

SOME PECULIARITIES OF *LYTHRUM SALICARIA* NUTRITION

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Nowadays much attention is paid to the quality of wetlands and waters. Environmental data on pollutants are not sufficient to understand the direct effects of negative compounds on aquatic flora. There is also the question of human impact on the environment. Land use is facing a major pollution load, in particular due to the use of fertilizers in agriculture, which falls in inland waters. Nitrogen (N) is the main mineral nutrient needed for plants and it plays an essential role in the plant life cycle. The nutrient evaluation could help to understand the affection level for environment.

Lythrum salicaria is riparian plant species, naturally occurring the riverbanks in Europe but is invasive in the United States of Amerika and Canada. This plant used for medical purposes, has many secondary metabolites and is important as indicator of soil salinity. There are genetical evaluations of this plant, but there is a lack of information about ecophysiological parameters, especially in the Baltic countries.

Our task was to evaluate leaf N concentration differences and compared it among populations of *L. salicaria* growing in different sites of Lithuanian rivers. Our study involved 29 populations of selected plant species, sampled on the Nemunas river and seafront catchments. Three independent batches of healthy leaves were dried, turned to the powder and analyzed by Kjeldahl method. Nitrogen concentrations were expressed as percentage of dry mass (d.m.).

Mean leaf N concentration for *L. salicaria* populations was 2.98 % d.m. The lowest N concentration (2.35 % d.m.) was documented in population sampled on the bank of the river Nemunas, while the highest (3.94% d.m.) was observed in population near the river Neris. Difference between the most contrasting populations was 1.68 times ($p < 0.05$). The mean values of leaf N concentration of Lithuanian populations of *L. salicaria* were lower than other neighbouring plant species like *Phalaris arundinacea* *Stuckenia pectinata*, *Bidens frondosa*, *Phragmites australis*, *Nuphar lutea* or *Echinocystis lobata*. Compared to the other species, among populations of *Lythrum. salicaria* differences in leaf N concentrations were the highest.

In order to determine the potential effect of rivers and their environment on nitrogen concentration in plants, *L. salicaria* populations were divided into five groups according to: the land cover type (based on classification system of COoRdinate Information on the Environment; CORINE) [1], river state, geographical location, river size and riverbed origin. Significantly higher ($p < 0.05$) leaf N concentrations were found for *L. salicaria* populations growing near agricultural areas (3.2 % d.m.) compared to populations found near artificial areas (2.8 % d.m.) or forest (2.7% d.m.). Significantly higher ($p < 0.05$) concentrations of leaf N concentrations were found for *L. salicaria* populations growing near the small rivers (3.4% DM) compared to the large ones (2.8 % d.m.). The higher N concentration than the median value was determined for *L. salicaria* growing in the centre of Kaunas city, it might be related to point sources of pollution [2]. The highest number (77 %) of *L. salicaria* populations, were located in the natural river parts, where mean value of leaf N concentration of populations was lower (2.9 % d.m.) compared to N concentration of populations from regulated river parts (3.2 % d.m.) [3].

It can be assumed that *L. salicaria* populations are affected by neighboring agricultural areas, in addition, N nutrition conditions are different comparing the rivers of the different size.

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