

2021 MONTANA INTRASTATE WINTER WHEAT DATA TABLE OF CONTENTS

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2021 Montana Intrastate Winter Wheat Test: List of Varieties and Lines

Variety	Experimental Designation	Origin	Release Year	Pedigree
AAC Wildfire	W512	Alberta/ SECAN	2015	((Norstar*5/PGR16635, AMN4LV) /6/ (RWA53, PI294994/3/ I3C//Norwin/Blizzard/4/2*AC Readymade /5/ Norstar*5/PGR16635// 2*Redwin/3/ AC Readymade) /7/ (A7257W-71-2-1/ A77695W, ID337-R1) // CDC Kestrel, <u>L99-1236</u>) /8/ <u>AC Bellatrix</u>
Battle AX	CO15A018	Colorado: Plainsgold/ Colorado Research Foundation/ Montech	2019	AF28/Byrd//AF26/Byrd/3/AF28/Byrd//AF10 M3/2*Byrd
Bobcat	MTS1588	Montana	2019	selection from a composite of 2 crosses: 07X291, ((SMN82164/SMN82140//Rocky/Tiber, MT9659)/3/S87-101/4/Pronghorn, <u>MT0598</u>)/5// <u>(98X366E29-1</u> , Heyne/Rampart//((MT9513, BigSky sib)) and 07X295, (((Lew/Tiber//Redwin ,MTS92021)/3/Judith/Arapahoe, MTS0023)/4/Pryor/ Genou, <u>01X258C1</u>)/5/ <u>MT0598</u>
Brawl CL Plus	CO06052	Colorado: Plainsgold/ Colorado Research Foundation	2011	Teal 11A/Above//((CO99314, TX91V4931/ Halt)
Byrd CL Plus	CO13003C	Colorado: Plainsgold/ Colorado Research Foundation	2018	CO06072/4*Byrd (Als1, Als2)
Flathead	MT1564	Montana	2019	selection from a composite of 2 crosses: 07X76, <u>Yellowstone*2/5/ (PI640431, BC4F4 line derived from WA007900*5/4/WA007900// Yr5/6*Avocet/3/ WA007900//Yr15/ 6*Avocet)</u> and 07X77, <u>Yellowstone/PI640431/4/(Yellowstone(340.233), Yellowstone*5/3/ (Yellowstone sib, MT9982))//((MTS0222, Rampart*2/Judith))</u>
Fortify SF	CO15SFD107	Colorado: Plainsgold/ Colorado Research Foundation	2019	Byrd/Bearpaw//Byrd
FourOsix	MT1465	Montana	2018	selection from a composite of 5 crosses: 06X272, Yellowstone/ (MT0684, a composite - see pedigree); 06X276, Yellowstone/ (MT06102, , a composite - see pedigree); 06X278, Yellowstone/7/ (MT06110, (Arapahoe/3/Brule//Hiplains/ Newton, SD93528)/6/ (MT9409, Tiber/5/ (TAM W-103/Froid/4/Yogo//Turkey Red/ Oro/3/Centurk, MT8030))); 06X282, Yellowstone/3/(MT06123, '2174'/(MT9440, BigSky sib)//BigSky); and 06X285, Yellowstone/7/ (98X168E1, (Nuwest/4/ (MT88001, Sawmont/Tendoy /3/Yogo// Norin 10/Brevor) /5/(MT7863, Froid/Winoka/ Centurk), MTS9720)/6/(PI 191303, Alba = Belgian variety)/Elkhorn);
Judee	MTS0713	Montana	2011	(Vanguard/Norstar//Judith dwf, 93X312E14)/3/ NuHorizon
Loma	MTS1224	Montana	2016	<u>Yellowstone/5/((Lew/Tiber//Redwin, MTS92045)/3/2*Erhardt, MTS0112)/4/(MTS0125, selection from a composite of 4 crosses)</u>
Northern	MT0978	Montana	2015	selection from a composite of 2 crosses: 00X248, (Yellowstone sib, MT9982)/4/((MT8709, Erhardt sib)/NuWest//Erhardt, MTW0072)/3/ (NW97S151, KSSB0192-3/NE89529) and 00X249, (Judith/(PI262605, Karagach, RWA resis.)/3/(S86-740, Norstar/Plainsman V //Ulianovka) ,MTW0047)/4/MTW0072/NW97S151

