



COST Action FA1306:
The quest for tolerant varieties –
Phenotyping at plant and cellular level



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Abstract book

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Oxidative stress in black and yellow soybean grown in organic production system

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Dark-coloured soybean seeds contain high concentrations of phenolic compounds that contribute to their high stress resistance. The purpose of this work was to define whether soybean plants developed from black coloured seeds would be protected from (a)biotic stress during seed filling period in organic system of production in comparison to those from yellow seeds. Lipid peroxidation intensity (LP, biomarker of cell degradation and oxidative stress secondary effects, expressed as nmol malondialdehyde or MDA equivalents g⁻¹ fresh weight) and antioxidant capacity (NBT-test, as antioxidant capacity of plant material expressing % of neutralization of reactive oxygen species or ROS produced during oxidative stress) were determined in leaves of soybean plants at the seed filling stage. Plant material tested in this research was soybean [*Glycine max* (L.)Merr.] leaves of two black ('NS Blackstar' and 'NS Pantera') and two yellow ('Fortuna' and 'Galina') soybean cultivars grown in experimental field of Institute of Field and Vegetable Crops, Department for Alternative Crops and Organic Production. Leaves of tested plants had different values of LP intensity (23-52 nmol MDA g⁻¹ fresh weight) and capacity to neutralize ROS (61-88%), however, 'Galina' was highlighted with lower LP intensity (2-fold) and higher antioxidant activity (10-27%) during seed filling period. Since there is no clear difference between black and yellow cultivars in response to oxidative stress during seed filling stage of development, further analyses of biomolecules responsible for colour of seeds could explain which of these compounds participate, among other antioxidants, in oxidative stress defense mechanisms and should propose which cultivar would perform better in organic production system.