Abstract

In order to evaluate different levels of vermin-compost and iron fertilizer on qualitative and quantitative peanut characteristics and compares the results with Artificial Neural Networks the experiment was conducted in research farm of Zabol University Institute in crop year 1393-94. The experimental design was split plots in a randomized complete block design with three replication. Different levels of vermin-compost included 0, 10 and 15 ton/ha as a main plot and different levels of iron fertilizer included spraying 0, 3 and 4 cc/l as a sub-plot were determine. Characteristics of peanut that studied in this experiment were number of pods in plant, number of grain in pods, number of total grain (six plant), 100 grain fresh weight, fresh economical yield, fresh biological yield, fresh harvest index, 100 grain dry weight, dry economical weight, dry biological weight, dry harvest index, chlorophyll index, oil percentage, grain nitrogen percentage, grain protein percentage, and grain minerals such as Phosphorus, Calcium, Magnesium, Iron, Sodium, and Potassium. The results showed that vermi-compost organic fertilizer except harvest index and Magnesium, in all of the peanut characters than the control treatment had a significant effect and resulted in improving these characters. Similarly, the effect of Iron fertilizer spraying except number of grain in pot, 100 grain fresh weight, protein percentage and Magnesium and Sodium minerals in all characters were significant. Investigation of treatment interactions showed that application of maximum ecological and biological yield, chlorophyll index, harvest index, 100 grain weight, Nitrogen percentage, oil percentage, protein percentage, Phosphorus, Calcium, Iron and Potassium minerals percentage together with 10 t/ha treatment vermin-compost and Iron fertilizer 4 ppt spraying ratio obtained. Results showed that combined application of vermin-compost and Iron spraying, instead of use them separately can affects increasing the qualitative and quantitative peanut yield. In this investigation by using Artificial Neural Networks, parameters that mentioned above were simulated. The results showed yield of the Artificial Neural Networks on estimating these parameters as well. Sodium percentage than the other parameters had a best estimation. If R^2 have a higher amount and RMSE and MAE have a lower amounts the results of simulation is better.

Keywords: Vermin-compost, Iron fertilizer, Protein percentage, Oil percentage, Minerals, Neural Network.

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Evaluation of different levels of vermicompost and iron fertilizer on the quantitative and qualitative characteristics of pigeon pea (*Arachis hypogaea*) and simulation the results using Neural Networks

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