

2.5.1.5: Pre-breeding using wild relatives of barley, mainly *Hordeum vulgare* subsp. *spontaneum*.

A total of 100 accessions of *H. spontaneum* were evaluated for powdery mildew and yellow rust at Marchouch station in Morocco. More than 83% of these lines combine resistance to both diseases. These accessions are under evaluation for beta glucans and micro-elements. A total of 75 interspecific crosses were made between barley varieties with *Hordeum spontaneum* and 10 crosses were made with *H. bulbosum* in collaboration with INRA-Morocco.

GRDC CAIGE-Barley Project on “Mining barley genetic resources and breeding germplasm for major biotic and abiotic stresses”

CAIGE-Barley project mapped to the CRP DC under genetic resources component, aims at identifying adequate sources of resistance/tolerance to major biotic and abiotic stresses from the genebank holdings and from the elite breeding germplasm available at ICARDA for use by the Australian and ICARDA barley breeders. During 2016, the exchange of visit was enhanced by the visit of the Australian breeders to Morocco during April 2016 which allowed the joint selection within the genetic resources sets and the breeding nurseries planted at different experimental stations, to visit different barley breeding programs. The ICARDA supplied germplasm in Australia clearly demonstrated that the genetic resources and breeding germplasm contain valuable traits specifically for abiotic (drought) and biotic stresses (diseases spot blotches, leaf scald and root diseases) tolerances.

Several accessions from the genebank showed good levels of resistance to net blotch, Powdery mildew and spot blotch and can be used as parental material in the breeding programs. The interaction among scientists at Australia and ICARDA has allowed to discuss potential areas for future collaboration including: need for strong pre-breeding activity to transfer genes into desired background, for genotyping of entries and accessions with valuable phenotypes, to evaluate malting quality of the ICARDA germplasm and to work on cold/frost tolerance.