

South Dakota State University

Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange

Agronomy, Horticulture and Plant Science Faculty
Publications

Department of Agronomy, Horticulture, and Plant
Science

12-2007

Nitrogen and Water Stress Impact on Hard Red Spring Wheat Crop Reflectance, Yield and Grain Quality

C. L. Reese

South Dakota State University, Cheryl.Reese@sdstate.edu

D. Clay

South Dakota State University, david.clay@sdstate.edu

D. Beck

South Dakota State University

S. A. Clay

South Dakota State University, sharon.clay@sdstate.edu

G. Seielstad

University of Grand Forks

Follow this and additional works at: https://openprairie.sdstate.edu/plant_faculty_pubs

Recommended Citation

Reese, C. L.; Clay, D.; Beck, D.; Clay, S. A.; and Seielstad, G., "Nitrogen and Water Stress Impact on Hard Red Spring Wheat Crop Reflectance, Yield and Grain Quality" (2007). *Agronomy, Horticulture and Plant Science Faculty Publications*. 146.
https://openprairie.sdstate.edu/plant_faculty_pubs/146

This Abstract is brought to you for free and open access by the Department of Agronomy, Horticulture, and Plant Science at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in Agronomy, Horticulture and Plant Science Faculty Publications by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact michael.biondo@sdstate.edu.

ADS Classic is now [deprecated](#). It will be completely retired in October 2019. Please redirect your searches to the new ADS [modern form](#) or the [classic form](#) . More info can be found on our [blog](#) .

[SAO/NASA ADS](#) [Physics Abstract Service](#)

- [Find Similar Abstracts](#) (with [default settings below](#))
- [Reads History](#)
- [Translate This Page](#)

Title: Nitrogen and Water Stress Impact on Hard Red Spring Wheat Crop Reflectance, Yield and Grain Quality

Authors: [Reese, C. L.](#) ; [Clay, D. E.](#) ; [Beck, D.](#) ; [Clay, S. A.](#) ; [Seielstad, G.](#)

Affiliation: AA(South Dakota State University, Plant Science Department SAG 210, Box 2207A, Brookings, SD 57220, United States Cheryl.Reese@sdsstate.edu), AB(South Dakota State University, Plant Science Department SAG 210, Box 2207A, Brookings, SD 57220, United States David.Clay@sdsstate.edu), AC(South Dakota State University, Dakota Lakes Reserch Farm PO Box 2, Pierre, SD 57501, United States Dwyane.Beck@sdsstate.edu), AD(South Dakota State University, Plant Science Department SAG 210, Box 2207A, Brookings, SD 57220, United States Sharon.Clay@sdsstate.edu), AE(University of Grand Forks, Center for People & Environment Clifford Hall Room 334 4149 University Avenue Stop 9011, Grand Forks, ND 58202, United States gseielst@aero.und.edu)

Publication: American Geophysical Union, Fall Meeting 2007, abstract id. B11F-05

Publication Date: 12/2007

Origin: [AGU](#)

Keywords: 0402 Agricultural systems, 0480 Remote sensing

Bibliographic Code: [2007AGUFM.B11F..05R](#)

Abstract

Water and nitrogen stress impact hard red spring wheat (*Triticum aestivum*) crop reflectance, yield and grain quality. To minimize yield losses from nitrogen (N) and water stress, it is essential to apply appropriate N in relation to water stress. The objective of this experiment was to determine the influence of N and water stress on hard red spring wheat crop reflectance, yield, and grain quality. Complete randomized block experiments were conducted in 2003, 2004 and 2004 in dryland and irrigated fields at three locations in central South Dakota. Treatments consisted of N rates and N application at different growth stages. Nitrogen fertilizer rates ranged from 0 to 200 kg ha⁻¹. Nitrogen fertilizer application times were (1) planting; (2) planting and tillering (Feekes 2 -3) or (3) tillering (Feekes 2 -3). Reflectance data was collected using a CropScan and a CropCircle radiometer. Reflectance data was collected at bare soil, tillering (Feekes 2-3) and flag leaf (Feekes 9-10). Carbon 13 isotopic discrimination ($\delta^{13}C$) was used to determine yield loss to nitrogen or water stress. Reflectance data was compared to yield and $\delta^{13}C$ values or grain quality and $\delta^{13}C$ values. Correlation of crop reflectance (measured at the different growth stages and by the different radiometers) with yield loss to nitrogen or water and grain quality will be presented. Information presented will be used to make corrective nitrogen treatments and improve marketing decisions as related to grain quality.

[Bibtex entry for this abstract](#) [Preferred format for this abstract](#) (see [Preferences](#))

Find Similar Abstracts:

Use:	Authors		
	Title		
	Keywords (in text query field)		
	Abstract Text		
Return:	Query Results	Return	items starting with number
	Query Form		
Database:	Astronomy		
	Physics		
	arXiv e-prints		
