OCCASIONAL PAPER No. 63 June 11, 1937

SOUTHERN FOREST EXPERIMENT STATION

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THE OPPORTUNITY FOR FORESTRY IN LOUISIANA'S AGRICULTURAL PROGRAM

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This paper releases data gathered in current investigations at the Southern Forest Experiment Station, and is subject to correction or modification following further investigation.

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The Louisiana farmer's opportunities for profit through management of his woodlands are not always fully appreciated. As a matter of fact, farm woodlands hold a high position in Louisiana's agricultural economy. According to the most recent census figures (1934), this State contains approximately 3,427,000 acres of farm woodlands, or an average of 20 acres per farm. These woodlands constitute about 33 percent of the State's farm land and 21 percent of its total forest area of approximately 16.2 million acres. The total area in cultivation in 1934 was 4,756,500 acres. In 1935, the last year for which data are available, the cash income from farm-forest products in Louisiana totaled $1,688,000. Compared with forest lands elsewhere in the United States, Louisiana farm woodlands have an outstanding advantage in that the potential rate of tree growth in this general section exceeds that in any other forest region of the country.

Of the total land area of Louisiana, 56 percent is in some type of forest. This can be roughly divided among the principal forest types as shown in table 1.

Table 1. Acres of productive forest land in Louisiana in the various forest types and forest-conditions

Forest type	Forest condition				Percent
	Old growth	Second growth	Clear-cut	Total	
	Thousand acres				
Longleaf-slash	212	1,153	1,275	2,640	16
Shortleaf-loblolly-hardwoods	237	4,704	51	4,992	31
Upland hardwoods	184	746	5	935	6
Bottomland hardwoods (including cypress)	2,709	4,691	121	7,521	47
Total productive 2/	3,342	11,294	1,452	16,088	100
Percent	21	70	9	100	

1/ Address before the Farm Chemurgic conference at Shreveport, La., April 15, 1937.

2/ Non-productive forest area is estimated at 123,000 acres, giving a total forest area in the State of 16,211,000 acres.

According to the preliminary estimates of the South's forest resources, as obtained by the Forest Survey, Louisiana contained (in 1934) approximately 29½ billion board feet (Doyle rule) of sound, merchantable sawtimber (pines at least 9 inches in diameter at breast height, and hardwoods at least 13 inches in diameter). This was made up as shown in table 2.

Table 2. Volume of sawtimber in Louisiana in the various species-groups.

Tree species-group	Volume (Doyle rule)	Percent of total
	million board feet	
Longleaf and slash pines	3,543.7	12
Shortleaf and loblolly pines	5,796.4	20
Hardwoods 1/	20,077.4	68
Total all species	29,417.5 2/	100

1/ Hardwoods include principally red gum, red and white oaks, black gum, tupelo, bitter pecan, cypress, and ash.

2/ Equivalent volume using Scribner rule is 37,641.9 million board feet, and by International ¼ inch rule (approximating mill tally), 42,441.3 million board feet.

In addition to the merchatable sawtimber given above, Louisiana forests include in sound trees under sawlog size the amounts of cordwood (standard cords, including bark) shown in table 3.

Table 3. Volume of cordwood in Louisiana in the various species-groups.

Tree species-group	Volume	Percent of total
	thousand cords	
Longleaf and slash pines	767	1
Shortleaf and loblolly pines	11,997	19
Pulping hardwoods 1/	20,793	34
Nonpulping hardwoods 2/	26,185	42
Cypress	2,384	4
Total all species	62,126	100

1/ Principally red gum and tupelo.

2/ Principally red and white oaks, bitter pecan, and ash.

The cutting and marketing of forest products, both from the farm woodland and from industrially owned forest land, have represented a considerable source of income and opportunity for employment, either full-time or part-time, to many Louisianians. The Federal Census figures (1929) showed that the forest-products industries employed approximately 38,000 persons, or 38 percent of the total people employed in all manufacturing industries in the State, paid out salaries and wages of more than 35 million dollars, and produced materials worth more than 115 million dollars annually. The cutting of cordwood, pulpwood, sawlogs, poles, and ties, and the production of naval stores (turpentine and rosin), are particularly suited to part-time employment of farm labor and equipment. Furthermore, Louisiana forests offer opportunities for expansion of the present industries and development of new wood-using industries, which, if taken, will absorb many people now on submarginal farms and provide part-time work for many farmers on subsistence homesteads.

