



# ND NOREEN

## HARD RED WINTER WHEAT



### Characteristics

<b>Yield</b>	High Potential
<b>Straw Strength</b>	Excellent
<b>Winter Hardiness</b>	Excellent
<b>Height</b>	Tall

### ND NOREEN

ND Noreen was released in 2020 by the North Dakota Agricultural Experiment Station. The North Dakota Crop Improvement and Seed Association (NDCISA) has rights to production and distribution of seed. ND Noreen is the first release from the newly reestablished NDSU HRWW breeding program.

Similarities to Jerry are ND Noreen has a high yield potential for the region compared to other popular cultivars (Table 1). ND Noreen also has excellent winter hardiness and is a conventional height variety with excellent straw strength in ND growing conditions (Table 2). Overall grain quality for ND Noreen is good. ND Noreen is a hard red winter wheat with plant height and maturity. ND Noreen has been strongly resistant to bacterial leaf streak.

### Strengths

- Very high test weight
- High protein
- Broad resistance to US stem rust races .



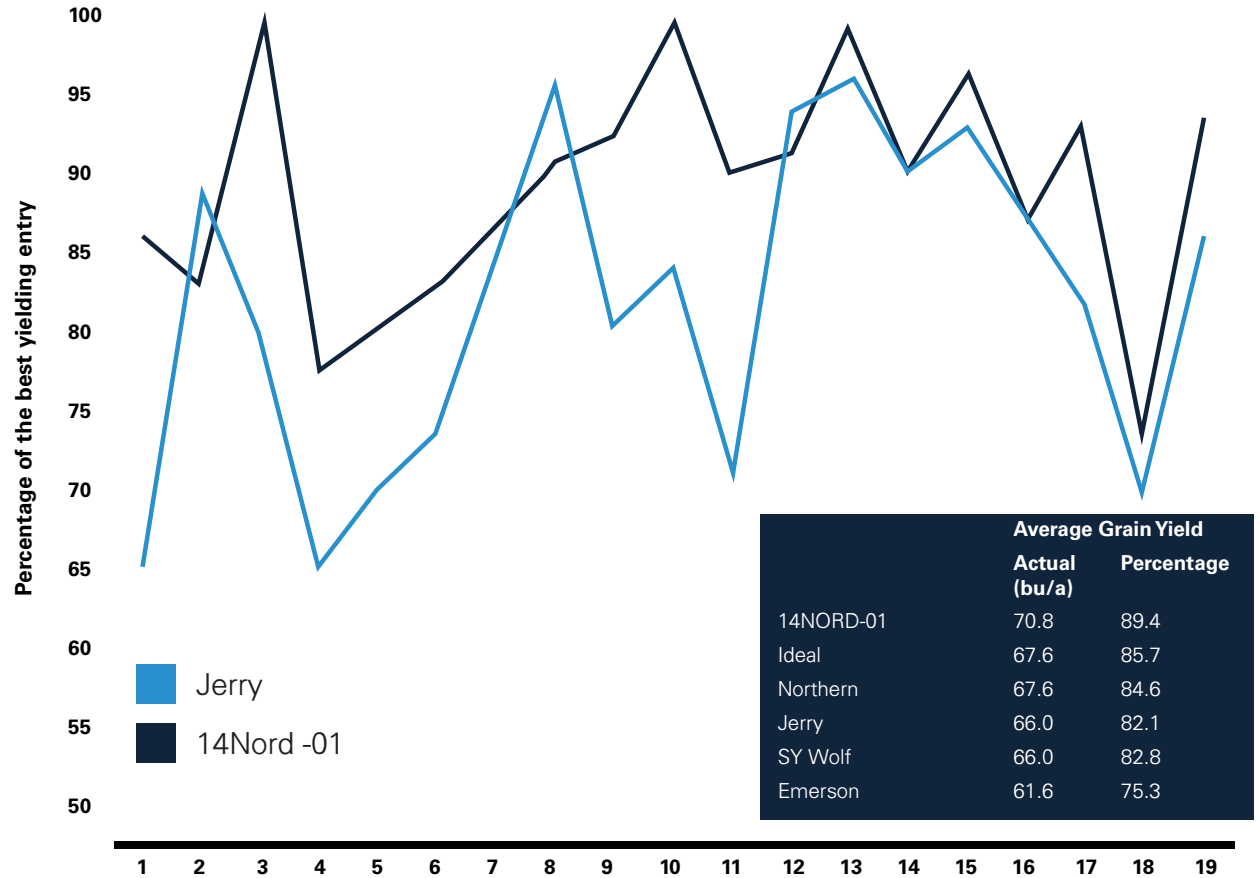
### ND Winter Hardiness VS Other Commerical Cultivars (2017-2018)

