

2021 WSU Variety Testing Hard Winter Wheat Trial, Horse Heaven

Variety Name Yield (Bu/A) Test WF (Lbs/Bu) Plant HT (%) Head (Bu/A) Average (Bu/A)				2021			2 Year	3 Year	5 Year
Released Varieties Keldin 23 60.1 12.8 27 138 34 40 41 Battle AX 23 60.3 12.4 26 138	Variety Name	Yield	Test WT	Protein	Plant HT	Head	Average	Average	Average
Reldin	Hard White Italicized	(Bu/A)	(Lbs/Bu)	(%)	(ln)	Date	(Bu/A)	(Bu/A)	(Bu/A)
Battle AX	Released Varieties								
Canvas 22 62.8 12.5 29 136 Guardian 22 61.1 13.1 26 137 Scorpio 21 58.4 13.2 25 141 31 SY Clearstone CL2 21 60.5 14.7 30 140 27 34 36 Millie 21 61.6 13.8 26 140 140 27 34 36 Millie 21 61.6 13.8 26 140	Keldin	23	60.1	12.8	27	138	34	40	41
Scorpio 21 58.4 13.2 25 141 31 31 31 31 32 32 34 36 36 36 36 37 34 36 36 37 38 36 38 36 38 38 38 38	Battle AX	23	60.3	12.4	26	138			
Scorpio 21 58.4 13.2 25 141 31 SY Clearstone CL2 21 60.5 14.7 30 140 27 34 36 Millie 21 61.6 13.8 26 140 140 27 34 36 Whistler 20 60.6 12.5 29 138 4<	Canvas	22	62.8	12.5	29	136			
SY Clearstone CL2 21 60.5 14.7 30 140 27 34 36 Millie 21 61.6 13.8 26 140 Whistler 20 60.6 12.5 29 138 AP18 AX 20 60.4 12.1 25 136 WB4394 20 60.9 13.4 31 138 28 UI Bronze Jade 20 57.8 13.1 28 140 30 WB4311 20 60.5 13.7 26 138 26 31 LCS Fusion AX 20 58.1 13.8 22 139 30 37 36 LCS Fusion AX 20 58.1 13.8 25 138 27 30 WB4623CLP 19 59.9 14.2 27 140 29 34 Experimental Lines PN13201002-04 24 60.5 13.2 29 138 40 28	Guardian	22	61.1	13.1	26	137			
Millie 21 61.6 13.8 26 140 Whistler 20 60.6 12.5 29 138 AP18 AX 20 60.4 12.1 25 136 WB4394 20 60.9 13.4 31 138 28 UB Pronze Jade 20 57.8 13.1 28 140 30 WB4311 20 60.5 13.7 26 138 26 31 LCS Jet 20 58.1 13.8 22 139 30 37 36 LCS Fusion AX 20 58.3 12.6 27 138 27 30 WB4303 19 60.5 13.8 25 138 27 30 WB4623CLP 19 59.9 14.2 27 140 29 34 Experimental Lines PN13201002-04 24 60.5 13.2 29 138 WA8310 22 60.2 13.3	Scorpio	21	58.4	13.2	25	141	31		
Whistler 20 60.6 12.5 29 138 AP18 AX 20 60.4 12.1 25 136 WB4394 20 60.9 13.4 31 138 28 UI Bronze Jade 20 57.8 13.1 28 140 30 WB4311 20 60.5 13.7 26 138 26 31 LCS Jet 20 58.1 13.8 22 139 30 37 36 LCS Fusion AX 20 58.3 12.6 27 138 26 31 WB4823CLP 19 60.5 13.8 25 138 27 30 WB4623CLP 19 59.9 14.2 27 140 29 34 Experimental Lines PN13201002-04 24 60.5 13.2 29 138 WA8310 22 60.2 13.3 28 140 28 LWH18-0122 21	SY Clearstone CL2	21	60.5	14.7	30	140	27	34	36
