ABSTRACT - This study was conducted on 2049 eggs, collected from commercial white layer hybrids, with the purpose of predicting egg weight (EW) from egg quality characteristics such as shell weight (SW), albumen weight (AW), and yolk weight (YW). In the prediction of EW, ridge regression (RR), multiple linear regression (MLR), and regression tree analysis (RTM) methods were used. Predictive performance of RR and MLR methods was evaluated using the determination coefficient (R2) and variance inflation factor (VIF). R2 (%) coefficients for RR and MLR methods were found as 93.15% and 93.4% without multicollinearity problems due to very low VIF values, varying from 1 to 2, respectively. Being a visual, non-parametric analysis technique, regression tree method (RTM) based on CHAID algorithm performed a very high predictive accuracy of 99.988% in the prediction of EW. The highest EW (71.963 g) was obtained from eggs with AW > 41 g and YW > 17 g. The usability of RTM due to a very great accuracy of 99.988 (R2) in the prediction of EW could be advised in practice in comparison with the ridge regression and multiple linear regression analysis techniques, and might be a very valuable tool with respect to quality classification of eggs produced in the poultry science. Key Words: chaid algorithm, data mining, decision tree, multiple regression