WINTER SURVIVAL (0 = NO; 10 = COMPLETE SURVIVAL)				
	AVE	2017 WILL	2018 CASS	2018 CROOK
Jerry	9.6	8.9	10	9.8
Decade	6.5	6.5		
Ideal	8.4	7.1	9.3	8.7
WB Matlock	9.4	9.4		
SY Wolf	8.3	8.3		
Monument	9.0		8.7	9.2
Flourish	3.8	3.8		
AC Emerson	7.7	5.3	8.2	9.5
Loma	2.8	2.8		
Northern	6.9	4.5	8.3	8
ND Noreen	9.3	8.4	9.8	9.8

WILL = WILISTON, ND CASS = CASSELTON, ND CROOK = CROOKSTON, MN

## Agronomic performance of ND Noreen vs Commercial Cultivars across 4 years (2016 - 2019)

KEY	LOCALITY	TRIAL	YEAR	N	CV(%)
1	Hettinger	Variety	2016	30	7.8
2	Minot	Variety	2016	30	5.3
3	Langdon	Variety	2016	30	8.6
4	Carrington(1)	Elite	2017	25	10.9
5	Carrington	Elite	2017	25	12.9
6	Carrington(F)	Elite	2017	25	12.9
7	Hettinger	Elite	2017	25	6.8
8	Minot	Elite	2017	25	10.2
9	Dickinson	Elite	2017	25	11.9
10	Carrington	Elite	2018	26	9.9
11	Casselton	Elite	2018	26	10.4
12	Dickinson	Elite	2018	26	11.7
13	Carrington	Variety	2019	30	8.2
14	Casselton	Variety	2019	30	7.6
15	Langdon	Variety	2019	30	3.6
16	Hettinger	Variety	2019	30	6
17	Minot	Variety	2019	30	9.1
18	Dickinson	Variety	2019	30	8.5
19	Nesson Valley	Irrigated	2019	22	11.3



## Comparison Of Average Test Weight of ND Noreen In The 2019 ND Regional Variety Trial

East	West	
<b>62.2 ND Noreen</b>	62.7 WB4595	<b>East locations include:</b> Carrington, ND and Casselton, ND
61.1 WB4595	<b>61.5 ND Noreen</b>	<b>West locations include:</b> Hettinger, ND, Minot, ND, Dickinson, ND and Nesson Valley, Nd
60.9 AC Emerson	60.7 AC Emerson	
60.8 TCG-Boomlock	60.4 TCG-Boomlock	
60.4 Oahe	60.2 Oahe	
60.3 Ideal	60.1 Northern	
60.3 Keldin	60.1 Peregrine	
60.3 SY Wolf	60.1 SY Wolf	
60.2 08BC379-40-1	59.7 08BC379-40-1	
60 Peregrine	59.6 Keldin	
59.7 Thompson	59.3 Thompson	
59.5 Jerry	59.2 Jerry	
59.5 Overland-Fhb1	59.2 Decade-Fhb1 (MT1793)	
59.2 WB4462	59.2 Ideal	
58.4 Decade-Fhb1 (MT1793)	59.2 WB4462	
58.2 SY Monument	58.8 SY Sunrise	
57.7 Northern	58.4 Loma	
57.7 SY Sunrise	58 Overland-Fhb1	
56.6 NHH1444913-3	57.6 SY Monument	
56.3 Loma	56.8 NHH1444913-3	

### Disease Evaluations:

ND Noreen has shown excellent bacterial streak resistance (Table 4) and intermediate resistance to stripe rust (Table 5) (according to Washington State University it has adult plant, high temperature resistance). Its overall stem rust resistance (Table 6) is better than that of Jerry (it has SrTmp and is heterogeneous for Sr2). Its leaf rust resistance is comparable to that of Jerry (Table 7).

#### BACTERIAL LEAF STREAK (SCORED 26-JUNE 2018; 0 = NONE; 10 = MOST SEVERE)

	AVE (3reps) <sup>1</sup>
Jerry	3
Ideal	3
SY Wolf	7
SY Monument	5
Emerson	4
Northern	4
ND Noreen	2

Casselton, ND

## Stripe Rust Resistance

COMPARISON OF THE STRIPE RUST RESISTANCE OF ND NOREEN WITH THAT OF CONTROL VARIETIES						
RACE	LOCALITY	OVERLAND	WESLEY	JAGALENE	JERRY	ND Noreen
<b>Field Nurseries</b>						
Natural Infection	Rossville, KS	4 (10)	2 (2)	8 (95)	6 (70)	2 (8)
Natural Infection	Bozeman, MT	3 (32)	4 (60)	7 (60)	8 (37)	7 (22)
Natural Infection	Central Ferr, WA	5 (5)	3.5 (2.5)	3.5 (2.5)	3.5 (2.5)	2 (0)
Natural Infection	Pullman, WA	8 (80)	8 (85)	8 (45)	8 (75)	8 (45)
Natural Infection	Mt. Venon, WA	5 (80)	5 (70)	5 (25)	8 (80)	2 (30)
Natural Infection	Walla-Walla, WA	5 (40)	5 (40)	3 (20)	8 (90)	2 (15)
Natural Infection	Lind, WA	8 (20)	8 (20)	8 (30)	8 (20)	8 (20)
	Summary	S	S	MS	S	MS
	Overall Rating	8	9	6	9	7
Natural Infection	Kenya	MRMS	MRMS	MS	MS	MRMS
<b>Test for HTAP Resistance (IT Data)</b>						
PSTv-4,14, 37, 40, 51	Greenhouse Seedling	8	8	8	8	8
PSTv-14	Greenhouse Adult	6,6,6	5,5,5	5,5,5	6,6,6	2,3,3
PSTv-37	Greenhouse Adult	5,5,5	5,5,5	3,5,5	5,5,6	2,3,3
PST-40	Greenhouse Adult	5,5,5	5,5,5	2,2,2	5,5,5	2,2,2
	Possible HTAP	Low	Low	Mod	Low	High

