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Reproductive and Offspring Trait Variation in *Quercus rubra*

Northern Red Oak, *Quercus rubra*, is an important species in the hardwood forest ecosystems in the Northeastern United States. Seed mass in oak species has a positive correlation with survival and growth. We looked at three age classes, 35, 90 and 135 years old, of red oaks at The Black Rock Forest in Cornwall, NY. Reproductive and offspring traits were examined to determine the relationship between seed mass and seedling growth in relation to age of the parent tree. In analyzing specific seedling traits, such as relative growth rate, aboveground and belowground biomass, there was a difference in seedling size arising from belowground biomass between young and old age classes. Soil nutrient composition at the study site showed that the old age class had soil with twice as much carbon and nitrogen that the sites of both the young and middle age classes. The results showed that seed mass from the young age class were larger than that from the old age class. However, seedlings from the young age class were smaller than seedlings from the old age class creating a negative correlation between seed mass and seedling growth. The findings did not support the accepted idea that larger seed mass leads to better oak seedling fitness. Instead, the results suggest that age of the parent tree or other factors such as soil nitrogen content may influence seed mass or fitness of seedlings.