

A Comparative Study of different Validation Techniques for Evaluating the Performance of Various Regression Models

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Abstract—*Model validation is an important step in the modeling process and helps in assessing the reliability of models. In the present study, Leave-one-out cross validation (LOOCV), 5-fold cross validation and 10-fold cross validation methods were examined for performance evaluation of different regression models. Primary data on height, bole height, diameter at breast height (dbh), no. of primary branches, secondary branches, average no. of leaves per secondary branch, age, canopy diameter and green fodder yield (dependent variable) for each selected tree of Grewia optiva was collected. Regression analysis was used to study the relationship between fodder yield (dependent variable) and other parameters. Different regression models were tried and on the basis of adj. R^2 , the best five models were selected. Goodness of fit of the selected models was tested by applying chi-square test. The different validation techniques were assessed by the estimates of root mean square error. In the present study, 10-fold cross validation method gave better results as compared to LOOCV and 5-fold cross validation depicted by the root mean square error.*

Keywords: *Validation, Goodness of fit, regression, modeling.*