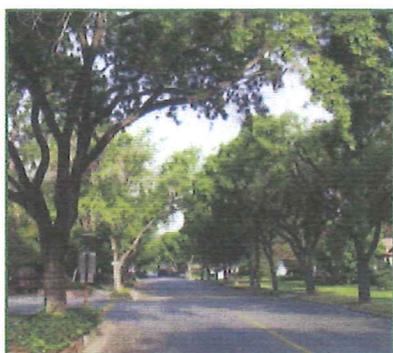


THE RESEARCH QUESTION:

Is there an inexpensive way to slow the rate of deterioration of streets and extend the time between treatments? We thought there was, so we asked the question: Is the condition of pavement on tree-shaded streets better than on unshaded streets – all other things being equal? And...the answer is YES.

During our research in Modesto, CA, we found that an unshaded street segment required 6 slurry seals over 30 years, while an identical one planted with small-crowning trees required 5 slurry seals, and one with large-crowning trees required only 2.5 slurry seals. We also found that the shade from the large-crowning trees was projected to save \$0.66/ft² over the 30-year period compared to the unshaded street.



The benefits of shade from large-stature trees compared to small-stature trees illustrate the value of investing in large-stature trees.



As pavement conditions deteriorate, maintenance and repair costs become increasingly more time intensive and costly.



More shade means more time between repaving. 20% shade on a street improves pavement condition by 11%, which is a 60% savings for resurfacing over 30 years.

SHADED ASPHALT IS CHEAPER ON THE BUDGET

Assuming slurry seal applications cost \$0.19/ft², and this price remains fixed over a 30-year period, each application will cost \$829 per street segment. A typical segment was 125 ft. by 35 ft. We found that the cost of maintaining the unshaded street segment over 30 years was \$4,971, while the cost of maintaining the pavement on the street segment with small-stature trees was \$4,142, and on the street segment with large-stature trees was only \$2,071. Thus, shade on the street segment with large-stature trees will reduce costs for repaving by \$2,900 (58%) over the 30-year period compared to the unshaded street. Shade from the small-stature trees is projected to save only \$829 (17%).

Road engineers have long recognized the economic importance of maintaining optimum levels of pavement condition. For example, in Modesto the average lifespan of a shaded residential street is 40 years. Pavements that are well maintained last longer and ultimately require less maintenance. In addition, as pavement conditions deteriorate, maintenance and repair costs become increasingly more expensive.

It was evident from our results in Modesto that greater tree shade was associated with better pavement condition. **Shady streets are happier streets.**

SCENARIO	SLURRY SEALS	TOTAL COST (\$)	SAVINGS (\$)
Unshaded	6	4,971	
Small trees	5	4,142	829
Large trees	2.5	2,071	2,900

Table 1: Savings per unit pavement surface for shaded vs. unshaded street segments over 30 years (area = 4,375 ft²).