



University of Zabol

Graduate school

Faculty of Agriculture

Department of Animal Science

The Thesis Submitted for the Degree of Master of Science in the field of Breeding
and Production of poultry

**Predicting metabolizable energy of sorghum and triticales grains, using Artificial
Neural Network models and multi liner regerssion**

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Abstract

Determination of metabolizable energy process is time consuming and is associated with many problems. hence, a model that can best predict the energy is, from the point of managing poultry nutrition is important. Therefore, in this study, we investigate the performance of three types of neural network RBF, MLP and GRNN with different structures in the forecast sorghum and triticale metabolizable energy was discussed. Continue the performance of these methods enter and stepwise regression method were compared. The results indicate that among all the methods used MLP neural network has a better accuracy in estimating the metabolizable energy of sorghum and triticale .Multi-Layer Perceptron neural network so as to makeup 1-12-6 and 1-10-6 respectively 99% of the metabolizable energy of sorghum and triticale using its chemical properties (GE, CP , EE, CF, P and ASH) is predicted, also content RMSE respectively on 3/76 and 9/86, MLP model for sorghum and triticale, The best regression model to estimate the metabolizable energy of sorghum much $R^2 = 0.91$ and $RMSE = 12/61$ obtained from the statistics in triticale respectively 0/76 and 30/81 is. Sensitivity analysis showed that of the six nutrients crude energy has the greatest effect on metabolizable energy.

Keywords: energy metabolism- artificial neural networks– regression- triticale- sorghum