

A stylized illustration of a plant with green stems and leaves, and yellow wheat-like stalks at the bottom. The central focus is a large, circular cross-section of a plant stem, showing internal structures like vascular bundles and a central pith. The word 'INDEPTH' is written across this cross-section in large, white, bold letters with a black outline. The top and bottom of the image feature rounded orange banners with black text.

COST_INDEPTH
Kick Off Meeting

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Clermont Ferrand
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Poster WG3.8

COMPARATIVE PHENOTYPIC AND METABOLIC ANALYSIS OF HELIANTHUS SPECIES FOR IMPROVED STRESS RESILIENCE

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The species of the genus *Helianthus* have very broad spectrum of life forms since they occupy diverse habitats. Cosmopolitan distribution of these species could be explained by a number of anatomical and physiological mechanisms that create the basis for survival of the plants in a wide variety of habitats. At the Institute of Field and Vegetable Crops (IFVCNS), Novi Sad, there is one of the largest collection of annual and perennial sunflower species, interspecific hybrids, sunflower varieties, lines and hybrids worldwide (<http://www.nsseme.com/about/inc/oilcrops/wild.php>). This collection has been actively used in breeding as a source of disease resistance and abiotic stress resistance genes.

Within the framework of ongoing projects, we have started to perform comparative phenotypic and metabolic analysis of genotypes chosen from IFVCNS collection in order to identify morphological and metabolic parameters of various plant organs that could be useful tools for detection of genotypes tolerant to different environmental stresses. This will be further complemented by molecular analyses for identification of QTLs correlated to abiotic and biotic stresses.

The final aim of this combined approach to stress resilience study in sunflowers is to identify genotypes with desirable traits that could be further included in sunflower breeding programs and creation of highly productive stress resistant hybrids, as well as to create an ideotype specific for certain agro-ecological conditions.

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Poster WG3.9

REPRODUCTIVE TRAITS STUDY FOR IMPROVEMENT OF LOCAL VITICULTURE IN ARMENIA

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Armenia is considered as one of the most important centers of grape origin and biodiversity. High sterility of female and male gametophytes as a result of failed meiosis causes the flower bud abscission and consequently the low fruit set in some grapevine cultivars. It depends on origin and genetic characteristics of varieties, gene expression and phenotype development in different environmental conditions. For cytoembryological studies the flowers of 10 local ancient and new bred grapevine varieties were fixed by FAA fixative and treated by using common paraplast-embedding and sectioning techniques combined with double staining by Mayer's hematoxylin and eosin (H&E). Different levels of reproductive cells viability were registered by microscopic observation of flowers sections. The level of pollen variability varied from 72.1% to 97.5% in ancient and from 58.3% to 90.1% in new bred varieties. In the ovaries instead of 4 potential ovules only 1-3 ovules with eight cells of embryo sacs were developed. The ovules viability varied from 32,0% to 62,5% in investigated varieties irrespective of their origin. Obtained results demonstrated an importance of cytoembryological approach for understanding problems regarding fruit set and yield level. Our data are actual for the efficient exploitation of plant genetic resources and breeding new cultivars with improved quality, stable yield and reduced economic and environmental costs (Royo *et al.*, 2015; Aroutiounian *et al.*, 2012).

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