

Seeing winter hardiness

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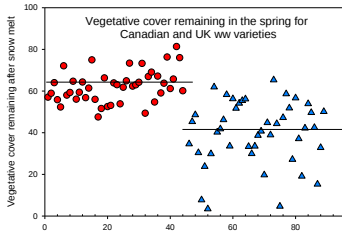
Abstract

In Canada, winter wheat must survive air temperatures as low as -30oC. Snow cover acts as a thermal blanket reducing the direct exposure to chilling air temperatures. In a joint Can/UK wheat project we measured vegetative cover (VC) on 88 different winter wheat varieties in the fall up to snow cover and directly after the snow melted in the spring. Comparing the VC pre- and post-winter provided a direct measure of winter hardiness. While the majority of the wheat cultivars from the UK experienced greater winter kill than the Canadian lines, there were still some with comparable hardiness. Fall and spring growth rates were determined and the UK lines had similar or greater fall growth rates than Canadian lines but lower spring growth rates. Phenomic determined hardiness was correlated to visual ratings and harvest yield.



Objective: Use images to measure the effects of winter on survival Canadian and UK winter wheat varieties. Difference between fall and spring VC as a measure of survival.

Correlations with yield	UK	Canadian
Visual survival rating (VR)	0.27 **	0.10 ns
Fall VC growth rate	0.05 ns	-0.12 ns
Spring VC growth rate	0.53 ***	0.06 ns
After winter VC	0.48 ***	0.02 ns
After winter VC and VR	0.79 ***	-0.06 ns



- Canadian varieties had superior winter survival
- UK yield was correlated with winter survival.
- We can use images to look at winter survival -- sometimes.

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