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Raymond O. Miller
Manager

Michigan State University
6005 J. Road
Escanaba, MI 49829

906/785-1575
FAX 906/786-9370
email UPTIC@PILOT.MSU.EDU

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RESEARCH NOTE

Weed control effects spruce survival under drought conditions

By: Raymond O. Miller
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ABSTRACT

A new plantation of spruce transplants was established in Escanaba, MI in the spring of 1988. That year brought a severe drought to the area. The inadvertent lack of weed control in one row of this plantation resulted in much lower survival (24%) than in adjacent rows which did receive weed control (98%).

INTRODUCTION

A plantation of 1-2 spruce transplants was established in the spring of 1988 at the Upper Peninsula Tree Improvement Center¹ by MICHCOTIP². Blue spruce (*Picea pungens*), white spruce (*P. glauca*), and their hybrid (*P. glauca* x *P. pungens*) also known as the Spartan SpruceTM were included in the planting. Glyphosate was sprayed in 4' wide strips at a rate of 3 lbs. active ingredient per acre 1 day prior to planting, and simazine was applied to the same strips at a rate of 3 lbs. active ingredient per acre 1 day after planting. The area between the sprayed strips was mowed several times through the growing season to control weed growth. Weed control remained excellent through the growing season.

Rainfall during the 1988 growing season was exceptionally low, which created problems throughout the agricultural and forestry communities. Only 3.6" of rain fell in Escanaba during May, June, and July. The drought broke many records. The spruce plantation, mentioned above, was irrigated twice during this time. Approximately 2 gallons of water were applied with hoses to each seedling on each occasion. Despite the fact that the drought was severe and the newly planted seedlings had large tops (averaging 12") but small root systems, they survived the ordeal well.

Two errors were made during the application of herbicides to this plantation in the spring of 1988: First, one of the rows in the plantation was missed when glyphosate was sprayed prior to planting. Second, another row, that received glyphosate, was missed when simazine was oversprayed after planting. Although this was not detected at the time of application, it became readily apparent during the growing season by observing the weed growth. This paper is written to summarize observations which were made of the trees in these and adjacent rows at the end of the 1988 growing season.

OBSERVATIONS

Surviving trees in five rows (one with no glyphosate, one with no simazine, and three "controls") of the spruce plantation were counted in the fall of 1988. These rows were 632' long and originally contained 79 seedlings each.

Weed control was excellent throughout the growing season in the control rows. The row which had not received simazine showed signs of weed regrowth by mid-growing season. The row which had received no glyphosate had vigorous sod cover throughout the growing season.

¹ The Upper Peninsula Tree Improvement Center is located at 6005 J Road Escanaba, MI. It is operated by Michigan State University's Department of Forestry and Agriculture Experiment Station.

² The Michigan Cooperative Tree Improvement Program conducts forest genetics and cultural research as part of Michigan State University's Department of Forestry.