Table 4 shows the number of wood-using plants in Louisiana in operation and the number of full-time laborers required in 1934.

Table 4. Wood-using plants in Louisiana and men employed, 1934.

Type of wood-using plant or commodity		Number of establishments	Number of full-time laborers 1/		
			Woods	Mill or plant	Total
	daily capacity				
Pine sawmills	80 M ft. and over	20			
	40 M ft. to 79 M ft.	8			
	20 M ft. to 39 M ft.	36			
	19 M ft. and under	169			
Hardwood sawmills	80 M ft. and over	4			
	40 M ft. to 79 M ft.	27			
	20 M ft. to 39 M ft.	21	3,804	7,120	10,924
	19 M ft. and under	84			
Cypress sawmills	80 M ft. and over	0			
	40 M ft. to 79 M ft.	4			
	20 M ft. to 39 M ft.	4			
	19 M ft. and under	10			
Veneer		14	285	141	426
Cooperage stock		24	261	377	638
Pulpmills		6	6,468	8,697	15,165
Treating plants		10		681	681
Distillation plants (steam solvent)		4	442	294	736
Turpentine stills		3	231	17	248
Posts, poles, piling, and crossties		-	1,537		1,537
Miscellaneous		15	1,535	2,095	3,630
Fuelwood (industrial) 2/		-	345	-	345
Total		463	14,908	19,422	34,330

1/ Based on 240 working days per year, 10 hours per day.

2/ In addition to this item, the labor used in cutting fuelwood and other forest products used locally is equivalent to full-time employment for approximately 12,438 men.

During the same year (1934), it is estimated that the forest industries in Louisiana cut approximately 1.8 billion board feet of sawtimber, which represented 2.3 percent of the total sawlog-size trees at that time. The additional drain in cordwood, for uses other than lumber production, and including that used on farms, has not yet been determined.

In the past, Louisiana farmers usually have not taken advantage of the opportunity to increase the income from their woodlands through improved management. The utilization of these woodlands is far from ideal, and much remains to be done before farm woodlands are adequately protected against fire, overgrazing, insects, diseases, and abnormal erosion. As elsewhere in the South the coming of the small mill has been the chief cause of overcutting. In many cases farmers have sacrificed stumpage under pressure of financial difficulties or simply because a small sawmill happened to be located temporarily in the vicinity. Often farmers owning small mills have converted all their merchantable timber into lumber, ties, posts, or other products for the sake of immediate cash income, when through selective cutting and careful milling they could have obtained an equal income without the sacrifice of adequate growing stock.

The result of overexploitation of farm woodlands is very evident in the considerable acreage of cut-over, burned-over woodland in Louisiana that has been forfeited to the State for nonpayment of taxes. In the entire State as of November 1934, there were 3,441,860 acres in tax default, or 11.9 percent of the gross area of the State; of this, approximately 1,720,000 acres were in forest. While this was the situation in 1934, there has been a marked improvement since that time. Data are not available as to the exact area now in State title for nonpayment of taxes, but it is estimated that a considerable percentage of the area in tax default in 1934 has now been restored to the tax rolls. This reduction in forfeited acreage has been brought about by the increased prices of farm products, by Federal benefit payments, and by legislation favoring easier redemption of forfeited and delinquent property.

Of the total number of tracts adjudicated to the State prior to 1933, 77 percent were less than 100 acres each. About half the area in these tracts was forest land, and most of it was owned by farmers. Through overcutting and lack of management, followed by depletion resulting from uncontrolled fires, this land has often been reduced to a waste, on which the owner could no longer afford to pay taxes. Its forfeiture consequently has increased the taxes on land remaining in private ownership, tending both to force it also into forfeiture and to curtail public services without any reduction in taxes. Although forest growth in Louisiana is potentially rapid, it cannot compete with uncontrolled fires, destructive cutting, and confiscatory taxes.

The individual farmer or other owner of small woodlands is often exploited through receiving an inadequate price for his stumpage and also by the overcutting of his timber. Therefore, in arranging for the sale of the products of his timberland, he should not neglect to "shop around" among sawmill operators and other users of forest products, and thus obtain the best price possible for his stumpage or logs. In doing this he can avail himself of the help of agencies, such as the State and extension foresters and the parish agricultural agents. He can also help to protect himself in the marketing of his timber products through the establishment of marketing associations and through the building up of local utilization plants.

