1.3: A drought phenotyping network in contrasting Brazilian environment targets

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A good environment characterisation is necessary for the drought process studies, requiring registration and acquisition of soil, water, plants, and atmosphere factors and understanding how these factors interact with plants genotypes performance under water constraint condition. Embrapa's researchers have established and described the procedures and practices to develop a "drought phenotyping network" in contrasting brazilian environment targets for drought tolerance investigation in cereals and legumes, by means of selecting, installing, and characterizing seven "Drought Tolerance Phenotyping Centers", according to geographical coordinates, elevation, climatic condition, and soil physical and chemical properties. The work emphasised the protocols, methods, and techniques for water stress levels control and management, the description of genetic materials and traits selected and evaluated, the structure and maintenance of a database, and the modelling to better understand the effects of plants genetic and environmental (GxE) interactions for grain yield, identifying and establishing the causes which will result ultimately on genotypes yield reduction due to a controlled water stress pressure selection. Genetic and environmental interactions are largely a result of phenotypic plasticity in terms of adaptive morphogenesis, physiology, and phenology, resulted from the different water regimes utilised, taking into account soils, plants, and canopy surface atmosphere water dynamics status.

Related GCP project—SP1 Commissioned G4005.06: Supporting emergence or reference drought tolerance phenotyping centers - Drought phenotyping network (DPN)

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