

Summary of publication No. (7)

Title: Selection Index for Seedling Root Traits to Improve Frost Tolerance in Winter Faba Bean

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Abstract

Frost stress causes a significant damage to winter faba bean yield. Root traits of faba bean seedlings play an important role in resistance to frost tolerance. The main objective was to study the genetic variation in root traits of faba bean seedlings after frost stress. A set of 208 diverse genotypes was tested. The experiments were conducted in a Frost Growth Chamber (FGCh). Root frost susceptibility (RFS), root fresh matter (RFM), and root dry matter (RDM) were scored on all plants after frost stress. A selection index was calculated to improve RFS using RDM and RFM. The results revealed a high genetic variation between all genotypes for all traits scored. The repeatability estimates was ranged from 0.52 (RDM) to 0.60 (RFM). Such a high genetic variation and repeatability estimated could be used for selection to improve frost tolerance in winter faba bean through breeding programs.

Keywords: Faba bean, Frost tolerance, Roots, Selection index