

# MONTHLY REVIEW

## FEDERAL RESERVE BANK OF ATLANTA

Volume XXXIII

Atlanta, Georgia, August 31, 1948

Number 8

### *Overcoming Handicaps In Farm Forestry*

**A**N INCREASE in the yield of present timber stands and shifts of some land from other uses to the growing of trees are essential for many Sixth District farmers if they are to increase their profits from forestry. To obtain the maximum profits the farmer, of course, must fit his forestry operation into his farming system in a manner that will make his available land, labor, capital, and managerial ability yield him the largest continuing returns. Even if all landowners possessed perfect knowledge of the most remunerative alternative use of their land, they would still face certain obstacles such as problems of fire control and marketing, which might prevent the development of their forest lands to the most profitable point. As is the case in many other farm problems, surmounting these obstacles depends upon appropriate community action and upon the acceptance by all persons of certain responsibilities.

Since the conditions under which forestry is carried on vary widely over the District, the particular problems faced by any individual owner of woodland can be met only by specific measures. The most serious problem in one locality, for example, might be the lack of a market for low-grade hardwoods; in another, it might be the damage caused by fires. Professional foresters who work with farmers list many reasons for the generally inefficient operation of farm forests.

Despite the diversity in local conditions, however, some problems are general and engage the attention of almost all the farmers who try to grow trees as a crop. These problems may be physical or economic and are not, of course, mutually exclusive. The protection of trees from damage by grazing animals, for example, is a physical problem in the same sense that the protection of field crops from damage by livestock is. For the farmer who has a very small pasture acreage, however, this problem may also involve economic choices. He may have to weigh the returns from his woodland when used as pasture against the offsetting damage that cattle might do to the trees.

#### **Major Physical Handicap**

Of all the physical handicaps to profitable timber production, fire is the most serious. Commercial forestry is seldom, if ever, profitable without adequate fire control. In a recent reappraisal of Southern forests, the United States Forest Service found that only 3 percent of the farm forests in Sixth District states had good fire protection. "Good protection" was taken to mean that the percentage burned annually over a five-year period was less than 3 percent for longleaf-slash pine types, less than one percent for loblolly-shortleaf hardwood types,

and less than 0.2 percent for bottomland hardwood types. A "good" rating does not mean that the existing fire protection is all that is desirable or that additional protection would not be beneficial. It merely means that it is the best protection attained so far on any considerable area.

In the same survey, 24 percent of the farm forests were found to have fair fire protection. To receive a "fair" rating, a forest property must conform reasonably well to minimum standards for "good" protection or must show no evidence of fire within the past 10 years. A property is deemed to have adequate protection if it has a rating of "fair" or "good." In Tennessee and Louisiana nearly half of the farm forests are adequately protected. On the other hand, less than a fifth of those in Alabama, Florida, and Georgia have adequate fire protection. For smaller areas, of course, the degree of protection ranges from none at all to "good." Since fire protection is usually organized on a county-unit basis, the farm woodlands in one county may receive virtually no protection while those in an adjoining county may have good protection. Many small properties in areas without organized protection, however, may show little or no evidence of fire damage where there are fire barriers, such as roads, or if the owner has been especially vigilant.

The most obvious damage caused by fire, of course, is the destruction of standing timber. This damage represents large immediate annual losses to District timberland owners, but these losses may easily be exceeded by those of potential future values. Little trees that are so small as to be hidden in the grass may be killed by burning, for example, and without them a new crop of timber cannot be obtained. Young trees that are not killed may be slowed down in their growth. Though larger trees may not be killed, they also may be retarded in growth or so weakened that they lose their resistance to insects and diseases. Even the fully mature trees that survive burning may be greatly reduced in sale value.

The measures currently used to prevent or control fires in the woods are determined in large part by the causes of such fires. Although the causes are many, nearly all fires are caused by man. Of these fires a large proportion are started by incendiaries. According to recent estimates, more than half of the woods fires in Louisiana and about two fifths of those in Mississippi are of incendiary origin. The proportions are similar in the other District states.

