

White Clover *Trifolium repens* L. Genetic Diversity and Salt Tolerance in Urban Area of Riga

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Abstract : *Trifolium repens* L. (white or Dutch clover) is a perennial herb, belongs to legume family (Leguminosae Juss.), spread extensively by stolons and seeds. The species is cultivated worldwide and was naturalized in many countries in meadows, yards, gardens, along roads and streets etc., especially in temperate regions. It is widespread also in grasslands throughout Riga, the capital of Latvia. The goal of this study was to investigate genetic structure of white clover population in Riga and to evaluate influence of different salt concentration on plants. For this purpose universal retrotransposon based IRAP (Inter-Retrotransposon Amplified Polymorphism) method was used. The plant material was collected in different regions of Riga and in several urban areas of Latvia. Plant DNA was isolated from in silicogel dried leaves of using 1% CTAB (cetyltrimet-ammonium bromide) buffer DNA extraction procedure. Genetic structure of city population and wild populations were compared. Soil salinization is an important issue associated with low water resources and highly urbanized areas in aride and semi-aride climate conditions, as well as de-icing salt application to prevent ice formation on roads in winter. The *T. repens* variety 'Daile' (form giganteum), one of the often used component of urban greeneries, was studied in this investigation. Plants were grown from seeds and cultivated in the light conditions (18-25 C, 16h/8h of day/night, light intensity 3000 lx) in plastic pots (200 ml), filled with commercial neutralized (pH 5.9 ± 0.3) peat substrate with mineral nutrients. To analyse the impact of increased soil salinity treatments with gradually rising NaCl (0; 20; 40; 60; 80; 100 mM) levels were arranged. Plants were watered when necessary with deionised water to provide optimum substrate moisture 60-70%. The experiment was terminated six weeks after establishment. For analysis of mineral nutrients, dry plant material (above ground part and roots) was used. Decrease of Na content can be significant under elevated salinity till 20 mM NaCl. High NaCl concentrations in the substrate increase Na, Cl, Cu, Fe, and Mn accumulation, but reduce S, Mg, K content in the plant above ground parts. Abiotic stresses generally changes the levels of DNA metilation. Several candidate gene for salt tolerance will be analysed for DNA metilation level using Pyromark-Q24 advanced.

Keywords : DNA metilation, IRAP, soil salinization, white clover

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