AP18 AX 20 60.4 12.1 25 136 WB4394 20 60.9 13.4 31 138 28 UI Bronze Jade 20 57.8 13.1 28 140 30 WB4311 20 60.5 13.7 26 138 26 31 LCS Jet 20 58.1 13.8 22 139 30 37 36 LCS Fusion AX 20 58.3 12.6 27 138 27 30 WB4303 19 60.5 13.8 25 138 27 30 WB4623CLP 19 59.9 14.2 27 140 29 34 Experimental Lines PN13201002-04 24 60.5 13.2 29 138 27 30 WA8310 22 60.2 13.3 28 140 28 28 28 141 33 28 140 28 28 <th>Millie</th> <th>21</th> <th>61.6</th> <th>13.8</th> <th>26</th> <th>140</th> <th></th> <th></th> <th></th>	Millie	21	61.6	13.8	26	140			
WB4394 20 60.9 13.4 31 138 28 UI Bronze Jade 20 57.8 13.1 28 140 30 WB4311 20 60.5 13.7 26 138 26 31 LCS Jet 20 58.3 12.6 27 139 30 37 36 LCS Fusion AX 20 58.3 12.6 27 138 27 30 WB4303 19 60.5 13.8 25 138 27 30 WB4623CLP 19 59.9 14.2 27 140 29 34 Experimental Lines PN13201002-04 24 60.5 13.2 29 138 WA8310 22 60.2 13.3 28 140 28 LWH18-0122 21 57.2 14.0 22 133 26 141 33 LWH19-0192 20 58.0 13.4 25	Whistler	20	60.6	12.5	29	138			
Ul Bronze Jade 20 57.8 13.1 28 140 30 WB4311 20 60.5 13.7 26 138 26 31 LCS Jet 20 58.1 13.8 22 139 30 37 36 LCS Fusion AX 20 58.3 12.6 27 138 27 30 WB4303 19 60.5 13.8 25 138 27 30 WB4623CLP 19 59.9 14.2 27 140 29 34 Experimental Lines PN13201002-04 24 60.5 13.2 29 138 WA8310 22 60.2 13.3 28 140 28 LWH18-0122 21 57.2 14.0 22 139 OR2160011R 20 56.7 13.3 26 141 33 LWH19-0192 20 58.0 13.4 25 140 WA8318 CL+	AP18 AX	20	60.4	12.1	25	136			
WB4311 20 60.5 13.7 26 138 26 31 LCS Jet 20 58.1 13.8 22 139 30 37 36 LCS Fusion AX 20 58.3 12.6 27 138 4 4 4 WB4303 19 60.5 13.8 25 138 27 30 4 WB4623CLP 19 59.9 14.2 27 140 29 34 Experimental Lines PN13201002-04 24 60.5 13.2 29 138 28 140 28 LWH8-0122 21 57.2 14.0 22 139 28 140 28 LWH19-0192 20 58.0 13.4 25 140 28 WA8338 20 57.9 13.9 27 141 33 44 44 44 44 44 44 44 44 44 44 44 <th< th=""><th>WB4394</th><th>20</th><th>60.9</th><th>13.4</th><th>31</th><th>138</th><th>28</th><th></th><th></th></th<>	WB4394	20	60.9	13.4	31	138	28		
LCS Jet 20 58.1 13.8 22 139 30 37 36 LCS Fusion AX 20 58.3 12.6 27 138	UI Bronze Jade	20	57.8	13.1	28	140	30		
LCS Fusion AX 20 58.3 12.6 27 138 WB4303 19 60.5 13.8 25 138 27 30 WB4623CLP 19 59.9 14.2 27 140 29 34 Experimental Lines PN13201002-04 24 60.5 13.2 29 138 WA8310 22 60.2 13.3 28 140 28 LWH18-0122 21 57.2 14.0 22 139 OR2160011R 20 56.7 13.3 26 141 33 LWH19-0192 20 58.0 13.4 25 140 WA8338 20 57.9 13.9 27 141 IDO2006 19 58.7 13.9 28 143 WA8318 CL+ 19 57.0 13.8 25 142 OR2180056R 19 57.0 13.8 25 142 OR2170199R 19 59.4 13.1 26 141 YSC-1001 18	WB4311	20	60.5	13.7	26	138	26	31	