In a survey conducted by the Georgia Agricultural Extension Service, farmers were asked: "Why do people burn the woods?" Their answers disclosed that about 27 percent of the fires resulted from carelessness, indifference, and a lack

of appreciation of values destroyed. About a fifth of the fires were deliberately set in an effort to improve the woodland for livestock grazing, and almost as many in an effort to kill snakes and insects. Attempts to destroy boll weevils accounted for about 13 percent, and the removal of fire hazards, such as grass and brush, for 7 percent. A small number of fires were set for spite or revenge, for a thrill, or through the carelessness of hunters and fishermen.

Since most forest fires are caused by man, their control or elimination involves restraint upon human activity. This may take the form of coercive restraint by law, or the self-restraint that results from appropriate educational measures.

All the District states now have laws which, though differing in detail, make the careless or intentional burning of woodlands illegal and provide penalties commensurate with the seriousness of the offenses. Like that of other laws, the purpose is to compel a recalcitrant minority to conform to practices which are considered desirable by the majority. By themselves, however, these laws have proved to be generally ineffective; and prior to the establishment of organized fire protection over large areas they had very limited application. Wherever owners of forest land have come to recognize the need for preventing fire damage, however, and have organized, with the co-operation of the state forestry department, to control fires, laws are an important part of the general fire-suppression program. The files of the state forestry departments contain an impressive record of prosecutions and convictions for violation of fire laws in those areas.

The educational approach to the prevention of damage by fire rests upon the principle that people will not, as a rule, destroy that which they believe to be valuable. Since a large proportion of the fires are set simply because many people do not realize that woodlands can be an important income-producing asset, an educational approach is particularly appropriate in dealing with this cause of fires. Personal contacts are the most effective means of educating those people most directly affected by fires, the landowners. In this work, which is done largely by the technicians of wood-using industries and various government agencies, the strongest appeal to the landowner is the one which shows him that by protecting his timber from fire he can substantially increase his profits. The educational measures directed toward changing the attitude of the general public regarding forest fires, of course, stress the duty of the citizen to preserve the state's natural resources and to help create and maintain wealth that benefits the whole community.

Although its effect cannot be readily evaluated, education undoubtedly plays an important role in reducing the fire hazard to the growing of trees. But, even if education materially reduces the number of fires, profitable forestry is not possible in most areas unless the fires which start are quickly suppressed. For this purpose organized fire-protection systems have proved both necessary and effective. In Florida, for example, where the forest-fire record is one of the poorest in the nation, 32.3 percent of the unprotected area was burned over last year, while only 1.68 percent of the woodlands receiving state protection were burned. The main features of these systems, which are usually administered by the state forestry department, are fire detection from steel lookout towers or planes and mobile fire-suppression crews. In areas where adequate personnel and equipment have been available, these protection systems have reduced fire losses to such an extent that forestry can be practiced at a profit. Although only about a third of the District forest land now

receives some sort of organized fire protection, the protected acreage is steadily increasing as more money, equipment, and personnel are made available for this purpose.

For the farm-woodland owner whose profits from forestry depend upon long-run stable operations, however, the simple fact that he has adequate protection now does not completely solve the problem of fire. He must also be assured that the protection will be permanent. Ordinarily, the protection systems that are now used depend upon co-operation between local units, such as counties or parishes, on the one hand and the Federal and state governments on the other. Funds for this work take the form of state appropriations, Federal allotments, and contributions from local governments and private sources. That permanent protection in most areas depends on local sources for a continuing flow of funds and for an authorization of work prevents the present system from being entirely satisfactory. Local sources frequently withdraw their support, thus causing the protection program to be greatly reduced in effectiveness or abandoned. One remedy that has often been proposed is to make the Federal and state governments entirely responsible for forest fire protection. Such a step would undoubtedly go far toward reducing fire hazards and would make forestry a profitable venture for more farmers.

In dealing with the problem of fire, farm owners of timberland have some important advantages over nonfarm owners. Most farm woodlands, which are relatively small, are usually protected by fire barriers, such as roads and cultivated fields. Even when a farmer lives in an area that has no organized fire protection he, himself, can often do much to protect his woods by a few simple but effective measures. Many farm woodlands, in fact, are highly productive primarily because the owners have plowed fire breaks, have properly disposed of slash, and have suppressed fires while they were still small. On most farms only a few pieces of inexpensive equipment are needed for this work. The main requisite for success is a determination on the part of the owner to protect his woods. Individual efforts of this sort, however, can by no means take the place of community and state action. Despite their own efforts to protect their woods from fire, many farmers each year sustain losses of timber values caused by fires beyond their control. Although a farmer owner can control fires more readily than some other types of owners, he too must have organized protection if he is to grow timber profitably.