2021 Montana Intrastate Winter Wheat Test: List of Varieties and Lines

Variety	Experimental Designation	Origin	Release Year	Pedigree
Warhorse	MTS0808	Montana	2013	selection from a composite of 3 crosses: 00X182, ((Froid/Winoka/7/((Sinvalocho/Wichita// Hope/Cheyenne /3/Wichita/4/Seu Seu 27, TX55-391-56-D8)/5/Westmont, MT6928)/6/ Trader, MT85200)/8/ Redwin, MT9908)/9/ Nu Plains/6/(MTS9862, (NuWest/ Lovrin 24 /4/((Rego/Cheyenne, Sel. 39-18-7)// Winalta, MT7431)/3/(MT7115, Yogo/T. polonicum-70-5), MT91366)/5/ (MTS92137, Lew/Tiber//Redwin)); 00X183, Nu Plains/MTS9862/4/ (MTW0047, Judith/(PI262605, Karagach, RWA resis.)/3/(S86-740, Norstar/ Plainsman V //Ulianovka)); and 00X184, Nu Plains/MTS9862/5/(MTS0028, Vanguard/4/(Lew/Tiber//Redwin, MTSF1570)/3/ Norstar)
Whistler	CO13D1783	Colorado: Plainsgold/ Colorado Research Foundation	2018	CO08W218/Snowmass//Byrd
Yellowstone	MT00159	Montana	2005	F ₂ composite of Promontory/Judith and Judith-dwarf/Promontory

Private Varieties

AP18 AX	CO14A136	Colorado Research Foundation/ Syngenta	2020	AF10/2*Byrd//AF26/Byrd
AP Solid	NP13005004#49	Syngenta	2021	na
Balance	WA8248	Washington: Nutrien	2020	BC002-2/Norwest 553-0
CP7869		Winfield Solutions, LLC, Arden Hills, MN	2018	na
CP7909		Winfield Solutions, LLC, Arden Hills, MN	2018	na
CP7017AX	LCH15ACC-15-17	Limagrain LLC: Winfield Solutions, LLC, Arden Hills, MN	2020	na
CP7050AX	LCH15ACC-7-2	Limagrain LLC: Winfield Solutions, LLC, Arden Hills, MN	2020	na
Keldin	ACS55017	Peter Franck: Seed-Link Inc.; Ontario, Canada, Westbred LLC	2011	Barenburg 235/Carlisle//TRX-A16-3-2
LCS Helix AX	LCS15ACC-8-21	Limagrain LLC	2020	na
LCS Julep	LCH13D-47-1675	Limagrain LLC	2020	na
LCS Steel AX	LCS 18-7071 AX	Limagrain LLC	2021	na
Milestone		Nutrien	2020	na
Ramsay	NAS-7653	Nutrien	2021	na

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Variety	Experimental Designation	Origin	Release Year	Pedigree
StandClear CLP	MTCS1601	Montana/ Loveland Products Inc; Loveland, CO	2020	((L'Govskaya 167/Rampart/6/(MT9409, Tiber/5/ (MT8030, TAM W-103/Froid /4/Yogo//Turkey Red /Oro/3/Centurk)) , <u>MTS0531</u>) /13/ (<u>MTS0532</u> , same pedigree as MTS0531) /12/ (Morgan/5/ (88X24D247-?, <u>96X17E69</u>) /9/((Tiber/5/(MT8030, TAM W-103/Froid /4/Yogo//Turkey Red /Oro/3/Centurk), MT9409)*2/6/IMI Fidel, <u>MTCL0309</u>)/7/ <u>CDC Teal 11A</u> /8/(<u>MTW01143</u> , Promontory/5/ (MT91366, NuWest/ Lovrin 24 /4/((Rego/ Cheyenne, Sel. 39-18-7)/Winalta, MT7431)/3/NuWest)) /10/(<u>MTCL0510</u> , Rampart*3/Fidel/6/ (MTS9720, Nuwest/4/(MT88001, Sawmont/Tendoy /3/Yogo//Norin 10/Brevor)/5/(MT7863, Froid/Winoka/Centurk))) /11/ (<u>MTS0531</u> , see above)
SY 517 CL2	07CL039-7	Syngenta	2017	(BC950811-2-6 / BC98343-09-7, <u>03B212#4</u>) // (<u>CL03040-6-1</u> , iW98-362A1 (imiJagalene, Als3) / AP502CL (Als1) /3/ <u>Art</u>
SY Clearstone 2CL	MTCL1077	Syngenta, Montana	2012	Yellowstone*4/3/MTCL01158/CDC Teal 11A//Jagalene
SY Wolverine	08BC379-40-1	Syngenta	2019	Everest / Platte // SY Wolf
WB4401	XC4109	Bayer: WestBred- Monsanto:	2020	na
WB4418	XA4402	WestBred- Monsanto:	2018	TUKURU-S-3 /3/ KS920750-A-13-1 // KS89180B-2-1-1 / CMBW91M02959T /4/ TX92U3060 / TX91D6564
WB4505	MODI4-5179, XC4209	Bayer: WestBred- Monsanto:	2019	na
WB4792	XB4711	Bayer: WestBred- Monsanto:	2019	na

