A DIAMETER GROWTH MODEL FOR THE SRS FIA

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Abstract—Changes in the national Forest Inventory and Analysis (FIA) processing system required the Southern Research Station's FIA unit to create a diameter growth model to estimate the growth of trees that could not be measured at both ends of a measurement interval. Examples of such trees are trees that have died or been harvested, and trees that grow over the minimum diameter threshold. I used a form of the Chapman-Richards function to model the growth. A function containing crown ratio, condition basal area, amount of basal area in larger trees, latitude, longitude, elevation, site class, tree mortality, and being on a plantation is used to modify the rate that a tree moves along the Chapman-Richard's curve. The model was first fit using ordinary least squares, then this set of parameters were used to estimate the errors, and then the parameters were refit using a mixed effects model. The variables used to model the variance were remeasurement period and initial predicted growth.

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