

CROP SILVICULTURE STUDIES: A) MODELING STAND DEVELOPMENT AND B) DAMAGE TO RESIDUAL TREES FROM HARVESTING

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Initial results from implementing and evaluating silvicultural treatments in overstocked, small-diameter stands on the Colville National Forest suggest that uniform thinning can achieve some management objectives, but other density-reduction strategies might be more economical, achieve desired goals and objectives more rapidly, and reduce damage to residual trees during harvesting. Two studies, one comparing stand development trajectories for the implemented treatment (uniform thinning to 100 tpa) with several alternative silvicultural treatments; and the second comparing damage to residual trees from four different harvesting methods on each of two topographies, were undertaken as part of the Fritz and Fritz Demo timber sales. Silvicultural treatments varied with respect to future conditions of forest structure and composition that were identified by Colville National Forest personnel as important management objectives. Analysis of residual stand conditions and growth model projections suggest that achieving desired future stand structure and composition is constrained by biological realities and economics. In particular, retention of submerchantable trees undermines silvicultural prescriptions and differential regeneration success among species reduces the probability that desired future stand composition will be achieved. Residual tree damage is another factor determining success or failure toward achieving desired future stand conditions. A substantial amount of harvesting damage observed in this study could probably have been avoided with non-uniform thinning prescriptions and harvesting operations timed to occur outside the season of active cambial growth.

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