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The height of *dharek (Melia azedarach* L.) monitored for 3 years was related to the root-zone soil sodicity that was measured in four layers of a fine loamy Natric Haplustalf using a depth increment of 0.3 m. Sodium adsorption ratio was a better predictor of tree height variation than pH and DTPA-extractable Na. Inclusion of DTPA-P and K in the regression model did not add to the information. The predictive power of the 0- to 0.6-m layer alone was as good as that of all the four depths (upto 1.2 m) considered simultaneously. Neighbouring residuals of ordinary regression of height on soil properties were correlated. Generalized least squares returned narrower confidence intervals of the sensitivity curves than corrected ordinary least squares. Consideration of pH as covariate to the log of the sodium adsorption ratio reduced confidence bands by 5 to 10%, which was roughly equivalent to 10 to 20% more observations.