Stumpage prices in many areas of the southern United States have recently been at record highs and show substantial real-price increases over the past decade. Conversely, logging rates in the South continue to show real-price decreases over the same time period due to increased production levels and an oversupply of logging contractors. Logging today may in fact be more difficult than in previous years due to a variety of factors ranging from government regulations to concerns about public image.

In spite of these pressures, American loggers continue to perform with some of the highest standards in the world. Helping them do this are advances in equipment and methods that have been adopted over the past 20 years or so. Many of these practices and technologies have become commonplace during the last decade.

**Methods and Strategies**

Before the 1970s, mills maintained substantial raw material inventories because harvesting systems were not reliable producers during all seasons or in wet weather. With improved harvesting systems that could operate year-round, mill inventory levels began to decline. As product types shifted from shortwood to tree-lengths, delivery shifted from rail to truck. Rail shipment shifted from roundwood to chips with the expansion of chipping headrig lumber mills and introduction of chip mills instead of pulpwood yards.

Tree-length logging required much more capital investment by logging contractors and thus provided the incentive to attempt to log every day to make the investment pay off. The higher production levels helped keep logging costs and mill inventories low, which the mills favored. But the production pressure created an incentive to log on marginal working days, increasing site damage and perhaps creating some of the industry’s public relations problems.

**Equipment and Technology**

Equipment continues to become faster, safer, more productive, and more standardized. One example is felling machines.

Most drive-to-tree feller-bunchers today use hydrostatic transmissions and are capable of operating any one of a dozen felling attachments. Three-wheeled, drive-to-tree feller-bunchers have carved a sizeable niche in the market. They are commonly used with sawhead attachments in thinning applications or in mixed-size natural stands. Their two independent, hydrostatic front-wheel drives make them highly maneuverable, which is a plus in partial cuts. Tracked (swing-to-tree) feller-bunchers, on the other hand, are commonly used to deal with sensitive sites such as slopes or wet areas.

Sawheads have become more widely used in many types of forest stands. They were initially adopted to minimize damage to felled timber (that was often caused by shears), but their productivity is a major selling point today.

Chainsaw felling is also still used, but it occupies a smaller and more specialized niche. Today’s chainsaws are lighter, faster, more powerful, and more fuel efficient.

Skidders are now the most standard logging machine in North America, and most sport grapples that are more productive when used with the mechanical feller-bunchers commonplace today. Operator cabs are starting to offer state-of-the-art ergonomics, and most models come with standard tires that would have been considered very wide just a few years ago. This minimizes site damage and improves machine performance.

Deliming has become mechanized more slowly than felling, but it is clearly following the same path. Chainsaw deliming is now often limited to operations producing hardwood or to simply cleaning up after gate deliming. Deliming gates have been used for years with grapple skidders, but today a wide range of mechanical deliming equipment can be found. Pull-through delimiters attached to hydraulic loaders are commonplace. These attachments rely on the loader to pull trees through a set of deliming knives operated from the loader cab. Stroke delimiters, once only found in Canada or the western United States, are selling well in the South. These attachments, which are mounted on tracked carriers, hold the tree while deliming knives mounted on a boom delimb the tree. Mechanized deliming improves the quality of logs delivered to market and reduces the use of manual chainsaws.

Alternatives to today’s highly mechanized tree-length operations are also finding greater acceptance. In-woods chipping operations using chain-flail debarkers to produce clean...
BEFORE YOU BUY

Critical Questions to Ask

- Has the machine operated successfully in your area?
- What range of tree species and sizes can it handle?
- Will it reduce environmental damage or improve the aesthetics of the operation?
- Is it more productive or cheaper to operate than your current method?
- What type of operator skills are needed?
- Is it safer than what you use now?
- Where will you obtain parts and service?
- Does it make your system more flexible or more specialized?
- Will it increase your weekly break-even production level?

Chips are a small but rapidly expanding method. Trees are pulled through a debarker, where chains attached to a spinning shaft flail bark from the stem before entering the chipper. These operations handle small trees from first thinnings very effectively and produce high-quality chips. Bark and other low-value residue is often left on the site, reducing the cost to transport the remaining, higher value chips.

Another system under careful evaluation by many loggers is cut-to-length. These systems typically use a harvester to fell trees and process them into precision-cut logs at the stump. Harvesters are machines that both fell and process (harvest) a tree, with a harvester head mounted on the end of a boom. Processing near the stump leaves limbs and tops positioned for nutrient cycling and provides a buffer between the soil and equipment, minimizing ground effects. Forwarders then carry logs out of the forest, instead of dragging them as skidders do.

By merchandising trees on the site, products are sent directly to end users, reducing overall transportation costs. Computers then assist merchandising decisions and collect inventory information. Most cut-to-length operations use only two people and two machines in the field. This smaller, lower production combination can be used on all sizes of tracts and is not as hindered by frequent moves due to wet weather.

Trucking remains the most expensive activity of the logging business. It is highly regulated by both federal and state governments. But even here, cost savings have been realized by using lighter trucks and specially designed trailers to maximize payloads. A variety of on-board scales are now available to help loggers ensure that each truck is fully loaded. And many loggers are running their trucks on extended shifts to further reduce costs per unit delivered.

Most industrial forest operations are now focused on tree growth and stumpage costs for a number of reasons. It is important, however, to keep in mind that logging and transportation often represent the largest component of delivered wood cost. Not only is harvesting one of our highest cost factors, it is vulnerable to public pressures. The United States' continued success in the wood products market depends on further controlling costs and shifting to methods that enjoy greater public acceptance.

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