

**PHYTOCHEMICAL VARIATIONS OF BLACK POPLAR (*POPULUS NIGRA*),
METABOLIC ANSWERS AND POPULATIONAL STRUCTURE OF THE APHID
CHAITOPHORUS LEUCOMELAS (KOCH, 1854) (HOMOPTERA: APHIDIDAE)**

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ABSTRACT

The black poplar *Populus nigra* is usually composed of only one cultivar, and is prone to attacks from bio-aggressors, of which the most damaging is the aphid *Chaitophorus leucomelas*. In order to determine the dynamics and the temporal succession of the various phenotypical forms, two areas of Algeria were selected, Zéralda (coastal area) and Médéa (mountainous area). The fitness and the populational structuring of the various generations were assessed by the quantification of female fecundity and the energy reserves in relation to the seasonal phytochemical quality of the host plant. The results revealed a temporal shift in the succession of the various phenotypes between the coastal area and the mountainous area. They also indicate a variability in the lipidic and carbohydrates content in the various phenotypes in relation to the seasonal changes of the phytochemical quality of *P. nigra*. Lastly, the results show a clear correlation between total sugars present in plant leaves, the modulation of the energy reserves and fecundity of aphid phenotypes. The populations undergoing more stress from dryness spend more energy to maintain homeostasis and as a consequence show lower fecundity.

KEYWORDS: Black Poplar, *Chaitophorus leucomelas*, Phenotype Succession, Energetic Molecules, Condensed Tannins, Total Sugars, Fecundity