FOR TOMORROW'S SAKE, PLANT TREES TODAY!

1

You can earn cash today and return profits in the future if you invest some time and care in the management of your small farm forest or woodlot.

Do you know what a forest really is?

The forest is a changing, living community, subject always to the forces of nature — to earth, air, sunshine and rain — and, within itself, to the action of plants and animals.

Animals and plants are interdependent; man is dependent upon both animals and plants; all are dependent upon soil.

When man ignorantly or carelessly destroys much of the plant cover, perils arise...often resulting in dust bowls, spreading deserts, ruined valleys, silted reservoirs, recurring water shortages, polluted rivers, and ravaging floods.

Remember, deserts in various parts of the world were once fertile places. Remember, the 1934 Dust Storm blew away enough topsoil to put a 7-inch layer on 1,800,000 farms of 160 acres each. Remember, whole areas of our country have declined.

Think about people forced to move on to other places or to remain and live in poverty and ignorance, ridden by disease.

Think about your farm. With the right to own goes the duty to conserve. Wise use is conservation. It is possible to rebuild soil and to replant forest land. You can help nature keep in balance.

Trees are extremely important in keeping nature's balance. They hold soil in place. Their roots conduct underground waters to stems and leaves and to ground-water storage levels. Their branches shelter birds that eat insects which might otherwise destroy farm crops. Their falling leaves form humus, enriching the soil. Leaves, covering the ground help prevent the rain from beating against the ground so hard that the soil is washed away. By retarding the raindrops, the leaves help water soak into the ground where it is needed. Standing trees help break the force of the wind and keep soil from blowing away.

Think about the trees on your farm. Small forest owners are profiting from well-managed forests and efficient sales methods. There never was a better time to make a small forest pay. Wood products bring good prices. Really good lumber from large, straight, clear logs will always command a market.

Congress has set aside money to help the States provide the owners of small forests with fire protection, insect and disease protection, seedlings for planting, and advice on forest management.

Use wisely and build UP!

Begin now, trees take time to grow.

Questions for Discussion

1. Are there any examples of "problem" land in our community or in the experience of any members of our group? Eroded areas? Gullied fields? Floods? Cut river banks? Dropping water tables? Pollution?

2. Where do trees fit in the balance of nature? Is it practical to help nature keep in balance by rebuilding soil and planting trees where they are best suited to grow? Can land management or mismanagement on one farm affect adjoining farms?

3. What kinds of woodlands exist on farms in our community? Is the timber in them growing, standing still, or losing ground? Why?

Reference Material
(For this and succeeding lessons)

You can probably obtain bulletins on tree planting and farm woodland management from your State Conservation Department, your county agent, and the nearest farm forester. In addition, the following may be obtained, free of charge, from the Forest Service, U. S. Department of Agriculture:

Managing the Family Forest, Farmers' Bulletin No. 2187
Wood, the Material of a Thousand Uses, K-27
The Well-Kept Farm Woods, a Teaching Outline, O-31
What We Get from Trees (Chart of Products), M-5293

To get these materials, write to the Forest Service at the regional office serving your State. These regional offices are listed below.

Region	States	Headquarters Address
1	Northern Idaho Montana	U.S. Forest Service Federal Building Missoula, Montana
2	Colorado Kansas Nebraska South Dakota Wyoming	U.S. Forest Service Federal Center, Building No. 85 Denver 25, Colorado
3	Arizona New Mexico	U.S. Forest Service 517 Gold Avenue, S. W. Albuquerque, New Mexico
4	Southern Idaho Nevada Utah	U.S. Forest Service Forest Service Building Ogden, Utah
5	California Hawaii	U.S. Forest Service 630 Sansome Street San Francisco 11, California
6	Oregon Washington	U.S. Forest Service 729 N. E. Oregon Street Portland 12, Oregon

Region	States	Headquarters Address
7	Connecticut Delaware Kentucky Maine Maryland Massachusetts New Hampshire New Jersey New York Pennsylvania Rhode Island Vermont Virginia West Virginia	U. S. Forest Service 6816 Market Street Upper Darby, Pennsylvania
8	Alabama Arkansas Florida Georgia Louisiana Mississippi North Carolina Oklahoma South Carolina Tennessee Texas	U. S. Forest Service 50 Seventh Street, N. E. Atlanta 23, Georgia
9	Illinois Indiana Iowa Michigan Minnesota Missouri North Dakota Ohio Wisconsin	U. S. Forest Service 710 N. Sixth Street Milwaukee 3, Wisconsin
10	Alaska	U.S. Forest Service Fifth Street Office Building Juneau, Alaska

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TREES CAN MAKE IDLE LANDS COME TO LIFE

On your own farm, and in your own neighborhood, a tree planting program is one of the most practical and profitable projects that you can undertake.