WB4303 19 60.5 13.8 25 138 27 30 WB4623CLP 19 59.9 14.2 27 140 29 34 Experimental Lines PN13201002-04 24 60.5 13.2 29 138 WA8310 22 60.2 13.3 28 140 28 LWH18-0122 21 57.2 14.0 22 139 OR2160011R 20 56.7 13.3 26 141 33 LWH19-0192 20 58.0 13.4 25 140 44 44 WA8338 20 57.9 13.9 27 141 44 44 44 IDO2006 19 58.7 13.9 28 143 44	LCS Jet	20	58.1	13.8	22	139	30	37	36
WB4623CLP 19 59.9 14.2 27 140 29 34 Experimental Lines PN13201002-04 24 60.5 13.2 29 138 WA8310 22 60.2 13.3 28 140 28 LWH18-0122 21 57.2 14.0 22 139 OR2160011R 20 56.7 13.3 26 141 33 LWH19-0192 20 58.0 13.4 25 140 44 WA8338 20 57.9 13.9 27 141 44 IDO2006 19 58.7 13.9 28 143 44 WA8318 CL+ 19 58.8 12.9 29 142 32 OR2180056R 19 57.0 13.8 25 142 OR2170199R 19 59.4 13.1 26 141 YSC-1001 18 58.1 14.1 26 140	LCS Fusion AX	20	58.3	12.6	27	138			
Experimental Lines PN13201002-04 24 60.5 13.2 29 138 WA8310 22 60.2 13.3 28 140 28 LWH18-0122 21 57.2 14.0 22 139 OR2160011R 20 56.7 13.3 26 141 33 LWH19-0192 20 58.0 13.4 25 140 WA8338 20 57.9 13.9 27 141 IDO2006 19 58.7 13.9 28 143 WA8318 CL+ 19 58.8 12.9 29 142 32 OR2180056R 19 57.0 13.8 25 142 OR2170199R 19 59.4 13.1 26 141 YSC-1001 18 58.6 14.1 30 142 LWH19-0907 18 58.1 14.1 26 140 YSC-1002 18 60.7 14.5	WB4303	19	60.5	13.8	25	138	27	30	
PN13201002-04 24 60.5 13.2 29 138 WA8310 22 60.2 13.3 28 140 28 LWH18-0122 21 57.2 14.0 22 139 OR2160011R 20 56.7 13.3 26 141 33 LWH19-0192 20 58.0 13.4 25 140 WA8338 20 57.9 13.9 27 141 IDO2006 19 58.7 13.9 28 143 WA8318 CL+ 19 58.8 12.9 29 142 32 OR2180056R 19 57.0 13.8 25 142 142 142 OR2170199R 19 59.4 13.1 26 141 142 142 YSC-1001 18 58.6 14.1 30 142 144 LWH19-0907 18 58.1 14.1 26 140 YSC-1002 18 <t< th=""><th>WB4623CLP</th><th>19</th><th>59.9</th><th>14.2</th><th>27</th><th>140</th><th>29</th><th>34</th><th></th></t<>	WB4623CLP	19	59.9	14.2	27	140	29	34	
WA8310 22 60.2 13.3 28 140 28 LWH18-0122 21 57.2 14.0 22 139 OR2160011R 20 56.7 13.3 26 141 33 LWH19-0192 20 58.0 13.4 25 140 40 WA8338 20 57.9 13.9 27 141 40 IDO2006 19 58.7 13.9 28 143 43 WA8318 CL+ 19 58.8 12.9 29 142 32 OR2180056R 19 57.0 13.8 25 142 OR2170199R 19 59.4 13.1 26 141 YSC-1001 18 58.6 14.1 30 142 LWH19-0907 18 58.1 14.1 26 140 YSC-1002 18 60.7 14.5 23 136 WA8309 17 56.7 14.1 23 <th>Experimental Lines</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Experimental Lines								