#### Other Physical Handicaps

Closely related to the problem of fire control is that of damage done to trees by grazing animals. Since the time of the first white settlements in the District, farmers have been burning the woods in order to increase their value as pasture. In many areas burning for this purpose is still the chief cause of forest fires. When grazed in burned-over woods, the livestock often cause further loss by seriously damaging or destroying the young trees. In the hardwood stands particularly, young trees are killed by all classes of livestock. Grazing by sheep has been found to be incompatible with efficient forestry, even in the pure pine stands. In the longleaf-pine areas bordering the Gulf Coast, hogs have proved very destructive in timber stands.

It has been difficult to prevent damage from grazing in large areas of the District because of the nature of existing stock laws. Although all the states have general stock laws their application is usually left to the discretion of local

government units. As a result most of the counties in the southern part of the District have "open range," on which the livestock owner is not required to keep his livestock fenced in. To protect his woodland in such an area from grazing, a farmer must fence it completely. Most farmers, however, continue to pasture livestock in their woodlands. The greatest progress in the prevention of grazing damage, therefore, has come from management plans that provide for enough increase in the carrying capacity of open-pasture to offset the grazing afforded by woodlands.

The program sponsored by the Florida Agricultural Extension Service is an example of such a plan. In recognition that under present management systems the burning and grazing of timberland are necessary supports of the cattle industry, the suggested plan provides for taking some land out of forest production. On this land are established wide improved pastures to serve as fire barriers around and through the forest area. When sodded with the better pasture grasses, which cattle graze closely, these open areas provide effective barriers. As far as possible the strips are established on ground now sparsely timbered or on that least adapted to timber growing. In small blocks of farm timber these barriers may be from 50 to 60 feet wide, and in the larger timbered tracts they may range from 100 to 200 feet wide. Where the fire hazard is greatest, as much as a fifth of the forest area may need to be in improved pasture for adequate fire protection. Although this plan sacrifices some of the forest area, that which remains can be made to yield more timber products because it will be adequately protected against both fire and grazing damage. The improved pasture strips will more than compensate for the loss of grazing in the timber stands.

Although this program provides for timber growing as well as grazing on the same tract, it embodies the well-tested principle that improved pastures and trees belong on separate areas. Attempts to grow trees and pasture on the same area usually end in a poor job of doing both. If the trees are spaced far enough apart for grass to grow well, they will tend to be too limby and broadtopped to yield valuable timber products. If, on the other hand, the trees are closely spaced so that they will grow tall and produce long, high-value logs, the stands are likely to be so dense that almost no grass will grow beneath them. Recent experiments in Louisiana with artificially planted stands of long-leaf pine showed that when these stands were properly managed for timber products they afforded no economical cattle pasturage after the fifteenth year.

The Florida plan, of course, is not applicable to all District forest areas. It does embody a principle, however, that could go a long way toward overcoming the grazing problem in the growing of timber. To show the farmer that by preventing grazing damage he will increase the profitability of his timberland is not enough. It is far more important that he be induced to adopt for his whole farm a plan which will give him a greater total income and which will also include measures for the protection of his timber from grazing damage.

As far as the annual destruction of timber is concerned, insects and diseases are more serious menaces than fire. The technical means of combating tree diseases and insects are so specialized as yet that they are beyond the reach of most farmers. Losses can be minimized, however, if proper silvicultural practices are followed, since vigorous fast-growing trees are less susceptible, of course, to these hazards than are weak and retarded trees.

Though not strictly a physical-production problem, the lack of equipment for harvesting and delivering timber products to the market may also be a handicap for some farmers. Much of the profit from forestry comes to farmers who use their own labor and equipment in harvesting and delivering the crop. Since most District farmers still use animal power and relatively few have farm trucks suitable for hauling logs, the harvesting and delivering of saw logs is often either too laborious or altogether impracticable. Economy in the use of equipment, of course, is directly proportional to the degree of utilization. The greater the number of hours that a tractor or truck is used per year, for example, the lower its cost per hour. Many farmers with small acreages simply do not have enough productive work in their present timber lots or, indeed, on their whole farms to justify owning much equipment. Overcoming this particular handicap to profitable tree growing may, therefore, involve increasing the size of farms or making farm machinery available on a custom basis.

