

Management, Silviculture and Harvesting

Proper forest management helps ensure that whenever we influence the forest ecosystem, our actions are not detrimental to the forest's long-term health and environmental quality. Since forest ecosystems are dynamic, the best management strategies work with, rather than against, natural changes.

Silviculture involves tending forests and establishing new ones. It is the theory and practice of controlling species composition, growth and regeneration by following principles of ecology and economics to reach management objectives.

A variety of federal and state laws and regulations govern timber harvesting to:

- protect land and water
- protect highways and bridges
- protect workers and property owners
- protect wildlife and sites of historical and other significance.

All earth disturbance activities must comply with the Pennsylvania Clean Streams Law. Regardless of the size, these activities must have a plan to minimize erosion and prevent sediment pollution.

No single silvacultural or harvesting method is best for all woodlands or landowners.

Types of Harvesting/Management

Artificial regeneration

The process involves planting of seedlings or cuttings, and it is most commonly used to establish pines (softwoods). For Pennsylvania hardwoods, replanting usually is unnecessary as the preferred regeneration comes from naturally dispersed seeds, stumps or root sprouts. The naturally regenerated hardwood trees generally grow faster, are healthier and survive better than planted (artificially regenerated) hardwoods.

Intermediate cuttings

Intermediate cutting is done to enhance growing conditions, e.g., reduce pests, improve quality of trees or promote certain species. Harvest types include:

- Cleaning or weeding to favor a species during the sapling stage
- Thinning to increase growing space and sunlight, to reduce competition and to produce an immediate financial return
- Improvement cutting to remove undesirable, e.g., crooked or diseased, trees
- Regeneration or harvest cutting, which produces a clearing where new trees can regenerate. The site needs seeds, seedlings and/or sprouts and prevention against deer over-browsing for successful regeneration.

-over-

Management, Silviculture and Harvesting (continued)

Even-aged management

A stand is even-aged when all of the trees are approximately the same age, generally because of their simultaneous regeneration. This is the case in most Pennsylvania forests. Even-aged management may include these harvest types:

- Regeneration or clear-cut: harvesting most or all of the trees in a specific area to create openings in the forest canopy. This method works best to promote the regeneration of species that require abundant sunlight. Different techniques may be used to adjust harvested areas to more aesthetically blend with the landscape.
- Seed-tree: a form of clear-cut which leaves some mature, seed-producing trees on each stand
- Shelterwood: two or three partial cuttings at five- or 10 -year intervals, with the early cut perhaps involving 60% of the trees to allow sun to reach the forest floor. Trees left to shelter saplings are cut later. This system is often used to favor shade-tolerant species.

Uneven-aged management

This process involves frequent selective harvesting to maintain a mix of tree sizes, ages and classes. It may approximate natural tree loss during the progression of the forest, which over time shifts species toward shade tolerant varieties. In this type of management, regeneration is slower and can be affected by deer browsing.

- Selection involves simultaneous regeneration and intermediate cuts in a complicated system so that the total volume removed does not exceed the growth, usually during five- to 10-year cycles. This involves single-tree or group selection and may have clear cuts of up to an acre.

Non-silviculture harvests

These activities may generate a high initial financial return on a harvest, but also may negatively affect the future value and quality of the stand:

- High-grading: selectively removing the largest and most valuable trees, generally diminishing species diversity and leaving smaller or less-valuable trees behind
- Diameter limit cutting: a form of high-grading which harvests trees above a certain size, e.g. 12-14 inch dbh
- Selective cutting: taking the fastest growth, largest trees and leaving large, lower quality trees

Best Management Practices, Landowner Assistance

Best management practices, or BMPs, for silvicultural practices are voluntary guidelines for forest management that can be used by landowners and by loggers, foresters and other natural resource professionals to practice sustainable forestry. In Pennsylvania, BMPs have been established by a broad-based task force under the auspices of the Forest Issues Working Group and compiled by Penn State University's School of Forest Resources.

BMPs include guidelines for several types of activities, including:

- ✓ Planning
- ✓ Harvesting operations
- ✓ Forest values

Many BMPs focus on the interaction of forestry and water quality. They include specific guidelines on working in forested wetlands and preventing erosion and sedimentation.

The practice of sustainable forestry means meeting the needs of the present without compromising the ability of future generations to meet their own needs.

How and when timber is harvested plays a major role in determining the character of the forest of the future – its sustainability. Several programs exist to help forestland owners learn more about harvesting.

Landowner programs include:

- ⇒ The federal Forest Stewardship program is administered in Pennsylvania by the Department of Conservation & Natural Resources (DCNR) Bureau of Forestry to educate and encourage landowners to develop a comprehensive, long-term forest management plan for their land. To participate in Forest Stewardship, the landowner must hold at least five acres, agree to work with a resource manager, and develop a written plan for 10-year implementation. The Stewardship Incentive Program provides cost-sharing program assistance.
- ⇒ The Sustainable Forestry Initiativesm (SFIsm) is an industry-led, comprehensive program of principles, guidelines and performance measures that integrate the perpetual growth and harvesting of trees with the protection of wildlife, plants, soil, air and water quality. The voluntary program features landowner outreach and education, promotion of landowner stewardship, logger training and promotion of BMPs.
- ⇒ The American Tree Farm System was established in 1941 to encourage private owners to manage wood lots. The program has a 10-acre minimum for participation.
- ⇒ The PA Forestry Association, the oldest state forestry organization in the nation, holds meetings, tours and seminars, and it administers the Tree Farm Program in Pennsylvania.
- ⇒ The PA Urban and Community Forestry Program offers community assistance.
- ⇒ Environmental certification programs (“green certification”) offer independent auditing to determine conformance with a comprehensive set of criteria that may include environmental, economic, public health and social criteria.