines close enough together to burn completely over during the daylight hours, this means they should not be farther apart than 600 to 800 feet. The closer they are, the less danger of the break-out and . . . destructive wildfire.

All of the fire break and fireline plowing can be done prior to the day of firing . . . in fact, should be . . . so that you can pick the ideal day and begin your burn without wasting time. If the lag between plowing and burning is too long, leaves and needles may fill the breaks and make them useless. Clean firelines are vital to the success of controlled burning. An ideal time to start your burn would be the day after a good rain, as soon as the surface vegetation is dry enough to burn.

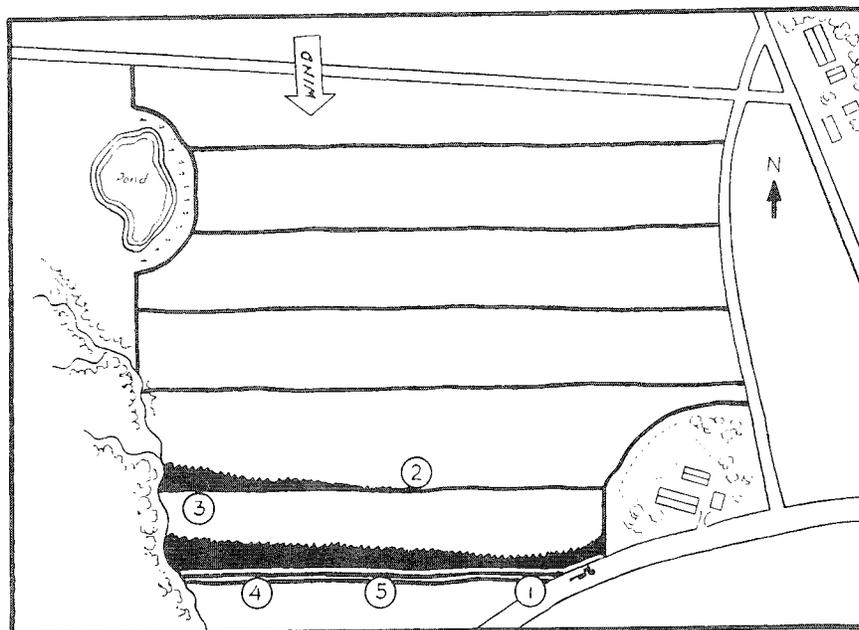
A steady five to ten mile per hour wind, strong enough to sway the tree tops, is necessary for good controlled burning. A higher velocity

wind is dangerous as it may cause the fire to get out of control. A lighter wind will let the fire scorch the tree crowns. The ideal controlled burning day has a cold steady wind from the north, normal after a winter rain in Florida, with moist fuel that helps keep the heat of the fire down. Remember, the colder the day, the less fire damage, and *DON'T BURN UNLESS THERE IS A STEADY WIND!*

The day is right, your firelines are plowed, neighbors notified and you're ready to begin your burn. Make a last minute check with the weatherman to make sure no drastic change in wind or weather is expected. Your local radio station, weather bureau, or Forest Fire Control Unit will all have the latest information. Five or six men are necessary to make the average 300 to 600 acre burn. Brief them on their specific jobs and on the whole operation.

Have one man start the fire along the north edge of the southern boundary fire break, *if the wind is from the north*. A back fire drip torch is best but dried grass or dried palmetto fans may be used. As the fire is set, post the other men along the line to make sure a spark carried by a gust of wind does not cross the line and start a wildfire.

When the fire has burned far enough north to make the base line secure (usually about 30-40 feet), fire the north edge of the next plowed



Progression to second line.

Circled numbers show placement of men and their movements during burning.

