TASS III Use Policy

B.C. Ministry of Forests

April 2024

The following Use Policy is provided to support the informed use of Version III of the Tree and Stand Simulator (TASS III) for managed stand growth and yield applications. This policy shall evolve over time to reflect ongoing model development and enhancements. The Ministry makes no warranties and is not liable for consequences resulting from its use.

Appropriate Model Applications

TASS III is considered appropriate for use in all applications requiring managed stand yields of lodgepole pine and white spruce in British Columbia. This includes single species single cohort monocultures, mixed species stands and multi-cohort stands of pure or mixed species. For other tree species, users should consider TIPSY 4.6 for managed stands, and VDYP7 for even-aged, natural stands and for ground-based inventories of multi-layered and partially cut stands. Note that the databases for lodgepole pine and white spruce in TIPSY 4.4 have been generated by TASS III and are therefore consistent with TASS III projections.

TASS III compared to TIPSY and TASS II

TASS is a spatial, individual tree model that simulates the development and interaction of tree crowns in three dimensions. Unlike TASS II and its derivative model TIPSY, TASS III actively models tree species interactions through differential height and crown dynamics in response to canopy light levels. TASS III is, therefore, more complex than TIPSY and more biologically advanced than TASS II.

TASS III incorporates new calibrations for lodgepole pine and white spruce growth and yield, based on additional data and improved modeling techniques applied after the previous calibration of TASS II. For lodgepole pine, projected volumes for high density stands are somewhat higher, and those for lower density stands somewhat lower, than in previous model versions. For white spruce plantations, TASS III yields are generally lower on low and medium quality sites, and higher on high sites.

Reliability and Cautions

TASS III stand-level yields for pine and spruce monocultures have been calibrated using growth and yield data from 2137 and 456 permanent plots, respectively, of both plantation and natural origin. However, additional managed pure stand data for validation of model projections beyond about 15 m of top height and mixed species simulations at any stage is very limited for these species in B. C. Confidence in model outcomes beyond the data limits relies upon the biological fidelity of the TASS component modules, which are evaluated against well-known principles of tree and stand growth, and yield information from other jurisdictions and published literature.[1] TASS III stand-level yield projections of mixed and monoculture stands perform well compared to independent permanent plot data of unknown stand origin.

[1] See: Mitchell, K.J. and I.R. Cameron. 1985. Managed stand yield tables for coastal Douglas-fir: Initial density and pre-commercial thinning. Land Management Report No. 31, Province of British Columbia, 69 pp.

However, uncertainties remain about the relative dynamics between the two species, especially at later stages of stand development for which there are few sources of comparison.

Therefore, users should exercise caution when interpreting late-rotation outcomes for mixtures of pine and spruce. The search for more data sources is ongoing, and as growth and yield installations in B. C. continue to be measured, new data will be continuously applied to model improvements. A technical report fully describing TASS III model development, testing and evaluation is currently in preparation.

As noted above, TASS III is more complex than TIPSY, and the range of potential model input values and stand structure scenarios that can be simulated is too large to fully test and validate. Therefore, a user's choice of input values and subsequent interpretation of simulation results must always be informed by professional judgement, based upon experience, a working knowledge of TASS III, knowledge of local conditions, and an appreciation of stand dynamics.

For further information, consult HELP within the TASS III software and the Ministry's Growth and Yield Modelling Website.

Request for Feedback

While every effort has been made to find and correct errors, bugs are inevitable in a program as complex as this. Users are encouraged to document and report system errors by describing the steps which lead to the error. Feedback from users will be essential in improving TASS III and developing additional features. Please direct feedback to the contact below.

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