

# GENETIC CHARACTERISTIC OF MUTANT LINES *HORDEUM VULGARE* L. FROM M<sub>4</sub> GENERATIONS

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Presented work is an element of research conducted in Department of Genetics, Faculty of Biology, Warmia and Mazury University on mechanisms responsible for heterosis. *Hordeum vulgare* L. served as an example of a model plant. The aim of presented work was comparison of barely mutants M<sub>4</sub> generation to quantitative traits and DNA markers.

Primary varieties were used as controls. Six quantitative traits were weight, namely the length of tillers, length of spike, number of stalks, number of seeds, mass of seeds from the plant as well as the mass of 1000 seeds. The experiment was carried out in completely randomized design in experimental field in Tomaszkowo, one of the University of Warmia and Mazury properties. In the course of experiment morphological changes and chlorophyll mutations were described.

In M<sub>5</sub> generation the analysis of 15- days seedling was carried out on Kunzla's rollers. The longest leaf and root were measured in relation to the length of upper part of the seedling and root.

Analysis of quantitative traits of M<sub>4</sub> generation produced evidences of statistical differences in 35,5% lines drawn from Brenda variety and 35% from Scarlett variety. Mutant lines drawn from Brenda variety in relation to height figured 32,7-73,9 cm (the average of control 60 cm). In relation to the mass of plant seeds mutant lines drawn from Brenda variety figured 8,3-0,2g (the average of control 4,0 g), while mutant lines drawn from Scarlett variety figured 10,7-0,5g (the average of control 3,5g). In relation to the mass of 1000 seeds mutant lines from Brenda variety figured 69,3-12,6 (the average of control 38,6) and 54,3-16,8g in lines from Scarlett variety.

Chlorophyll mutations were observed in 53% in Brenda variety and 40% in Scarlett variety lines.

Analysis conducted by means Kunzla's rollers figured 48,7% in Brenda variety lines and 47,5% in Scarlett variety lines differing in relation to control. The length of upper part of the seedling in mutant lines from Brenda variety line it figured respectively 123,1-54,3% in relation to control. As far as length of root is concerned obtained data showed 14,2-33% in lines from Brenda variety and 127-42,7% in Scarlett variety lines.

Molecular analysis of selected M<sub>5</sub> mutant lines generation was carried out by means of PCR reaction using semi-specific starters partially complementary to the sequence placed on the intron and exon border (ISJ2, ISJ3, ISJ4). Only for ISJ4 starter three additional bands were obtained for one of researched mutant lines.