<sup>1</sup> High temperature adult plant resistance was measured under controlled conditions by Bob Graybosch employing gradually increasing daytime temperatures in both seedling (0-20°C) and adult plant (0-30°C) screening tests

# Stripe Rust Resistance

## STEM RUST RESISTANCE OF ND NOREEN AND CONTROLS

RACE	ORIGIN	OVERLAND (SrTMP)	WESLEY (SR6)	JAGALENE (SR24)	JERRY (SR2, SR6)	ND Noreen (SrTemp; SR2?)	SITE
QFCQ (A48)					0	0	NDSU
QTHJ (64E)					3p0 1p3	2p2cn 1p3	NDSU
TPMKC (TNMK-SP)					22++3	12	NDSU
TMLK (72-41-SP)					12cn	;1	NDSU
QFCSC	USA	2	;1-	;1-	;2-	0;/;	ARS, St. Paul
QTHJC	USA	2	22+	;2-	3+	22+	ARS, St. Paul
MCCFC	USA	4	;1-	;2-	0;/;	;	ARS, St. Paul
RCRSC	USA	22+	;2-	2-	;11+	;	ARS, St. Paul
RKRQC	USA	2+	3/2	;	4	3	ARS, St. Paul
TPMKC	USA	4	;1	2	;	;1	ARS, St. Paul
TTTTF	USA	3+	2	2-	3	2	ARS, St. Paul
GFMNC		2	;	;2-	0;	;	ARS, St. Paul
QCCSM	USA	2	;2-	31;/;	;	0;/;	ARS, St. Paul
TTKSK	Kenya	2	2-/4-	2-/4-	3+	22+	ARS, St. Paul
TTKSK	Kenya	2+	3/2-	2-	3+	2	ARS, St. Paul
TKTTF	Ethiopia	3+/2-	2-/2+3	2-	3+	2/3	ARS, St. Paul
TKKTP	Germany	3+	3+	2+/2-	3-	3	ARS, St. Paul
TTKSK	Kenya	22+	3/2-	2-	3+/2-	2+3	ARS, St. Paul
TTKST		22+	3	2+3	3+	2+	ARS, St. Paul
TTTSK	Kenya	2+	3	2-	3	2+	ARS, St. Paul
TTKTT	Kenya	3	3+	3	3+	3+	ARS, St. Paul
TKTTF	Germany	3	3-2;	;	2+3	2+3	ARS, St. Paul
FIELD	Kenya	50S	50S	90S	20S	30S	ARS, St. Paul
FIELD	St. Paul, MN	20-40MR	10MR	0	10-20MRMS	0	ARS, St. Paul
FIELD	Rocky Ford, KS	5(30)	3(1)	3(1)	4(5)	3(1)	IT: 0-10 (Sev: 1-100)

## Leaf Rust Resistance

STEM RUST RESISTANCE OF ND NOREEN AND CONTROLS						
RACE	OVERLAND (Lr77)	WESLEY	JAGALENE (Lr24, Lr37, Lr46)	JERRY (Lr46, Lr77)	14NORD-01 (Lr77)	SITE
MFPS				2cn	;	NDSU
TBDJQ				2p2cn 1p; 1p3	;123	NDSU
THBL				2cn	;12	NDSU
TBDG				12cn	2n	NDSU
MCDL				2cn	3	NDSU
CASS17 <sup>1</sup>				2p2 2p3	2	NDSU
TNBGJ	;1-	;1-	3+	;	;12	ARS, St. Paul
TNRJJ	;	3+	3+	;1+	3+;	ARS, St. Paul
TBBGS	;1-	3+;/	;	;1+	;	ARS, St. Paul
TCRKG	;	3+	;1-	;1-	-	ARS, St. Paul
KFBJG	;	;	3+	;1-	;	ARS, St. Paul
MBDSD	;	3+;/	;	;1-	3/;	ARS, St. Paul
MCTNB	;	;	;	;	;	ARS, St. Paul
MFJSB	3+	3+	3+	3+2+	3+	ARS, St. Paul
MJBGJ	3+	3+	3+	3+	3+	ARS, St. Paul
PBLRG	;1-	3+	;	;1-	3+2+	ARS, St. Paul

<sup>1</sup> Unidentified race (s) - Field Collected