LWH18-0122 21 57.2 14.0 22 139 OR2160011R 20 56.7 13.3 26 141 33 LWH19-0192 20 58.0 13.4 25 140 WA8338 20 57.9 13.9 27 141 IDO2006 19 58.7 13.9 28 143 WA8318 CL+ 19 58.8 12.9 29 142 32 OR2180056R 19 57.0 13.8 25 142 OR2170199R 19 59.4 13.1 26 141 YSC-1001 18 58.6 14.1 30 142 LWH19-0907 18 58.1 14.1 26 140 YSC-1002 18 60.7 14.5 23 136 WA8309 17 56.7 14.1 23 143 30 WA8309 17 56.7 14.1 23 143 30 LSD (0.05) 3 1.3 0.7 3 2 4 3	PN13201002-04	24	60.5	13.2	29	138			
OR2160011R 20 56.7 13.3 26 141 33 LWH19-0192 20 58.0 13.4 25 140 WA8338 20 57.9 13.9 27 141 IDO2006 19 58.7 13.9 28 143 WA8318 CL+ 19 58.8 12.9 29 142 32 OR2180056R 19 57.0 13.8 25 142 OR2170199R 19 59.4 13.1 26 141 YSC-1001 18 58.6 14.1 30 142 LWH19-0907 18 58.1 14.1 26 140 YSC-1002 18 60.7 14.5 23 136 WA8309 17 56.7 14.1 23 143 30 LSD (0.05) 3 1.3 0.7 3 2 4 3 2 Average 20 59.3 13.4 27	WA8310	22	60.2	13.3	28	140	28		
LWH19-0192 20 58.0 13.4 25 140 WA8338 20 57.9 13.9 27 141 IDO2006 19 58.7 13.9 28 143 WA8318 CL+ 19 58.8 12.9 29 142 32 OR2180056R 19 57.0 13.8 25 142 OR2170199R 19 59.4 13.1 26 141 YSC-1001 18 58.6 14.1 30 142 LWH19-0907 18 58.1 14.1 26 140 YSC-1002 18 60.7 14.5 23 136 WA8309 17 56.7 14.1 23 143 30 C.V. % 9 1.1 2.6 5 1 12 12 11 LSD (0.05) 3 1.3 0.7 3 2 4 3 2 Average 20 59.3 13.4 27 139 30 34 38 Highest 24	LWH18-0122	21	57.2	14.0	22	139			
WA8338 20 57.9 13.9 27 141 IDO2006 19 58.7 13.9 28 143 WA8318 CL+ 19 58.8 12.9 29 142 32 OR2180056R 19 57.0 13.8 25 142 OR2170199R 19 59.4 13.1 26 141 YSC-1001 18 58.6 14.1 30 142 LWH19-0907 18 58.1 14.1 26 140 YSC-1002 18 60.7 14.5 23 136 WA8309 17 56.7 14.1 23 143 30 C.V. % 9 1.1 2.6 5 1 12 12 11 LSD (0.05) 3 1.3 0.7 3 2 4 3 2 Average 20 59.3 13.4 27 139 30 34 38 Highest 24 62.8 14.7 31 143 34 40 41	OR2160011R	20	56.7	13.3	26	141	33		
IDO2006	LWH19-0192	20	58.0	13.4	25	140			
WA8318 CL+ 19 58.8 12.9 29 142 32 OR2180056R 19 57.0 13.8 25 142 OR2170199R 19 59.4 13.1 26 141 YSC-1001 18 58.6 14.1 30 142 LWH19-0907 18 58.1 14.1 26 140 YSC-1002 18 60.7 14.5 23 136 WA8309 17 56.7 14.1 23 143 30 C.V.% 9 1.1 2.6 5 1 12 12 11 LSD (0.05) 3 1.3 0.7 3 2 4 3 2 Average 20 59.3 13.4 27 139 30 34 38 Highest 24 62.8 14.7 31 143 34 40 41	WA8338	20	57.9	13.9	27	141			
OR2180056R 19 57.0 13.8 25 142 OR2170199R 19 59.4 13.1 26 141 YSC-1001 18 58.6 14.1 30 142 LWH19-0907 18 58.1 14.1 26 140 YSC-1002 18 60.7 14.5 23 136 WA8309 17 56.7 14.1 23 143 30 C.V.% 9 1.1 2.6 5 1 12 12 11 LSD (0.05) 3 1.3 0.7 3 2 4 3 2 Average 20 59.3 13.4 27 139 30 34 38 Highest 24 62.8 14.7 31 143 34 40 41	IDO2006	19	58.7	13.9	28	143			
