IMPACT OF SMALL MAMMALS ON REGENERATION OF NORTHERN RED OAK

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Abstract: The impact of small mammals on regeneration of northern red oak (*Quercus rubra*) was studied from October 1989 to December 1990 in Huntingdon County, Pennsylvania. Acorns were planted in two replicates each of three silvicultural treatments: 20% shelterwood, 70% improvement, and untreated mature forest. Four hundred acorns were planted in a 0.8-ha study site in each replicate, giving a total of 2400 acorns in each of six trials (Nov-Dec, Mar-Jun). One-half of the total acorns were direct-seeded 2 cm below the soil surface, and one-half were surface-seeded in a shallow depression on the soil surface. Acorn loss was compared between autumn (Nov-Dec) and spring (Mar-Jun), among treatments and between acorn depths. Most acorn loss was attributed to white-footed mice (*Peromyscus leucopus*). Total acorn loss (direct-seeded, surface-seeded) in the 20% shelterwood ranged from 28% to 68% in autumn and from 96% to 100% in spring. Total loss in the 70% improvement ranged from 44% to 84% in autumn and from 94% to 100% in spring. Total loss in the untreated mature forest ranged from 67% to 88% in autumn and from 99% to 100% in spring. Loss of direct-seeded acorns ranged from 17% in the 20% shelterwood during autumn to 60% in the 70% improvement during autumn. Loss of surface-seeded acorns ranged from 40% in the 70% improvement during autumn to 83% in the 20% shelterwood during autumn. Preliminary evidence indicated that acorn loss was lower in autumn than in spring, and acorn loss in autumn was greater in untreated forest sites than in treated sites.

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