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Poster Communication Abstract – 2.37

PRIMA-DROMAMED: EXPLORING MAIZE GENETIC RESOURCES OF ADAPTATION TO HEAT AND DROUGHT WITHIN MEDITERRANEAN TO BE INTRODUCED IN BREEDING PROGRAMS FOR RESILIENCE

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DROMAMED, a three years project (2021-2024) financed by the PRIMA call, intends to 1) valorize maize Mediterranean germplasm pooling and evaluating varieties from the national collections for adaptation to a large diversity of stressful environments, 2) capitalize current and new knowledge about mechanisms of tolerance to stresses, and 3) develop selection tools to improve breeding approaches enhancing tolerance.

Additionally, DROMAMED's specific objectives are to implement biodiversity-

with resilient varieties adapted to each target area for enhancing the sustainability of farming systems understood as climate resilient and efficient, cost-effective and environmentally and socially responsible. Consequently, exploring germplasm collections for adaptation to specific environments and tolerance to stresses associated with climate change, represents a valuable tool as first step for identifying new genetic resources to be introduced in breeding programs for resilience

With the aim to capitalize the diversity of maize for cultivation in the Mediterranean area, germplasm including accessions adapted to dry areas were pooled to identify a subset of landraces tolerant to abiotic stresses representative of biodiversity of the national collections. The subset, including 215 genotyped landraces from dryland of Algeria, France, Portugal, Spain and Italy, was tested in multisite field experiments (6 locations) during 2022 in Italy, Tunisie, Morocco. In addition, breeding populations selected for different traits traits were evaluated in Turkey, Algeria and Spain under abiotic stress. Finally, Spanish populations included in the European Maize Landraces Core Collection (EUMLCC) and Tunisian populations were tested in Tunisia and Spain.

Weather data, soil monitoring by sensors, field traits (plant morphology, architecture, characterization and yield) were recorded in the different locations. Preliminary results about field trials will be reported. Plants experienced heat waves and diverse range of water deficit scenarios. Appreciable variation for plant development and ear set was observed.

Combined analysis of collegial field trials for key adaptation traits, together with marker association analysis, will allow us to capitalize new genetic variability from which extrapolate the varieties with greater resilience to face challenges derived from climate change.

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