

EFFECTS OF REGENERATION HARVESTS ON STAND DEVELOPMENT AND OAK
(*Quercus* spp.) REGENERATION THROUGH 15 YEARS IN BOTTOMLAND HARDWOOD
FORESTS OF NORTHERN MISSOURI

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ABSTRACT

Bottomland hardwood forests provide important economic and ecological values within the midwestern United States, yet silvicultural guidelines for reaching management objectives have been poorly developed outside the southern United States. This study determined the effects two silvicultural treatments and a control treatment had on bottomland forest stands in northern Missouri and the competitive environment surrounding regenerating oaks during the first 10 to 15 years after harvest. Study treatments included a clearcut with reserves (CC; basal area reduced to 2.3 m²/ha), basal area retention (BAR; basal area reduced to 6.9 m²/ha), and a control (CO; no harvest, basal area 32.0 m²/ha). Both harvest treatments increased abundance of green ash and American elm but did not increase abundance of oak species. However, both regeneration harvests created conditions for adequate growth of oak advance reproduction. With specific interest in oak regeneration, the competitive environment was calculated around 149 midstory oaks in 2015. Our results indicated that midstory oaks in the CC treatment were exposed to more competition than those in the CO treatment. However, the competitive environment was a poor predictor of midstory oak size. These results shed light on the effects partial overstory removal harvests have on stand development and the competitive status of oaks in bottomland hardwood forests, which will enable foresters to develop silvicultural prescriptions that better suit management objectives.