Cold and drought have afflicted agriculture over the ages. Today, the importance of crop resistance to water stress, extremes of salinity, and harsh temperature is further increasing, in connection with both expanding cultivated areas and increasing of extreme weather conditions due to global climate change. Many stress-inducible genes have been identified and insights into their functional roles in stress tolerance is gaining. This makes it feasible to improve crop stress tolerance by targeting stress-related genes either for genetic manipulation or for assisted breeding. The expression of the DREB2 gene after induction of drought-stress in a controlled greenhouse has been analysed in several Italian varieties like Creso, Ciccio, Simeto, Gianni, Cannizzo, Colosseo and Yellow-green, a laboratory mutant from Cappelli. Further 17 varieties, some coming from “field environment”, are going to be analysed. Work is in progress with specific oligos inferred from data bank genes, RNA extracts and RT-PCR and multiple-PCR analyses and real-time-PCR. Interesting preliminary results of PCR analyses have been obtained from these time-course experiments of drought-stress.

A functional genomics approach has been used to select and characterize the different varieties. The final goal is to individuate those genotypes better responding to drought-stress in view of obtaining new varieties by molecular assisted breeding.