

# PHOTOSYNTHETIC CAPACITY IN *AMORPHA FRUTICOSA*, *ACER NEGUNDO*, *AILANTHUS ALTISSIMA* AND *ELEAGNUS ANGUSTIFOLIA*, THE INVASIVE PLANTS VS. NATIVE PLANT IN DANUBE DELTA BIOSPHERE RESERVE AREAS

Ligia ACATRINEI<sup>1</sup>

e-mail: ligia.acatrinei@icbiasi.ro

---

## Abstract

The purpose of this study is to analyse gas- exchange parameters and chlorophylls synthesis in order to establish the photosynthetic capacity of some ligneous plants with invasive behaviour in comparison with native trees in areas of Danube Delta. The investigation was carried nearby of Razelm Lake (Beștepe hill), a xerophilous coastal meadow with clumps of trees (fallow vine plantation) and in three other plots (Plaur I, Plaur II and Pătlașanca) situated along Chilia branch. Photosynthesis rate registered lower values in *Amorpha fruticosa* ( $3.53 \mu\text{mol m}^{-2}\text{-s}^{-1}$ ) in comparison with *Populus alba*, young plantation ( $33 \mu\text{mol m}^{-2}\text{-s}^{-1}$ ), lower value in *Ailanthus altissima* ( $13.5 \mu\text{mol m}^{-2}\text{-s}^{-1}$ ) in comparison with *Fraxinus ornus* ( $14.54 \mu\text{mol m}^{-2}\text{-s}^{-1}$ ), comparable values in *Acer negundo* with *Amorpha fruticosa* (close to  $3.5 \mu\text{mol m}^{-2}\text{-s}^{-1}$ ). Generally, the investigated invasive plant registered a lower respiration rate than non-invasive/native species. Transpiration was direct proportional with photosynthesis rate and with stomatal conductance. Photo-assimilatory pigments represented by chlorophyll a, chlorophyll b and carotenoids as total registered in *Ailanthus altissima* being by approximative 1.4 times higher in comparison with *Crataegus monogyna* and *Fraxinus ornus* (Beștepe station), by 1.5 times higher in *Amorpha fruticosa* than *Acer negundo* in ruderal area (Plaur I) and having close values at *Amorpha fruticosa* and *Populus alba* in riparian plantation (Plaur II). Analysis of photosynthetic capacity revealed the competition strategy between invasive plant and native or even among invasive, especially co-dominant species such as *Amorpha fruticosa* vs. *Populus alba*, *Amorpha fruticosa* vs. *Acer negundo*, *Ailanthus altissima* vs. *Fraxinus ornus* and *Eleagnus angustifolia* against *Salix alba* in studied areas.

**Key words:** *Amorpha fruticosa*, *Acer negundo*, *Ailanthus altissima*, *Eleagnus angustifolia*, invasive, gas-exchange parameters