

Researcher Finds Lime, Fertilizer Can Improve Forest Regeneration

UNIVERSITY PARK, Pa. — Applying lime and fertilizer to areas where timber was harvested can dramatically improve the regeneration of trees, according to a researcher in Penn State's College of Agricultural Sciences, who just completed a three-year study of new forest growth in Somerset County.

In a paper published March 5 in the journal *Forest Ecology and Management*, Bill Sharpe, a professor of forest hydrology who has chronicled the effects of acid rain in Pennsylvania for more than two decades, maintains that soils in many places have become too acidic to support adequate new growth of some economically important species.

"The addition of lime and fertilizer in combination with herbicide appeared to significantly improve growing conditions and resulted in taller and more diverse regeneration," he says.

The study was conducted in cooperation with the Pennsylvania Department of Conservation and Natural Resources' Bureau of Forestry. But in a finding sure to prove an eye-opener for that

agency, Sharpe's research indicated that an herbicide commonly sprayed in the state to kill hay-scented ferns to promote tree growth actually made soils more acidic and elevated levels of aluminum, which is toxic to trees and other plants.

"Use of the herbicide may actually be making things worse," says Sharpe, who teamed with former graduate student Angela Schreffler on the study. "Chemical measurements of soil water revealed that the standard practice of herbicide application alone actually made soil water more acidic and increased aluminum concentrations."

The research was done on three sites where timber was removed in a "shelterwood cut," which Sharpe describes as "standard Bureau of Forestry practice, leaving quite a few trees behind to provide seeds for regeneration."

The land then was fenced to keep deer out, and each site was divided into several research plots. Some plots received lime and fertilizer only, others received herbicide only, and others got lime, fertilizer and herbicide. Control plots were established

where no materials were applied.

"Study data revealed that the benefits of liming were reduced by the relatively large amounts of sulfur deposited in forest soils as a result of many decades of acid rain," says Sharpe.

"When herbicides were combined with lime and fertilizer treatments, woody seedling numbers, diversity and height growth improved significantly. Results were not as good for limed plots without herbicide treatment due to competition for growing space. But where ferns were damaged and partially eliminated by logging equipment, woody seedling growth was very good."

An increase of red maple trees in Pennsylvania forests has been noted in the last decade, occurring at the same time that northern red oaks have been decreasing in prominence, a trend that concerns many foresters.

Sharpe believes his research has shown one reason why. "The red maple is a more acid-tolerant species," he says. "Residual red maple tended to grow better on the more acidic herbicide-only plots. In fact, it could be argued that the standard red oak shelterwood cut with herbicide treatment favored red maple growth."

Pennsylvania is downwind from the greatest industrial complex in the world — the Ohio Valley — and the state's forest soils have been polluted by acid precipitation originating from there for many decades. The acid comes primarily from sulfur dioxide in the emissions from coal-fired power plants in Ohio, Indiana, Illinois, West Virginia, and western Pennsylvania.

"Pennsylvania long has been the victim of the most acidic precipitation in North America," Sharpe says. "Acid deposition increases soil water aluminum,

which is toxic to plants and also lowers the availability of calcium and magnesium, which are essential elements for plant growth. We have a forest regeneration problem and a forest health problem in Pennsylvania.

"Our research group has been studying the relationships between these problems and acid deposition for the past dozen or so years.

If you argue that the problem is poor growth due to acid rain-caused soil acidity and loss of calcium and magnesium, putting these nutrients back into the soil should fix the problem and indicate that your argument is correct. In this case, it appeared as though soil acidity was indeed a large part of the problem.

"The good news is that this study showed that with appropriate use of herbicide, lime and fertilizer, forests can regenerate very nicely in as little as two or three growing seasons."

Woods Introduces New Rotary Cutter For Sub-Compact Tractors

OREGON, Ill. — Woods Equipment Company has introduced the RCC42 single spindle rotary cutter, the newest addition to Woods' Estate Series, landscape attachments for tractors up to 25 horsepower.

The RCC42 mows weeds and light brush up to 1-inch in diameter in pastures, trails, and gardens. Deep, sturdy side frames and a smooth, sloped deck that sheds water and debris are just two of the quality features that ensure years of worry-free performance.

Woods' Estate Series features

four compact yet powerful attachments for smaller tractors up to 25 engine horsepower, with category 1 or 0 three-point hitches. The 60-inch rear grading blade, 60-inch landscape rake, 48-inch box scraper, and new 42-inch rotary cutter are ideal for general maintenance around the yard, garden, and pasture.

All products in the Estate Series carry Woods' reputation for safety, performance, and durability, and are tested in rigorous real-life conditions and in compliance with recommended industry safety standards.

Forklifts, Inc. Purchases Ransome Lift

HARRISBURG (Dauphin Co.) — Forklifts, Inc., with full-service operations in Williamsport and Lancaster, has purchased the assets of Ransome Lift, Bristol.

As a result, all manufacturers represented by Ransome Lift have amended their dealer agreements and have authorized Forklifts, Inc. to sell, service, and support their products with genuine factory parts, trained technicians, and rental services.

This includes Linde, Cat, along with Lull brand of reach

trucks and Eagle Pitcher lift trucks.

In addition, Forklifts, Inc. has retained all of the critical technicians, parts, rental sales and service personnel that operated out of the Ransome Lift — Lemoyne, Bristol, Allentown, and West Chester locations.

The 180 employees of Forklifts, Inc. have combined with the 90 employees of Ransome Lift to create one of the most dominant material handling dealers in the region.

Worksaver's New Tree Clipper Simplifies Trimming, Cutting

LITCHFIELD, Ill. — The new Tree Clipper from Worksaver, Inc. solves the problem of trimming and cutting hard to reach tree branches or unwanted trees. It also eliminates the need to trim limbs with a chainsaw from a loader bucket or ladder. The Tree Clipper can be mounted to either side of the main frame and provides excellent visibility.

Designed for use with a tractor loader or a skid steer loader, the Tree Clipper features rugged welded steel frame construction while the cutting blades are built

from T-1 steel. The cutting head rotates 113 degrees. The head rotator cylinder is 3" x 10" and the cutting head cylinder is 5" x 8".

The Tree Clipper is available in two models, the Model TC8-FL and TC8-SS. The Model TC8-FL is designed for use with a tractor loader and includes standard pin-type brackets. Optional quick attach brackets are available.

The TC8-FL requires a minimum of 45 PTO HP. The TC8-SS Tree Cutter is designed for skid steer loaders that use the "universal" attachment system.

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