OR2170199R 19 59.4 13.1 26 141 YSC-1001 18 58.6 14.1 30 142 LWH19-0907 18 58.1 14.1 26 140 YSC-1002 18 60.7 14.5 23 136 WA8309 17 56.7 14.1 23 143 30 C.V. % 9 1.1 2.6 5 1 12 12 11 LSD (0.05) 3 1.3 0.7 3 2 4 3 2 Average 20 59.3 13.4 27 139 30 34 38 Highest 24 62.8 14.7 31 143 34 40 41	WA8318 CL+	19	58.8	12.9	29	142	32		
YSC-1001 18 58.6 14.1 30 142 LWH19-0907 18 58.1 14.1 26 140 YSC-1002 18 60.7 14.5 23 136 WA8309 17 56.7 14.1 23 143 30 C.V.% 9 1.1 2.6 5 1 12 12 11 LSD (0.05) 3 1.3 0.7 3 2 4 3 2 Average 20 59.3 13.4 27 139 30 34 38 Highest 24 62.8 14.7 31 143 34 40 41	OR2180056R	19	57.0	13.8	25				
LWH19-0907 18 58.1 14.1 26 140 YSC-1002 18 60.7 14.5 23 136 WA8309 17 56.7 14.1 23 143 30 C.V.% 9 1.1 2.6 5 1 12 12 11 LSD (0.05) 3 1.3 0.7 3 2 4 3 2 Average 20 59.3 13.4 27 139 30 34 38 Highest 24 62.8 14.7 31 143 34 40 41	OR2170199R	19	59.4	13.1	26	141			
YSC-1002 18 60.7 14.5 23 136 WA8309 17 56.7 14.1 23 143 30 C.V. % 9 1.1 2.6 5 1 12 12 11 LSD (0.05) 3 1.3 0.7 3 2 4 3 2 Average 20 59.3 13.4 27 139 30 34 38 Highest 24 62.8 14.7 31 143 34 40 41	YSC-1001	18	58.6	14.1	30	142			
WA8309 17 56.7 14.1 23 143 30 C.V. % 9 1.1 2.6 5 1 12 12 11 LSD (0.05) 3 1.3 0.7 3 2 4 3 2 Average 20 59.3 13.4 27 139 30 34 38 Highest 24 62.8 14.7 31 143 34 40 41	LWH19-0907	18	58.1	14.1	26	140			
C.V. % 9 1.1 2.6 5 1 12 12 11 LSD (0.05) 3 1.3 0.7 3 2 4 3 2 Average 20 59.3 13.4 27 139 30 34 38 Highest 24 62.8 14.7 31 143 34 40 41	YSC-1002	18	60.7	14.5	23	136			
LSD (0.05) 3 1.3 0.7 3 2 4 3 2 Average 20 59.3 13.4 27 139 30 34 38 Highest 24 62.8 14.7 31 143 34 40 41	WA8309	17	56.7	14.1	23	143	30		
Average 20 59.3 13.4 27 139 30 34 38 Highest 24 62.8 14.7 31 143 34 40 41	C.V. %	9		-					
Highest 24 62.8 14.7 31 143 34 40 41	LSD (0.05)	3	1.3	0.7	3	2	4	3	2
•	Average	20					30	34	38
Lowest 17 56.7 12.1 22 136 26 30 36	Highest	24	62.8	14.7	31	143	34	40	41
	Lowest	17	56.7	12.1	22	136	26	30	36

Agronomic information						
Planting Date:	10/1/2020					
Harvest Date:	7/23/2021					
Seeding Rate (seeds/ft ²):	12.5					
Previous Crop:	Fallow					
Spring soil test:						
N (lb/ac) 4-ft sample	173					
P ₂ O ₅ (lb/ac) 1-ft sample	75					
S (lb/ac) 2-ft sample	24					
pH (top 6 inches)	6.6					

Herbicide: Herbicides were applied by the cooperator

Trial Notes:

- 1. The Horse Heaven nursery was located 9 miles W of Prosser, WA.
- 2. The nursery was fertilized prior to seeding at a rate of 42N, 30P, 11S. No additional fertilizer was applied after spring soil sampling.
- 3. Overall yield was 47% lower than 2020. Test weight data was not published in 2020.

Cooperator: Chad Smith