# Application of Robust Optimization to the Sawmill Planning Problem

Álvarez, P.P., Vera, J.R. (2014). Application of Robust Optimization to the Sawmill Planning Problem. *Ann Oper Res, 219*, 457–475. https://doi.org/10.1007/s10479-011-1002-4

## Abstract

Optimization models have been used to support decision making in the forest industry for a long time. However, several of those models are deterministic and do not address the variability that is present in some of the data. Robust Optimization is a methodology which can deal with the uncertainty or variability in optimization problems by computing a solution which is feasible for all possible scenarios of the data within a given uncertainty set. This paper presents the application of the Robust Optimization Methodology to a Sawmill Planning Problem. In the particular case of this problem, variability is assumed in the yield coefficients associated to the cutting patterns used. The main results show that the loss in the function objective value (the "Price of Robustness"), due to computing robust solutions, is not excessive. Moreover, the computed solutions remain feasible for a large proportion of randomly generated scenarios, and tend to preserve the structure of the nominal solution. We believe that these results provide an application area for Robust Optimization in which several source of uncertainty are present.