Louisiana farm woodlands contain much raw material potentially available for the production of pulpwood, in addition to other forest products. This is particularly opportune at the present time because of the recently expanding pulp and paper industry. Louisiana has a particular interest in pulp mills, with six already established in the State (Bogalusa, Bastrop (2), Monroe, Hodge, and Elizabeth) and others in prospect. At present, the South dominates the field in the production of pulpwood where the sulphate process is used, the principal products being brown kraft wrapping paper, bags, and boxboards. Laboratory research indicates that excellent newsprint can be made from southern pines.

Among the factors which should be considered in the location of pulp mills are: availability of ample and continuous supplies of high-quality pulping cordwood, labor, power and fuel, water, and chemicals; transportation facilities; proximity to markets; and taxes.

Although the prospects of further expansion in the pulp and paper industry in Louisiana are favorable, certain precautions must be observed if this expansion is to be on a sound basis; and the following policy should govern this expansion:

1. There should be no more pulp mills in Louisiana than its forest lands can support from timber not needed for established forest-using industries.

2. Insofar as economic circumstances will permit, new pulp mills should be fairly well distributed throughout the State and not concentrated in restricted localities.

3. Each new and existing plant should plan for permanency and should utilize timber in its territory on a sustained-yield basis, with full regard for the needs of other wood-using industries, integrating the production of pulpwood with other forest products of greater value.

Aside from cash income through sale of forest products, the production of fuelwood, posts, poles, lumber, and similar products for use on the farm represents an important part of the total farm income. In Union Parish, La., investigations by the Southern Forest Experiment Station, in conjunction with the Louisiana Agricultural Experiment Station, showed that in 1930 the value of forest products cut and used on 119 farms averaged $33 per farm, or 48 cents per acre of woodland. The cut of products thus used was concentrated on a small percentage of the total woodland area, so that for the land actually cut-over the value was much greater.

Other studies by the Southern Station show that the average Louisiana farm uses about 11.4 cords of fuelwood per year (1934), while the average number of fence posts used annually per farm is estimated at about 60. Poles that go into cribs, barns, and other farm structures average 0.44 cords per farm. Most of these materials are cut from the farmer's own woodland. If the farmers had to pay for these products from their pocketbooks instead of obtaining them from their woodlands, the cost would be considerable.

As a concrete example of the tree growth that is taking place on Louisiana farms, figures obtained by the Southern Forest Experiment Station in a study of the financial aspects of growing timber, in Union Parish, show

that in 1929, more than 40 percent of the land in this parish was in farm woodland. Although studies of individual farms showed that very few farmers were practising good forestry, it was found that in a farm woodland representing the parish average the well-stocked pine stands were growing at an annual rate of more than 500 board feet per acre and that the average annual growth for all the farm woodlands in the parish was more than 200 board feet per acre. The possible annual income from sale of stumpage and pulpwood, at the prices then prevailing, averaged $2.47 per acre for well-stocked stands and 71 cents per acre for the whole woodland. The cost of taxes, fire protection, and forest management per acre per year was 31 cents for the well-stocked areas and 25 cents for the whole woodland. Thus, the indicated net profit per acre per year was $2.16 for the well-stocked woodland and 48 cents for the whole woodland. These figures present a strong argument for careful protection and management, since on well-stocked woodlands the net profit per acre was more than four times as great as that on average woodlands.

It behooves the owner of a farm woodland, whether he be a farmer or an urban resident, to protect his property carefully, manage it wisely, and cut it conservatively. To obtain protection against fire is in general a relatively simple matter. Federal allotments are made available for this purpose under the provisions of the Clarke-McNary Law; and the Division of Forestry of the Louisiana Department of Conservation cooperates with owners or groups of owners of forest land in protecting these properties from fire. With Federal and State cooperation, owners of Louisiana woodland can protect their forest properties from fire at an annual cost of about 2 or 3 cents per acre. Owners of small tracts in localities where it is impossible to establish protection units can at least plow firebreaks around their woods, remove snags and down timber, and observe care in the use of fire.

If reproduction is desired in the longleaf pine belt, woodlands must be protected against hogs where these animals are numerous. This can be done without excessive cost in relation to ultimate returns on the investment by building and maintaining good stock-fences. An abundance of pasture is available without overgrazing of farm woodlands.

