Costs of Lumber Production

production costs in California have become vital factor in determining nation-wide use of lumber and its price level

Henry J. Vaux

One fourth of all lumber produced in the United States is cut within 300 miles of Redding—making California a far more vital factor in the nation's lumber supply than it has ever been.

At the same time, markets have been an increasing cause for concern to the lumber industry. For half a century the general trend of per capita lumber consumption in the United States has been downward. The lumber industry has attacked this problem of dwindling markets; research is directed at product development; trade promotion is more extensive; but improved products and better promotion will not solve one fundamental source of market weakness—the rapid rise of costs.

Costs of logging and of lumber manufacture have risen sharply in recent years and were the most important of the several reasons for lumber's loss of markets.

Costs and Markets

A study of America's demand for wood made by other research workers and completed last year shows that whether the market expands or contracts will largely depend on the cost of producing sawlogs.

Between 1929 and 1952, the total volume of all goods and services produced annually in the United States almost exactly doubled—but national lumber consumption increased a mere 13%. Lumber consumption failed to expand in step with the rest of the economy because average lumber prices were rising more than fourfold.

Lumber consumption in the United States is expected by some analysts to expand during the next 20 years to about 8% above the 1953 level, or to almost 45 billion board feet per year.

This estimated 8% rise in consumption is based on the expectation that real prices of lumber will rise 80% above 1953 levels as a result of further increases in costs of production. If costs can be checked, the market potential is available to permit expansion considerably beyond the 45 billion foot level, but there is no guarantee that costs can he kept within the limits of even the estimated 80% rise.

Cost reduction is a vital part of the problem of current profit and of maintaining the entire competitive position of the American lumber industry. If the industry is to avoid losing additional markets to competing materials it must find ways to market more lumber without increasing prices.

Despite the recent rise of lumber prices, the California region was the only part of the country able to increase its lumber output significantly in the years since 1929. Production in the southern states is actually down 20% over that period. In Washington and northern Oregon, it is down 35%. The only reason that the industry as a whole has been able to maintain a cut close to 1929 levels is that southern Oregon and California have made good the deficit in the older producing areas.

In 1954, California and the six southwestern counties in Oregon produced over nine billion board feet of lumber per year. Twenty-five years earlier—in 1927–29—they were producing an average of 2.9 billion per year. Over the same 25-year period, production in all the rest of the United States declined by 6.5 billion board feet.

Therefore, what it costs California to put its lumber on the market is a vital factor in determining nation-wide lumber price levels. The experience since 1940 shows that the industry's ability to hold the lumber price line by maintaining existing levels of supply depends largely on what southern Oregon and California can produce.

Cost Trends

The rising curve of all lumber production costs began in 1940 after 20 years of maintaining a fairly constant level through a fluctuation of booms and depressions. That level may be represented by 1935 average costs in the California Pine Region of about $20 per M—thousand board feet—for all costs required to place lumber in the cars, exclusive of stumpage. From 1940 on, costs rose steeply at a rate of about $3.50 per M per year until, in 1954, conversion costs were 3⅓ times as high as they were in 1935.

This increase in costs has been over and above that due to rising stumpage values. During the past twenty years, the average price paid for ponderosa pine stumpage sold from national forests in California increased about $25 per M. During the same period, logging and milling costs rose on the average almost $45 per M. Even in the extreme case of mills operating solely on recently purchased stumpage, logging and milling costs have been the principal contributors to rising costs.

More detailed analysis of conversion costs in the California Pine Region emphasizes the important role of logging and transportation as strategic items. For a representative mill, cutting partly on owned timber and partly on current stumpage purchases, costs are distrib-

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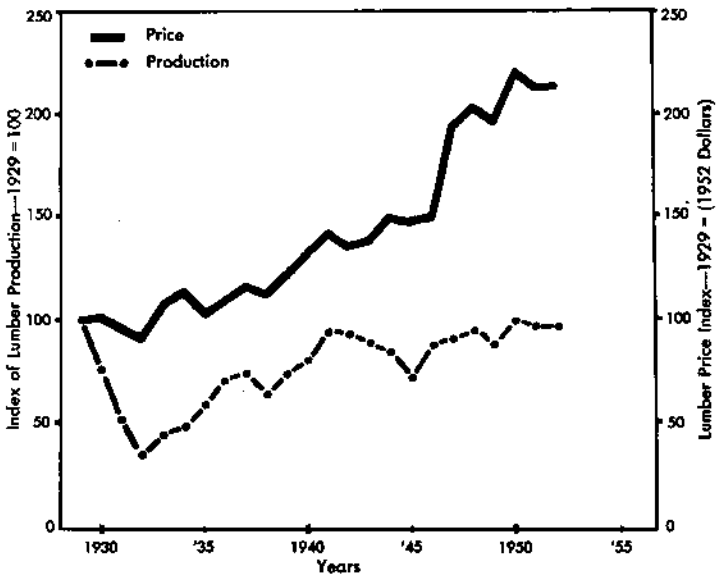
Indexes of U. S. lumber production and lumber prices, 1929–1952.