Trees add to farm income. The first person to benefit from a well managed farm forest is its owner. The timber it yields will help him and give work to many people. First of all it will put cash in the owner's pocket, or at least save him from having to buy posts and firewood. It will save his land from erosion and will conserve the water he uses. It will bring him profits from land which might otherwise be almost worthless.

Should you plant more tree crops on your farm? Trees of a useful variety, successfully started on the right land, are sure to return a profit to the owner. How much the profit will be depends mainly on the prices at harvest time and on how good the site is. The forest will yield posts, pulpwood, lumber and timbers. It will be a home for wildlife; it may serve as a windbreak; it will conserve moisture and prevent erosion; it will give the owner and his family recreation.

Trees help keep the soil from washing or blowing away. They protect the soil from excessive heat, light, and from drying winds. The foliage intercepts much of the force of wind-driven rain, preventing it from beating the protective litter and soil. Litter retards runoff and filters water into the soil without disturbing soil structure.

The roots of a tree hold the soil in place. Wherever trees grow, die, and decay they make the soil more porous and permeable. As their roots decay they leave deep channels through which water may percolate and air may move.

Trees hold water in the soil. Good forest soils which take water quickly will HOLD 50 percent or more of their total volume. This means that soil 8 feet deep may store about 4 feet of water.

When rains fall in the forest, some rain trickles down the stems and plant stalks. In a hard or prolonged rain, a considerable amount of water falls directly on the forest floor filtering into the topsoil and gradually filling its pores. Another part of the rain moves downward to become a part of the permanent water supply table that supplies

our springs and streams. After the rain stops, slow drainage through the soil continues until only as much water is left as can be held there against the pull of gravity. This percolated, or ground water, is the major source of many streams.

Trees build up soil fertility. Fertile soil contains millions of living organisms, plant and animal. It has pore space which contains water and air.

Each forest soil develops its porous and absorptive structure and its own balanced and active population of bacteria, molds, fungi, worms, insects and animals. Roots of the trees anchor the soil in place. The leaves help provide a protective cover of litter and added fertility, yearly.

Trees reduce farm heating costs. The value of windbreaks and shelterbelts on the farm have been shown by tests run in Nebraska and elsewhere, on identical houses. Where one house was protected from the winds and the other house left exposed to full sweep of the winds – while maintaining a constant house temperature of 70 degrees F. — the amount of fuel used was reduced by 22.9 percent in the sheltered house. A study of 508 farms in North Dakota showed that annual saving in fuel bills, where adequate windbreaks were planted was $15.85. The average of savings for houses protected on the north in South Dakota, Kansas and North Dakota was 20.2 percent. By sheltering three sides of a house it was found that fuel saving may run as high as 30 percent.

Trees reduce feed bills and increase calf crops. Dairymen, livestock feeders and breeders have positive ideas of how the protection afforded by windbreaks — the shorter and more blocky plantings around farmsteads — reduces their feed bill and increases their calf crops. Eighty-six livestock feeders in Nebraska and South Dakota placed this average annual saving at more than $800. Sixty-two livestock breeders report that their savings amount to more than $500 annually; 53 dairymen place their average savings at $600.

At the Montana Experiment Station at Havre, Montana, two herds of cattle were wintered on the same rations--one in the protection of trees and shrubs, the other in an open lot with some protection from a shed. The tree-protected animals each gained 34.9 more pounds (average) during a mild winter and lost 10.6 pounds less during a severe winter than the unprotected herd.

A windbreak on duty protects fruit gardens and fields at all seasons. Farm families depend upon gardens for much of their subsistence.

Most of them are aware of the influence of a windbreak in increasing the quality and quantity of vegetables and fruit from gardens and orchards. In the opinion of farmers interviewed the increase was $67.15 on 323 farms in Nebraska and $84.43 on 260 farms in South Dakota.

A profitable sale is the final step in good forest management. It decides whether the owner's investments in cash and labor have succeeded or failed. Selling, like other parts of forest management, requires thought, care and experience. Unless he has had such experience, when considering a sale the owner should ask his local forester about outlets and prices for forest products. Know how much timber you have for sale! Too many farmers sell their trees to the first buyer who offers them a lump sum for stumpage. It pays to market measured timber. For example, in Kentucky an owner was offered $7,000 for 310 trees picked by the buyer. After consulting a farm forester who helped him mark his trees for sale this owner received $12,600 for 190 trees.

