



## GENETIC PARAMETERS OF DIFFERENT OAT GENOTYPES USING CLUSTER ANALYSIS

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### SUMMARY

The timely study aimed to assess the oat (*Avena sativa* L.) genotypes through cluster analysis, genetic and phenotypic variations, and the heritability (broad sense) during the winter crop season of 2022–2023, held at the University of Basrah, Basrah, Iraq. Three oat cultivars (Genzania, Shifaa, and Carrolup) were in a randomized complete block design (RCBD) sampling, with factorial arrangement and three replications. The results revealed for total grain yield, the genetic, environmental, and phenotypic variations, the values recorded were 1.143, 0.1746, and 1.3176, respectively, and the heritability (broad sense) was 86.74% for the said trait. The hierarchical cluster analysis showed the genetic convergence of the genetic structures between the cultivars Genzania and Carrolup amounted to 53.257, and the genetic distance of 12528.264 between the cultivars Genzania and Shifaa. However, the genetic distance between the cultivars Shifaa and Carrolup amounted to 11430.981. Therefore, based on the results, the cluster analysis helps draw the mutual relationship between oat varieties, making a comparison between them is easier.

**Keywords:** Oat (*Avena sativa* L.) cultivars, genetic, environmental, and phenotypic variations, heritability, cluster analysis, genetic distance

**Key findings:** Cluster analysis proved efficient in analyzing the interrelationship and genetic kinship among the studied oat (*Avena sativa* L.) cultivars and facilitating the selection process for cultivars with high genetic distancing while preserving the genetic origins.

### INTRODUCTION

Oat (*Avena sativa* L.) crop is one of the winter annual cereal crops belonging to the family of Poaceae and ranks seventh for importance and

production in cereal crops, after wheat, rice, barley, maize, sorghum, and millet. In various countries, oat growing has a dual purpose, as a

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