### Economic Handicaps

Most of the economic handicaps to timber growing arise from the necessity of making long-time commitments and that of waiting a relatively long period before returns begin to come in. These are the main differences between growing trees and growing other crops. The farmer who decides to shift most of his time and resources from the growing of cotton to the growing of peanuts must make a decision which involves only one crop year. If he finds that he has made an unwise choice, he can quickly shift back to the original enterprise. The period of time between the original investment and the expected returns is a matter of a few months and is approximately the same for each of these two crops. On the other hand, the farmer who decides to spend his time and resources in the growing of trees, must abide by that decision for a long time. If he spends five or ten years improving his timber by selective cutting, fire protection, thinning, and fence maintenance and then decides to sell all merchantable trees and abandon the practice of forestry, he may find that much of the time and money spent on improvement has been wasted. Since the time and money spent on timber usually yield no returns for several years, the farmer, in appraising optional enterprises, must consider the present worth of future incomes as well as the dollar returns for a given year. Only if he does this will the opportunities for profit from farm woodlands be fully apparent to him.

The cash-crop systems that have distinguished District farming in the past give farmers little or no experience in assessing the current worth of future incomes. The rapidly growing pulp and paper industry, however, is doing much to overcome this handicap. In some areas profitable pulpwood cuttings have been made between 12 and 15 years after the land was artificially planted to pines. Although the development of a large pulpwood market has shortened the waiting period appreciably, forestry still compares favorably with other farm enterprises only in those systems that are based on continuing returns over a long period of years. The livestock farming systems that are now becoming common also serve to provide the needed experience in long-range financial planning. This change to long-range farm plans is one of the most effective means of overcoming the economic handicaps to farm forestry.

To a great extent the success of a long-range project, such

as farm forestry, also depends on the relative stability of prices for the product. Unfortunately, the prices of timber products have fluctuated violently in the past. As a result of these alternating periods of high and low timber prices, future markets have been very uncertain. In periods of general business depression and inactivity in the building trades, forces operating both from the demand side and from the supply side of the price equation conspire to drive down the prices of timber products. In such periods slack demand tends to lower prices. Instead of supply's adjusting itself to the lower demand, however, it actually tends to increase because farmers feel forced to maintain their income by cutting their trees when the general level of farm prices is falling and when there is a considerable volume of rural unemployment. The increase in supply has the effect of aggravating the decline in prices.

In recommending the practice of forestry to farmers, it is true, stress has often been placed on the ability of well-stocked woodlands to provide badly needed income when all farm prices are low. But, if a large proportion of the farmers draw on their timber bank accounts in such periods, they contribute to the instability which has been such a serious handicap in the development of farm forestry. Acting individually, farmers can do little to mitigate the effects of changes in demand that arise from changes in the level of construction or general business activities. They can, however, help to stabilize the supply by practicing selective cutting at regular periods. Farm foresters now stress the long-range management plans that call for cutting to remain fairly constant regardless of prices. Because trees double in volume every few years, a farmer will seldom, if ever, lose money by following this procedure. The increased volume gained by a few years of growth can usually offset any likely decline in the price per board foot.

Among the marketing problems which confront the owner of farm woodland are a lack of market knowledge, the limitations of the market for low-grade hardwoods, and the lack of a ready market for small quantities of forest products. The first of these difficulties is being overcome by the educational work of the foresters, private companies, and various state and Federal agencies. With a little instruction and practice, a farmer can readily learn to measure and grade timber products well enough to obtain full market value for his product.

