



Forest Resources & Wildlife Management

The influence of soil catena and aspect on the growth and yield of *Pinus taeda* in the Eastern Highlands of Zimbabwe.

By

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A dissertation submitted in partial fulfilment of the requirements for the BSc. (Hons).
Forest Resources and Wildlife Management.

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May 2007

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Abstract

Pinus taeda is one of the most important softwood species grown in Zimbabwe. It covers 60% of the total area of softwood plantations. Research into this species has focused more on site species matching and tree breeding. However, less information is available on the potential production of *P.taeda* on a site (commercially). It becomes necessary to determine if responses would be obtained for different site conditions in terms of growth and yield. With this in mind a research study was conducted in the Eastern Highlands of Zimbabwe to establish whether soil catena and aspect have an influence on growth and yield of *P.taeda*. Five treatment plots were randomly set for each catenary position on two aspects (southeast and southwest). The slope was divided into three catenary positions i.e top slope, middle slope and foot slope. ANOVA was carried out using the General Linear Model command in SPSS version 10 to test the effects of soil catena, aspect and their interaction on height, diameter, volume and basal area. A significant increase ($P<0.05$) in the growth and yield measures was observed from the middle to the foot slope regardless of aspect (non- significant catena x aspect interaction). The results show that the yield – mean volume and mean basal area at the middle slope was significantly higher than the top slope ($P<0.05$). Growth and yield measures increased significantly ($P<0.05$) with decreasing slope. This result indicates that *P. taeda* achieves greater site productivity when soil depth increases.

A comparison of growth and yield of *P.taeda* suggest that performance of the species was significantly higher at the middle slope as compared to the top slope as hypothesized. However, the effect of aspect does not contribute much to the total growth and yield of the species as compared to the effect of the catena. The combined effect of the soil catena and aspect is not significant enough to influence the growth and yield of *P.taeda*. This suggests that the catena is a strong factor in influencing growth and yield of *P.taeda*. Therefore it is recommended that foresters can use these results for site – species matching, planning volumes for extraction during harvesting and for investment planning.