

O 55. EFFECTS ON EARLY DEVELOPMENT OF HEAT STRESS IN WHEAT (TRITICUM DURUM)

Aida Dervishi^{1*}, Erika Hoxha¹, Adriatik Cakalli², Xhuliana Arapaj³

¹*Department of Biotechnology, Faculty of Natural Sciences, University of Tirana, Albania*

²*Institute of Plant Genetic Resources, Agricultural University, Tirana, Albania*

³*Department of Biology, Faculty of Natural and Technical Sciences, University of Vlora "Ismail Qemali", Albania*

E-mail: *aida.dervishi@fshn.edu.al; hoxhaj.erika11@gmail.com; adcakli13@gmail.com; xhulianaarapaj@yahoo.com*

ABSTRACT: Heat stress, particularly during cereal crops germination and early development stage has a detrimental influence on their productivity. The predicted climate changes threaten the sustainable cultivation and production of crops. Therefore, the screening and the identification of heat stress tolerant genotypes is crucial for development of climate resilient cultivars. This study examined the impact of heat stress on germination rate and early development stages of wheat (*Triticum durum*) genotypes. Samples were subjected to diverse temperature conditions, encompassing a control temperature of 25°C as well as to higher temperatures of 30°C and 35°C. The germination percentage and rate, phenotypic traits and photosynthetic pigments concentrations were evaluated in the control and heat stress samples. The germination rate exhibited a slight increase when grains were exposed to 30°C as compared to control, whereas lower germination percentage and rate were observed in samples exposed to higher temperatures of 35°C. Moreover, significant differences were observed in both root and plant length with the increasing of temperature to 35°C. This heat stress induce effect was also observed in chlorophyll a, chlorophyll b amounts across all analysed genotypes, which decreased substantially at 35°C compared to the control. The comparative clustering analysis of 23 *T. durum* varieties employing morpho-physiological data of control group, and two heat stress treatments, a grouping emerged wherein heat resistant varieties were grouped together in response to the heat treatment. The study identified four resistant wheat lines that could be valuable source for breeders aiming to develop heat-tolerant varieties.

Keywords: Heat Stress, Triticum Durum, Early Development