Finding markets for low-grade hardwoods is primarily a research problem. The United States Forest Service is directed by congressional mandate to emphasize in its wood-utilization research an improvement in the utilization of low-grade hardwoods. Among the more important commercial outlets promising expansion in the use of such woods is that provided by the making of wood pulp, although the growth of Southern hardwoods in pulpwood size now exceeds the drain about 12 million standard cords a year. The Southern pulpwood industry in 1946 used only 1.2 million cords of hardwood and about 7.6 million cords of pine. The industry is interested in using more hardwood, but the greater capacity of the plant now under construction is planned for the use of softwoods. It is reported, however, that a recently developed paper-manufacturing technique may almost double the use of hardwoods for pulp.

If the low-grade hardwoods that interfere with the production of high-quality timber could be destroyed at a low cost, the need for markets would be far less urgent than it is now. Most woodland owners cannot afford to remove

undesirable hardwoods by conventional methods unless they can be sold for enough to pay for most of the removal cost. Poisoning, which is now being tested extensively, offers interesting possibilities as a means of low-cost removal. If poisoning costs can be reduced enough, many woodland tracts which now contain a high percentage of virtually worthless hardwood can be restored to high-yielding pine stands.

Because of the present strong demand for most timber products, even a farmer who has only small quantities for sale has encountered little difficulty in marketing his product. In the past, however, this problem has been very serious for some owners of small timber tracts. Other than by an increase in the size of farm woodlands, which would be desirable for other reasons as well, it could be partially solved by an organization that would pool the products of many woodland owners and sell to buyers of forest products in large lots. The few co-operatives that have been started in the District for this purpose, however, have not been particularly successful. To be successful, a co-operative must have a large volume of business and a stable membership. These two conditions have been very difficult to realize in the District.

#### **Institutional Handicaps**

In addition to the physical and economic problems associated with timber growing, obstacles of an institutional nature tend to retard the development of profitable forestry. By institutional problems is meant those problems which arise from practices, laws, and customs that have a persistent effect on the economic activities of the community. Responding to a questionnaire sent out in 1942 by the Society of American Foresters, a total of 167 foresters from 42 states listed the reasons for their difficulty in arousing the farmers' interest in forestry. Opposition to change and general apathy made up 15 percent of the 256 reasons listed. Because the attitudes of farmers toward practicing forestry are bound by custom they are for that reason difficult to overcome. Many of the older farmers can still recall the cutting of virgin-timber stands. Since there has been no tradition of growing timber as a crop, most farmers have simply allowed their trees to grow, except for those they cut for firewood, fence posts, and other farm needs. When the second-growth stands have become valuable either because of higher prices or additional volume they have usually been sold on the stump, by the tract, with the buyer cutting all the trees that he considered valuable. Burning to kill insects or to improve the woods for grazing purposes has been customary in most areas ever since the land was first cleared for settlement. To uproot these prevailing customs with their attendant attitudes and replace them with the practice of "cropping" timber stands and protecting the stands from damage just as other crops are protected has been one of the main tasks of farm foresters. A forester's most effective tool has been to show the farmer in his own woods just what the practice of farm forestry means. Although lectures, demonstrations, meetings, and similar expedients are helpful in arousing interest, this personal service has produced the most tangible results.

Customs with regard to land ownership also account in part for the attitude of some farmers toward long-range projects, such as forestry. In contrast to some countries where farm land is treated as a trust and is handed down intact from generation to generation, land in this country is usually bought and sold like any other commodity. Last year one in every 20 District farms changed hands in an outright

sale. In 1940 the average owner-operator had been on his farm only about 15 years.

Under these rather unstable conditions of ownership many farmers can make very little profit from tree growing. Farm woodlands that are badly understocked as a result of fires and overcutting often require at least 15 years of intensive management before they become profitable again. Since most of the changes in farm ownership are made for unavoidable causes, there needs to be found some method by which the seller of farm woodlands can be compensated for the improvements he has made in their earning capacity. In some cases, of course, the seller is compensated by getting a higher price for his farm when the timber stand is improved. But, because many prospective buyers do not appreciate the value of productive woodlands, the increase in selling price is seldom proportional to the growth of the woodland's earning capacity. In the case of farm transfers this type of problem has sometimes been solved by father-and-son-transfer agreements. Such an agreement usually provides for transferring ownership of the farm to one of the sons when the parent is ready to retire. The new owner assumes a mortgage equal in amount to the claims of any remaining heirs and retires the debt in instalments that he pays out of profits from the farm. Since the transfer price is based upon the farm's estimated earning power, the parent is assured of compensation for any additions to earning power that he may have made. It is thus transferred as a going concern, and all the advantages of stable ownership, including profitable timber growing, are retained.