A third form of protection that is today receiving belated attention is protection against erosion. In Louisiana, since 1933 there have been established a number of Civilian Conservation Corps camps, which, under the technical supervision of the Soil Conservation Service, are undertaking a program of controlling soil erosion. This work is a part of a comprehensive program for controlling rapid run-off of rain water and the consequent washing away of the valuable top soil. The method of stopping or healing gullies is largely to revegetate them by planting trees, vines, or grasses. To do this in the larger gullies, low temporary check-dams of brush, poles, or wire are built; the banks are reduced to an angle of repose; top soil is then put into the gully; and soil-binding trees, vines, or grasses are planted. These improvements, in addition to their direct effect in checking erosion, will serve as demonstrations to guide the farmers in their efforts to heal gullies on their farms. Areas on which abnormal erosion has been checked can be put to work growing crops of black locust or other timber. An important corollary of this gully-healing work is the correction of poor agricultural practices by the farmer himself through the use of improved methods of cultivation, including terracing and contour plowing, lack of which has been an important factor in excessive run-off from slopes.

Livestock production offers another means of using farm woodlands and contributes to the income and subsistence of many Louisiana farmers. Since present production of livestock falls far short of meeting local market needs, there is a considerable field for expansion, although one handicap to the economical production of livestock in Louisiana is the lack of improved pastures. In this connection it should be pointed out that livestock may cause damage to the woodland. Furthermore, the widespread winter-burning, which is practised in certain parts of the State to remove the accumulation of dead grasses in order that fresh feed may be more easily available to livestock in the spring, is done as a rule, without regard to the possibility of damage to the forest; and where the production of pulpwood and timber products is the dominant purpose, full stands can best be obtained by excluding livestock. It might be mentioned, in addition, that Louisiana farm woodlands are destined to become increasingly important for the production of game.

In the field of forest utilization, the farmer's job is not difficult. Instead of clear-cutting his merchantable timber, the woodland owner should practise selective cutting and thus get a continuous income. For his pulpwood and posts he can remove trees that are defective for lumber purposes and that are interfering with the development of other trees. Such culling increases the growth and value of the remaining stand. He can thin out young stands for firewood, crossties, or pulpwood, and by watching the market can arrange to make these thinnings when the cut material will bring the best prices. Even if he desires to sell or cut his timber for lumber, he should not slash off everything on the ground. He will get more for his logs if he sells by grade rather than by gross volume. Ordinarily, selective cutting costs nothing aside from the owner's time, and its returns continue for many years. Trees in the woods are like capital in the bank; their new growth corresponds to the interest. An owner of Louisiana woodland can well afford to pay taxes assessed at a reasonable rate on a fair valuation on managed forest land that is highly productive and is returning a profit on the investment. He cannot afford to pay taxes on woodland that has been denuded beyond hope of repair during his lifetime, or even on good timberland that is assessed at an inequitable rate.

In managing his woods, skilled help is readily available to the farmer. Louisiana has an extension forester working, in cooperation with the State and Federal forestry agencies and through the parish agricultural agents, to aid owners of forest lands in establishing sound forestry practices. Through joint efforts, also, extension foresters and parish agricultural agents are training 4-H club members in forestry practices and are establishing demonstration areas. The Louisiana Division of Forestry also advises farmers on their forest problems and distributes trees for planting at cost. Printed matter on many phases of forest protection, management, and utilization is available through this agency.

The United States Forest Service maintains, with headquarters at New Orleans, La., the Southern Forest Experiment Station, which conducts research on technical forestry problems to determine the best methods of growing timber in the Southern States. Investigations are under way in the fields of silviculture and forest management, fire protection, reforestation, naval-stores production, erosion control, forest economics and land-use, and other related subjects. The current findings of this Station are made available to the forestry and agricultural agencies throughout Louisiana and the other

Southern States, and these agencies disseminate the information to forestland owners. The results of the Southern Station's research program should serve as the basis for the scientific practice of forestry and thus promote the full use of the immense area of farm woodland and other forest land in Louisiana and the other Southern States, both for timber growing and for associated purposes such as watershed protection, recreation, and game management.

All these agencies are working in the interest of the Louisiana farm-woodland owner, but the final application of the methods they recommend is something that the farmer himself must carry out. If and when he does apply these methods, he will learn that the results will be more than worth the effort.