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Assessment of Relationships between Agro-Morphological Traits and Cold Tolerance in Faba Bean (vicia faba l.) and Wild Relatives

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Abstract : Winter or autumn-sown faba bean (Vicia faba L.) is one the most efficient ways to overcome drought since faba bean is usually grown under rainfed where drought and high-temperature stresses are the main growth constraints. The objectives of this study were assessment of (i) relationships between cold tolerance and agro-morphological traits, and (ii) the most suitable agro-morphological trait(s) under cold conditions. Three species of the genus Vicia L. includes 109 genotypes of faba bean (Vicia faba L.), three genotypes of narbon bean (V. narbonensis L.) and two genotypes of V. montbretii Fisch. & C.A. Mey. Davis and Plitmann were sown in autumn at highland of Mediterranean region of Turkey. All relatives of faba bean were more cold-tolerant than the faba bean genotypes. Three faba bean genotypes, ACV-42, ACV-84 and ACV-88, were selected as sources of cold tolerance under field conditions. Path and correlation coefficients and factor and principal component analyses indicated that biological yield should be evaluated in selection for cold tolerance under cold conditions ahead of many agro-morphological traits. The seed weight should be considered for selection in early breeding generations because they had the highest heritability.

Keywords : cold tolerance, faba bean, narbon bean, selection
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