Does Money Grow on Trees? Using Silviculture to Improve Financial Results

BY KATHRYN OLSON

Timberland as an investment has gained popularity in recent years. TIMOs (Timberland Investment Management Organizations) and REITs (Real Estate Investment Trusts) now play a significant role in forestland management in the Pacific Northwest and throughout the nation. According to Hickman, "TIMOs buy, manage, and sell forestland and timber on behalf of various institutional investors—e.g., insurance companies, pension funds, endowments, and foundations…REITs are entities that buy, manage, and sell real estate or real estate related assets—e.g., mortgages—on behalf of various private investors."

Managing timberland as an investment calls for strategic silvicultural decisions. The silviculture practitioner should consider the "time value" of money to ensure that all investments exceed the landowner's return threshold while concurrently working to increase the overall asset value over time. The focus is on managing for predictable, continued value growth that can be documented and translated into favorable property appraisal results, ensuring sustainability and uniform cash-flow for the long-term.

There are numerous ways a good silviculture program can work to improve financial results. The examples provided herein are based on my experience working in northwest Oregon where I manage the silviculture program for GreenWood Resources on a portion of our Lewis and Clark Timberlands asset. One of many assets under management by GreenWood Resources, Lewis and Clark Timberlands consists of approximately 175,000 acres of coastal, mixed conifer forests. While our working forest is managed for multiple resources including clean water, wildlife habitat, and recreation, our primary objective is to provide stable financial returns to our investors.

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A clearcut harvest near Hamlet, Ore.

When viewing silviculture through the lens of return on investment, forest managers must evaluate whether a given silvicultural activity is financially justifiable. This narrows the spectrum of treatment options to those that yield positive net present values. That is, where the present value of the expected financial benefit from the treatment outweighs the present value of the costs. Standard discounting techniques can be used to calculate net present values and compare the opportunity costs of different treatment options.

While this all sounds straightforward enough, the economics of silviculture extend far beyond a simple desktop budgeting exercise. Risk and uncertainty are inherent when dealing with nature. One cannot expect long-term economic stability without also planning for ecological stability. Part of what attracts investors to the timber space is portfolio diversification and risk management. Timberland assets are generally considered low risk as most physical risks associated with timberland can be identified and managed. A good silviculture program plays a significant role in managing the physical risks (pests, disease, fire, animal damage, etc.) associated with a timberland asset.

Desirable economic outcomes can be achieved by employing silvicultural techniques that work to maximize tree growth and manage risk simply by augmenting natural biological processes. This might include strategically matching species and stock types to soil and site conditions; using stock types produced from improved seed; varying initial plantation spacing to maximize the use of available growing space; and undertaking vegetation management and precommercial and commercial thinning.

Evenaged silviculture is the primary system employed on many forests where the principal objective is to maximize return on investment. In even-aged silviculture, the life cycle or rotation of a stand of trees begins and ends with a clearcut harvest. Harvest timing is determined primarily by the financial maturity of the timber rather than biological maturity. Financial maturity occurs when the annual rate of increase in the monetary value of a given stand falls below what is consid-

ered an acceptable rate of return.

Site conditions resulting from a clearcut harvest leave many reforestation options available. Artificial regeneration via hand planting of seedlings is typically the most cost-efficient method. This method also ensures that the land goes back into production as quickly as possible, as opposed to relying on natural regeneration.

When it comes to reforestation, an important consideration is choosing the right seedlings for a given site. Species and stock types should match the soil and other site characteristics. This will serve to maximize tree growth and manage risk. One example from a coastal perspective could be employing a mix of conifer species in historically mixed stands. Maintaining this species richness at the forest or even the stand level at the time of planting can be of both economic and ecological value. In this case, a diversified forest manages risk much the same as a diversified investment portfolio. Forest health is maximized by maintaining biological diversity. This increases the ability of the system to withstand infestations of insects or disease that often target only a single species or narrow range of species.

At the stand level, individual species can be tailored to the most appropriate microsites. Examples include Sitka spruce near stream beds and wet areas, western redcedar on rocky outcrops, and western hemlock in areas comprised of a heavy duff layer. Furthermore, factors such as soil depth and level of exposure to coastal winds may lead one to choose containerized stock over bare-root stock for some sites. From an economic perspective, maintaining a mix of species allows the land manager the flexibility to capture different markets as they emerge over time.

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A planted western hemlock seedling in Clatsop County, Ore. In the background, note a mixed stand of western hemlock, Sitka spruce, Douglas-fir, and red alder.

The use of improved seed is another common practice managers use to maximize tree growth and produce favorable returns. Tree improvement is now an important aspect of many reforestation programs throughout the Pacific Northwest. Landowners and managers work cooperatively to produce seed from genetically superior trees in the controlled setting of a seed orchard. This collaborative effort drives down costs and ensures that the value (tree growth) gained from tree improvement far exceeds the cost of seed production. Producing seedlings from improved seed can substantially increase tree growth and has the potential to shorten rotation lengths, resulting in significant value gains.

Controlling competing vegetation can significantly impact tree growth, which again transfers to asset value growth. A good vegetation management program is often a key element to maintaining fluidity and stability for harvest planning and scheduling efforts. This is particularly true in states like Oregon where forest practices rules require that adjacent young stands be "greened-up," meaning a minimum of 200 trees per acre must reach four feet in height before harvesting can occur. Failure to meet this requirement could delay timber harvesting, complicating harvest planning and compromising financial returns.

When managing for return on investment, care should be taken to maximize the use of available growing space throughout the rotation. Initial plantation spacing and early- to mid-rotation density management treatments such as precommercial and commercial thinning can have considerable effects on tree growth and log quality. The specific focus is to achieve stocking targets that provide a balance of tree growing financials, log quality, management flexibility, forest health, and establishment cost. The greatest board foot volume of wood is produced in those stands that are just dense enough to fully utilize the available site resources without becoming overcrowded. For most conifer species, some level of inter-tree competition can stimulate height growth. However, too much competition will result in stand stagnation and subsequent volume losses. Desired spacing should be determined for each situation based on considerations such as site potential, growth habit(s) of the species, expected survival rates, product objectives, and plans for future silvicultural treatments.

These examples, however simple, serve to exemplify the fact that the seemingly small decisions we make early in the life of a stand can have a significant impact on value when it comes to fruition. They also demonstrate the notion that one cannot practice silviculture from an economic perspective without considering its fundamentally biological nature. Whatever the objective and however simple or intensive the management strategy, perhaps the single most important element of a good silviculture program is that it should preserve future options. ◆

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