

Survival model for fusiform rust infected loblolly pine plantations under mid-rotation vegetation control

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A two-step modeling strategy was applied to develop survival model for loblolly pine plantations infected with fusiform rust. Data came from repeated measurements of 40 permanent paired plots: one plot of the pair was left to develop completely untreated and the other had mid-rotation vegetation removal treatment. The model consists of two complementary parts. The first part is a logistic function predicting the probability of stand mortality, which is mainly influenced by the number of trees per acre, age, site index, and the percentage of fusiform rust infection. The second part consists of two equations for estimating stem number reduction for uninfected and infected trees. The mortality rate for infected trees was higher than that for uninfected trees. The predictive ability of total surviving trees is generally improved by the sum of predicted uninfected and infected components. The number of surviving trees decreases with increasing productivity and with increasing level of fusiform rust infection. Mid-rotation vegetation removal treatment has no significant effect on survival for loblolly pine plantations.