**EARLY STAND DEVELOPMENT IN A RED OAK-PAPER BIRCH STAND REGENERATED THROUGH THE SHELTERWOOD SYSTEM IN NORTHERN WISCONSIN**

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A study was established 20 years ago in northern Wisconsin to examine the minimum size of seedlings to ensure seedling survival after the overstory was removed in a red oak (*Quercus rubra* L.) and paper birch (*Betula papyrifera* Marsh.) stand. About 65 percent of the site was scarified in 1985 with a woods disc. The overstory was removed 3, 4, 5, and 6 years after scarification. The site index is poor for sugar maple (*Acer saccharum* Marsh.) (SI=50) but good for red oak and paper birch (SI=70 and 60, respectively).

Saplings were counted and measured 10 and 15 years after overstory removal. Red oak and paper birch success was highly dependent on scarification and amount of competition from shrubs (primarily raspberry). Red oak success was best in plots that were scarified and had little raspberry (*Rubus* spp.) competition. Red oak was the dominant sapling in 25 percent of these plots compared to only 11 percent in the unscarified plots. When raspberry was dominant, red oak seedlings survived that were 3 to 4 feet tall prior to overstory removal. When raspberry was not dominant, oak seedlings survived that were 2 feet tall prior to overstory removal. About 1,700 saplings/acre were present 15 years after overstory removal in the scarified plots with little raspberry present.