LUMBER

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uted among the several stages of manufacture about as follows:

Item	%
Stumpage	16
Logging	20
Log transport	15
Sawmill	10
Yard and kiln	10
Planing and shipping	12
Selling	1
Overhead	12

Logging and log transportation thus account for more than a third of the total cost of putting lumber in the cars.

The cost history of a representative pine operation—over the past 20 years—shows real cost increases by departments to be:

Item	% Increase
Mill overhead	22
Planing, shipping, and selling costs	24
Sawing, yard, and drying costs	59
Log transportation	62
Logging cost	81

In the face of these figures it seems apparent that loggers have the biggest opportunities to reduce costs of any group in the lumber industry.

Logging and log transport costs in the California Pine Region have increased about $18.50 per M—from about $6.50 per M to around $25 per M—in 20 years. Of this increase, about $8.30 has resulted from general decline in the purchasing power of the dollar. Although this inflationary factor is the most important single cause of cost increases, it actually accounts for less than half of the rise in logging costs. Another $10.20 per M has been added to costs for reasons other than inflation.

One of these reasons is increased hourly earnings of woods labor. Average hourly earnings have risen about 3⅓ times in actual dollars during the last twenty years—somewhat less than the percentage increase in logging costs. After allowing for changes in the value of the dollar, of the total $10.20 increase in real logging and transport costs about $3.60 is attributable to increased hourly earnings. In terms of real economic cost, about 35% of the cost increase has been due to higher real wage rates.

In most industries, the impact of increasing wage rates has been offset in large measure by increases in over-all production from material, men, and machines. For example, between 1939 and 1950, over-all productivity of operations went up 10% in the paper and pulp industry, 24% in the clay construction products industry, and 17% in the mining industry, all of which are concerned with products competitive in some degree with lumber. In contrast to this general pattern of expanding productivity in the use of material, machines, and men, the hourly product in logging in the California pine region appears to have declined. For a representative group of operations, hourly product is apparently down about 20% in 20 years. This is equivalent to $5.10 per M, or half of the noninflationary increase in cost.

The decline in productivity reflects the decreasing size of timber and density of stand, more difficult logging terrain, and longer hauls. In part, these reductions were offset by better equipment. Other factors, such as changing productivities of workers and equipment and how well management recognized and dealt with the problem of efficiency in the woods, affected the end result. To reverse the productivity trend is therefore not a simple job or one the industry can expect to accomplish overnight, but productivity increase seems to be the one way which the industry has for minimizing the squeeze between costs and prices.

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BRUSH

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The kind of spray used made little difference.

3. Seedlings were more susceptible to sprays in the spring when the soil was moist than later in summer. Also, sprays were more effective on northerly exposures than on southerly ones, and more effective in sparse stands of grass where the soil moisture remained high than in dense stands where it was depleted.

4. Species were susceptible to sprays in the following descending order: yerba santa, chamise, manzanita, wavyleaf ceanothus, wedgeleaf ceanothus.

5. Although some very high kills of brush seedlings were obtained when hormone sprays were properly applied, some seedlings remained in every case. Also, when current seedlings were treated, new seedlings appeared the second year, thus tending to mask the effect of the sprays.

Results of the tests indicate that when sprays are used, the best kills can be obtained when applied to current year seedlings in the early spring after germination is complete and at the approximate rate of four pounds of acid per acre.

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RANGE

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developed that year. Beetle numbers in 1953 had declined temporarily from the 1950–51 high.

This area had a few spots infested with Medusa-head, an undesirable range grass. One line transect went through such a spot so that a progressive study could be made. In 1948 only a trace was recorded, but the next year this weedy grass made up 16% of the annual grasses. By 1953, this had increased to 24%.

The perennial grass found most frequently in plots was California oatgrass—probably the best native forage grass available for this section of the state—which had managed to withstand the Klamath weed competition. When the weed was controlled, oatgrass had an excellent opportunity to spread.

Purple stipa was the second most frequent perennial grass, followed in order by squirreltail and blue wild-rye.

At the second location, the study pastures are at an elevation of 2,000′ on a 5% slope to the north, and drain into Laribee Creek, a tributary of the Eel River. Past grazing use has principally been in spring and summer, tending to give a slightly better perennial grass stand initially than in the other study area.

These pastures were approximately 10 miles from an initial beetle-release area. The first indication of beetle feeding was in 1950. Since many colonies had been distributed by ranchers on various sections of the range, it is quite possible that the beetles may have come from areas other than the initial release point. Observations during 1953 were not possible.

Klamath weed made up 70% of the vegetation in the pre-beetle observation. This dropped to 15% the year after beetles were first observed. The annual grass and forb population was about equal the first year of observation. After Klamath weed was greatly reduced by beetle feeding, the anual grasses occupied a greater part of the vacated area.

Medusa-head did not appear in the count area until the 1950 readings, and then only in one line transect. On this line, it made up 60% of the annual grass cover, or 20% of the total forage cover. During 1951, the annual grass cover increased, but at this time the weedy grasses made up only 30% of the annual grass cover and only 20% of the total forage cover.

California oatgrass was the most abundant perennial both before and after Klamath weed control. After weed control, some Hall's bentgrass and blue

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