Even on farms where ownership is comparatively stable, rapid changes of operators may also prevent the growing of trees as a crop. The operators of rented farms move more often than do the owner operators, and they usually have even less interest in enterprises that require long periods of time to become profitable. About two thirds of the tenant farmers have been on their present farms less than five years. Only about one tenant in every 10 stays on the same farm for 15 years or longer. Since the tenant, under most leasing arrangements, is permitted to harvest only enough timber products for fuel wood, fence posts, and other farm needs, he has little incentive to improve the timber stands. The owner of rented farms, many of whom do not live on the property, often find the protection of the timber from fire and other hazards so expensive that they cannot practice forestry at a profit.

One of the most promising measures for solving this problem may be the type of agreement now used to some extent in connection with soil-conservation improvement. In such an agreement the owner compensates the out-going tenant for the unused value of the tenant's investment in soil conservation and other farm improvements. In this way the tenant is assured of compensation for the time and money that he spends in improving the farm even if he has to move before reaping the benefits from the improvements himself. Few such agreements on District farms are now in effect. In Georgia, for example, according to a study published in 1942 by the Georgia Experiment Station, only one in a hundred of the landlords who held written leases had made any provision in the lease to pay the tenant for unexhausted improvements. There is little information available on how a similar agreement in connection with farm woodlands might work in practice. Since about a third of the District's farm woodlands are on tenant-operated farms, however, there is

a grave need for serious study of this and other devices for promoting more profitable forestry on rented land.

Of the hindrances to the practice of farm forestry that result from prevailing laws or customs, taxation of forest land has probably been the one to receive the most widespread attention. As early as 1907 the Alabama legislature enacted a law providing for certain tax exemptions "in order to encourage the practice of forest culture." Louisiana and Mississippi also now have laws that include special provisions for the taxing of forest land.

The general property tax is mainly responsible for the special problem of forest taxation. Property taxes must be paid annually, whereas the returns from timber growing are often received only at intervals of several years. During the period required for timber values to materialize, the forest owner receives no annual income from his timber that can be used to pay taxes. Many states have experimented with various schemes of taxation designed to remove this handicap. Yield taxation in lieu of property taxation, deferment of property taxes, and separate taxation of the timber and the land are some of the more common expedients.

Tax changes have not generally been very effective in stimulating the practice of forestry. For the farmer, the tax problem is probably not the most important deterrent to the practice of forestry, because he must pay the taxes on his present woodland regardless of whether or not he attempts to grow periodic crops of forest products. The tax burden becomes important, however, when he is considering a new investment in timberland. Special treatment of forest lands for tax purposes, therefore, might encourage farmers to increase their woodlands by buying adjoining tracts that are not now in farms.

If farm woodlands could be, and were, made to return high yields on an annual basis, the general property tax would impose no greater burden on timber growing than it does on other land uses. Many of the other foregoing obstacles to timber growing would likewise disappear under a modern system of sustained-yield forestry. A change in farmers' attitudes so radical that trees would come to be regarded as a crop is, therefore, probably the most crucial step yet to be taken in achieving more profitable forestry.

### Summary

If each farmer who wanted to grow trees had to overcome all of the obstacles individually, the case would be hopeless indeed. For most farmers, however, forestry would be profitable if only a few of the present handicaps were overcome. Some of these, such as the slow rate of growth that is typical of some sites and the inferior quality of some new growth, are subject only to limited control, if any.

On the other hand, many of the obstacles to the development of forestry can be eliminated or at least greatly reduced by applying well-tested methods. Fire losses attributable to carelessness or malice require appropriate public action. Changes in the methods of taxing forest property are also a public responsibility. The research of private industry and public agencies in wood utilization and the educational activities of Federal and state governments are examples of collective effort to overcome the present handicaps to a development of farm forestry. Because many of these obstacles are amenable to control and because their removal would be beneficial to farm woodland owners, all programs moving to eliminate them merit the careful attention of everyone interested in the welfare of Sixth District agriculture.

BROWN R. RAWLINGS