

Relationship between Grain Yield, Osmotic Adjustment and Benzoxazinone Content in *Triticum aestivum* L. Cultivars

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Fifteen wheat genotypes were grown under water deficit to ascertain the role of osmotic adjustment (OA) and the concentration of benzoxazinones in sustaining grain yield. A positive correlation between osmotic adjustment capacity and yield was observed in wheat genotypes cultivated under field conditions. The weight gain of plants exposed to drought was in agreement with the OA values ($R^2 = 0.93$). However, when wheat plants were infested by cereal aphids, this correlation was not found. The benzoxazinones 2,4-dihydroxy-1,4-benzoxazin-3-one (DIBOA) and 2,4-dihydroxy-7-methoxy-1,4 benzoxazin-3-one (DIMBOA) are defensive secondary metabolites present in wheat and others cereals. The content of these compounds varied in wheat genotypes and increased with drought and aphid infestation. A positive correlation between weight gain of irrigated-infested plants and drought-infested plants and the contents of benzoxazinones was observed. These results suggest that plants with better OA capacity and high benzoxazinone content should have better field yields.

Key words: Wheat, Osmotic Adjustment, Benzoxazinones, Crop Yield