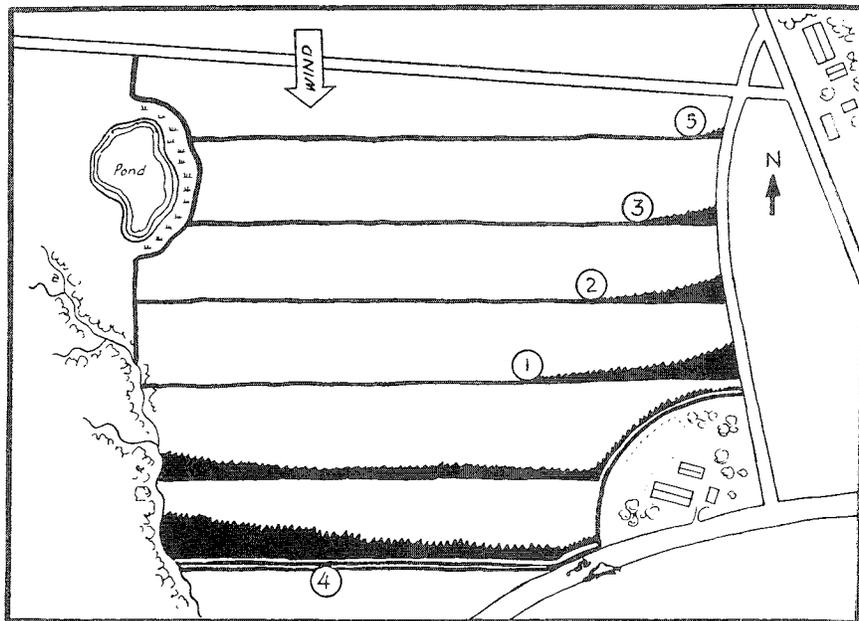
line. Leave three men to patrol the base line and bring the other men to the next parallel line to the north.

Continue this firing, working to the north, until the area for the day is completed. Usually, after the base line and first parallel lines are secure, four men can be used to set fires and the other one can patrol the down-wind side of the area. In this way, 500 acres can be fired in an hour. On a good day, it may be possible to burn another tract, leaving two men behind to patrol the first fire.

Burning should be started by the middle of the morning and completed by dark. Normally the wind is steadiest during this time. Night is *not* the best time to burn because the wind is erratic and may die down, letting the fire flare up and scorch the crowns. Moisture from the night dew also keeps the fire from burning into the wind.

The important thing is to keep constant watch over the fire and have enough men and equipment to control it if the weather should change, the wind pick up or a vagrant spark should get away . . . changing a controlled burn into a raging wildfire.

Patrol the fire until it is out and check it again the next morning before the dew dries for any danger areas where a break-out could occur.



All lines fired.

Circled numbers show placement of men and their movements during burning.

The margins of the ponds or swamps on the edge of the burned area should be watched especially during and after burning.

The height of the scorch line tells whether you did a good job or not. For sapling size longleaf and slash pine, when the scorch involves less than the lower one-third of the live needles, it's a good controlled burn and no measurable slowing of growth follows. A scorch between the lower one-third and one-half of the needles results in a loss equivalent to one or two year's growth. As the scorch line rises into the upper half of the tree, the growth loss rapidly increases and mortality often results. Occasionally, trees weakened by fire that burns into the upper half of the crown are killed by insects and disease.

The cost of controlled burning depends on the type of burn being made, the number of men used, the amount of equipment needed, and the size and number of the fire breaks and lateral lines that are plowed. The average cost is from 10¢ to 30¢ per acre but it can go much higher.

The question to burn or not to burn rests entirely with you. If you want maximum growth for your trees, you can't burn every year. Annual burning, whether controlled or wild, damages standing trees and kills most of the small seedlings that grew from seed during the previous year. Not only timber but also the soil itself suffers when the litter that carpets the woodland floor dries out and burns during the annual fires. There are no hard and fast rules about the frequency of controlled burning . . . from 3 to 6 years or even longer may be the interval for your particular problem. Get your professional forester's advice in all cases.

The Florida Forest Service offers its help in any of your woodland problems and endorses the practice of wisely-done controlled burning. The dangers of careless controlled burning cannot be over-emphasized and should be well known to you before you decide to burn. Be sure that you make a careful examination of your woodlands and get the advice of a professional forester before making your decision. The Florida Forest Service will furnish the "know-how" . . . you make the decision.

The Florida Forest Service is vitally interested in helping you do a good job of controlled burning and will be glad to inspect your woodlands to see if it's necessary, as well as tell you how to do it. Write or contact your district forester, county ranger or farm forester if one serves your county.

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