

GROWTH RETARDANT FOR REDUCED MOWING

DESCRIPTION OF THE PROBLEM:

There are approximately 100,000 acres of roadsides that the State of Indiana maintains through mowing. In the 1996 fiscal year, \$8.1 million was spent in state forces (76%) and contracted forces to perform this maintenance. Reduction in the number for mowing cycles would significantly reduce this cost.

A research study, started in 1983 and completed in 1987, was conducted to determine if certain chemical combinations could be sprayed to help control the growth of roadside vegetation. These growth retardants, sprayed on the roadside vegetation, have two effects; (1) to slow the growth of the vegetation and (2) to eliminate certain type of vegetation. By slowing the growth of the vegetation, the time needed between mowing cycles increases, and the effort required to mow decreases resulting in savings of mowing operations and equipment maintenance costs. By eliminating certain types of vegetation including brush, the time between mowing cycles again increases, but more importantly, the need to hand remove brush decreases and reduces the visual impact of certain unwanted highly visible vegetation.

This study is important for both safety and fiscal reasons. The safety issues are the maintenance of visibility along the roadsides and the use of the proper chemicals. Visibility is important because drivers need to visibility. Because the state of Indiana is heavily agricultural, it was important that the chemicals used would not have an effect on the adjacent farmland. The chemicals used are selective to the unwanted vegetation; they have been shown to have little effect on farmland. With proper application, there should be no effect on untargeted vegetation. The fiscal issue is the cost savings from reduced mowing cycles with an additional spray cycle that is competitive with a mow cycle.

RESEARCH FINDINGS AND IMPLEMENTATION:

Through a study of many chemical combinations, the optimal combinations were found to retard vegetation growth. This includes vegetation that was, in the past, difficult to control. The optimal conditions were defined by searching for good control through the most cost effective combinations. Through five years of field testing, the best retardant was found. This was a mix of Embar, Telar, surfactants, and 2,4-D herbicide, for application at the beginning of the mowing season. For use with narrow roadsides, an additional combination was produced and applied at a cost that is about 20% less than a single mowing cycle. It was also found that the retardants need be applied every other year accompanied by a single annual mowing cycle to clean up the roadsides.

In 1969, the state mowing contract included five full width mowings. By 1985 this number dropped to 3 cycles with the use of previous retardants and increasing fuel and other costs. In 1985, there was semi-statewide testing of the new combinations. Currently, the state uses 3 mowing cycles per year; 1 wide fence to fence cycle and 2 narrow cycles, but with limited retardant use only in the Crawfordsville and Seymour Districts.

BENEFITS: In 1985, INDOT reported a savings of \$1.239 million from the use of growth retardants.

COST OF RESEARCH: \$394,425

ESTIMATED ECONOMIC VALUE OVER 20 YEARS AT A 5% DISCOUNT RATE.

Mowing Scheme	Annual Mowing	Annual Spray	Annual cost	Discounted Cost (20year)
3 Cycle Mowing (1 Full plus 2 Partial)	\$6,521, 200		\$6,521,200	\$81,515,000
1 Cycle Mowing and ½ Cycle Spray	\$3,260,600	\$1,184,750	\$4,445,350	\$55,566,875
		Savings	\$2,075,850	\$25,948,125

