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### **W154 : Coffee Genomics**

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#### **Drought Tolerance In Coffee: Identification Of Candidate Genes And Study Of Its Natural Variation**

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Drought stress significantly affects coffee yield, productivity and quality. Thus, the goal of this study was to investigate the molecular mechanisms underlying the response to drought stress in coffee plants by different approaches. Candidate gene identification was performed by comparing gene expression and protein profile of different genetic materials (tolerant vs. susceptible) as well as, under different conditions of water supply (irrigated vs. non-irrigated). In this work, the genetic materials studied were Conillon clones of *Coffea canephora* and two cultivars of *C. arabica*. The applied water stress ( $PD=-3,0$  MPa) to the conillon plants was achieved under green-house conditions and, in the case of arabica, adult plants cultivated under field conditions were used. Under field conditions, leaves were collected during day and night, and the most pronounced observed water-stress was of  $PD =-1,7$  MPa. After selection of candidate genes by different strategies, the expression was confirmed by qPCR analysis. The natural variation of some selected candidate genes was also performed using a set of different genotypes. The data obtained indicated that several genes displayed decreased expression upon water stress and usually these were encoding-genes of proteins involved in photosynthesis. On the other hand, the applied water stress on coffee plants also induced a set of genes such as RD29, DREBA and NAC, which have already been described in literature as genes involved in plant responses to drought. In addition, this study also revealed the importance of other factors controlling the expression of these genes, such as the circadian clock and the age.