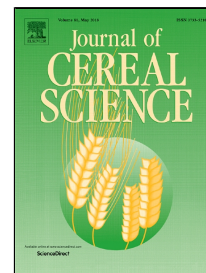


Accepted Manuscript

Pre-harvest sprouting resistance of soft winter wheat varieties and associated grain characteristics

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PII: S0733-5210(18)30496-X

DOI: 10.1016/j.jcs.2018.08.006

Reference: YJCRS 2620

To appear in: *Journal of Cereal Science*

Received Date: 22 June 2018

Accepted Date: 02 August 2018

Please cite this article as: Taehyun Ji, Bryan Penning, Byung-Kee Baik, Pre-harvest sprouting resistance of soft winter wheat varieties and associated grain characteristics, *Journal of Cereal Science* (2018), doi: 10.1016/j.jcs.2018.08.006

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1 **Pre-harvest sprouting resistance of soft winter wheat varieties and associated grain**
2 **characteristics**

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8 **ABSTRACT**

9 The varietal differences in pre-harvest sprouting (PHS) resistance and associated grain
10 characteristics have yet to be understood. We tested the grains of 125-166 soft winter (SW)
11 wheat varieties grown for three years for falling number (FN), α -amylase activity, and degree of
12 sprouting (DS) under field sprouting (FS) and spike wetting conditions, and determined the
13 characteristics of grain produced under non-FS conditions for two years.. Eleven to 31 varieties
14 exhibited FNs higher than 200 under spike wetting conditions, and 16 to 99 varieties exhibited
15 FNs above 300 under FS conditions. Red wheat varieties showed significantly ($p<0.05$) higher
16 FNs than soft white wheat varieties for the grains produced under FS conditions in 2015 and
17 2017 and subjected to spike wetting in 2017. Awned varieties showed significantly ($p<0.05$)
18 lower FNs and higher DS values than awnless varieties when subjected to spike wetting in 2016.
19 Falling number, α -amylase activity, and DS of grain produced under FS in 2015, 2016 and 2017
20 exhibited significant correlations with test weight (TW) ($p<0.01$) of grain produced under non-
21 FS conditions in 2016 and 2017. Five awnless red wheat varieties exhibited relatively high FNs,
22 even under FS and spike wetting conditions.

23 **Keywords:** Pre-harvest sprouting resistance; Soft winter wheat; Field sprouting; Spike wetting;
24 Grain characteristic; Test weight

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