

Field Evidence for Frost-Induced Cross-Stress Tolerance in Canola

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Abstract

Canola (*Brassica napus* L.) is most susceptible to frost damage from budding stage through early seed fill stage. In early June 2017, a late spring frost occurred while early-flowering (EF) canola cultivars were at the flowering stage and late-flowering (LF) cultivars were at the budding stage. A second frost 12 d later occurred after flowering had ended among EF cultivars but was still underway among LF cultivars. Subsequently, both EF and LF cultivars were exposed to high summer temperatures. There was a disproportionately greater negative impact from exposure to frost and subsequent heat stress among EF cultivars, indicating possible cross-stress tolerance among LF cultivars. The LF cultivars were primed by frost for the heat that followed, while no priming was possible among EF cultivars since flowering was underway when the first stress (i.e., frost) occurred. If correct, this study represents the first known field evidence of frost-induced cross-stress tolerance in canola.

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