POINTERS ON FIELD PLANTING

Landowners usually find it best to plant seedlings instead of growing directly from seed. Rodents, drought and birds are great enemies of direct seeding. Rodent-and-bird-repellent coatings for tree seeds are now available. Nevertheless, broadcasting seed, even on prepared soil, involves many uncertainties and requires close technical supervision.

When to plant seedlings--Plant when soil conditions are good after growth stops in the fall, and before it starts in the spring. If you are in a climate where the ground frost-heaves, be sure the frost is out of the ground.

Spacing the seedlings. The more shade a tree tolerates the closer it should be planted. Close spacing, by reducing the number and size of branches, increases the value of future sawlogs. Spacing is usually from 6 by 6 to 8 by 8 feet apart. Spruce, sugar maple and hickory grow well under shade. Red, loblolly and slash pines, cottonwood and black walnut do not.

Close spacing is best on unfavorable sites, or on sites which cannot be cultivated after planting. The extra trees offset deaths and protect the soil by shading it. Species that are branchy in open stands should be planted closer than those with straight, single stems.

Generally speaking, the aim should be to have about 700 trees growing per acre when the plantation has become well started. A spacing

of 5 by 5 feet takes 1,742 trees per acre; 6 by 6 feet, 1,210 trees; 6 by 8, 908 trees; 8 by 8, 680 trees per acre.

Mixtures. Planting two or more kinds of trees together is a little more troublesome than setting out pure stands, but sometimes has distinct advantages. If one kind is badly damaged by insects or disease, or turns out to be unsuited to the land, the other kind may still grow into a good timber crop. Species that are mixed must be trees that grow at the same rate, otherwise the rapid growers may overtop and kill out the others.

Buying the seedlings. When you have decided what species you will plant and how many seedlings you will need, you are ready to order seedlings. These may be obtained from privately or publicly operated nurseries. State nurseries sell seedlings at cost or less. County agents and local foresters usually have order blanks. Orders should be sent in 6 months in advance. Try to get seedlings raised from seed collected within 100 miles distance and 1000 feet of altitude of the proposed planting site.

Planting the Seedlings

When the seedlings arrive, the bundles should be loosened a little, moistened (but not washed) with water, and kept in a cool, shady, well-ventilated place. If the seedlings are to be kept more than 2 or 3 days before being planted, the bundles should be undone and the roots of the seedlings spread in a trench in the ground and immediately covered with moist soil or sand, firmly packed to remove all air spaces. The seedlings are dug up from the trench as needed.

Methods of planting seedlings. Ordinarily the ground of old fields, pastures, and cut-over areas does not need much preparation before planting. It is usually a good practice to make small scalps, 16 or 18 inches square, in heavy sod or dense weeds to remove competing plants while the small trees are getting started. Competing vegetation can also be removed — and more cheaply — by plowing furrows on the contour.

Planting can be done either in spring or fall except on heavy clay soils. On these, because of the danger of frost heaving, planting should be done only in the spring.

The planted tree should be set a little deeper than it was at the nursery. Its main roots should be nearly straight and should not be crowded,

doubled back, wound, or sharply bent. There must be no air pockets at the bottom of the hole. Moist soil should be firmed, but not packed too tightly about the roots, and the tree should be upright.

Hole planting works well on rough, rocky land and for trees with spreading root systems. Dig a hole deep enough to hold the tree roots. Leave one side vertical and place the seedling against it 1/4 to 1/2 inch deeper than it grew in the nursery. Pack some loose surface soil around the lower roots, then fill the hole level and press down the soil with your foot. Be sure that the hole is deep enough for the roots. A mattock, long-bladed grub hoe, shovel, or spade makes a good tool.

The slit method is faster than hole planting. It works best on smooth land with light to medium soils and with trees having one main root. A mattock or spade will serve, but the best tool is a grub hoe with an 8- or 10-inch blade at least as long as the roots of the trees being planted. A planting bar can be used where no scalping is needed, or where sod has been removed by plowing furrows, and is even faster.

In some States foresters have developed tree-planting machines. These help speed the job and save labor. They can be used, however, only in open areas and on stone-free ground. Consult your farm forester or county agent for information as to where such machines may be borrowed or rented.

Questions for Discussion

1. What are some "dollars and sense" reasons for planting trees?

2. What is the most important point to remember in selecting trees for planting? How can we decide what method of planting to use? Where can trees for planting be obtained? How much do they cost?

3. Are any farmers in this area handling their timber as a crop? How do they manage it? Where do they market it, or do they use it entirely on their own farms?

4. Is there any non-productive land on the farms in this community that might be planted to trees?

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