Public Elite Lines

	MTCL1737			Yellowstone-2CL /3/ Yellowstone*2 /Pelsart// Promontory/ 3*Yellowstone
	MT1745			Decade*2/3/(NI06732, HBK0630-4-5// (NE98632, Niobrara/NE91525)
	MTS1831			selection from a composite of 2 crosses: 09X203, (selection from a composite of 2 crosses, see pedigree , <u>MTS0907</u>)/ (<u>MTS0827</u> , selection from a composite of 2 crosses, see pedigree) and 09X211, (selection from a composite of 2 crosses, see pedigree , <u>MTS0916</u>)/ <u>MTS0827</u>
	MTS1855			selection from a composite of 2 crosses: 10X199, (05X438-aC71, (Erhardt //Judith / CDC Kestrel, MT0097)*2 /3/ Jagalene / Choteau) /4/ Roughrider and 10X200, (05X438-aB30-2, (Erhardt //Judith / CDC Kestrel, MT0097)*2 /3/ Jagalene / Choteau) /4/ (MT0890, selection from a composite of 2 crosses, see pedigree)
	MT1872			selection from a composite of 2 crosses: 09X83, ((MT8709, Erhardt sib)/ NuWest// Erhardt, MT0071) /10/ (Wesley sib, N95L1229) /9/ (MT9834, (Froid/ Winoka/7/ ((Sinvalochol/ Wichita// Hope/ Cheyenne/3/ Wichita/4/ Seu Seun 27, TX55-391-56-D8)/5/ Westmont, MT6928)/6/ Trader, MT85200) /8/ Tiber), <u>MT0859</u>) /11/ ((Judith/(PI262605, Karagach, RWA resis.)/3/(S86-740, Norstar/Plainsman V //Uliyanovka), <u>MTW0047</u>)/4/((G97019, G33/Tomahawk//Karl 92), <u>MT0840</u>) /5/ (<u>MT0873</u> , selection from a composite of 2 crosses, see pedigree) and 09X84, <u>MT0859</u> *2 / (MT0872, selection from a composite of 2 crosses, see pedigree)
	MTS18116			Loma*2/Warhorse
	MTS18149			Loma*2/AAC Gateway
	MTS1903			selection from a composite of 2 crosses: 11X1, (Judee sib, <u>MTS0819</u>) /10/ (Yellowstone loppo plant seln, MT08189) /8/ (Yellowstone loppo plant seln, MT08188) /7/ (MT0419-1, Erhardt /5/ (KS92H21-4, (Plainsman IV / Cheney // Odessa / 2*Eagle /3/ Pawnee / DURM, KS82H238-1) /4/ HF5761 / TAM 105 //Bounty 203) /6/ Pronghorn)), <u>08X350-A6</u> /9/ <u>Warhorse</u> and 11X2, <u>Spur</u> // <u>08X350-A6</u> / <u>Warhorse</u>

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	MTS1908			selection from a composite of 2 crosses: 11X1, (Judee sib, <u>MTS0819</u>) /10/ (Yellowstone loppo plant seln, MT08189) /8/ (Yellowstone loppo plant seln, MT08188) /7/ (MT0419-1, Erhardt /5/ (KS92H21-4, (Plainsman IV / Cheney // Odessa / 2*Eagle /3/ Pawnee / DURM, KS82H238-1) /4/ HF5761 / TAM 105 //Bounty 203) /6/ Pronghorn)), <u>08X350-A6</u> /9/ <u>Warhorse</u> and 11X2, <u>Spur</u> // <u>08X350-A6</u> / <u>Warhorse</u>
	MTS1915			(selection from a composite of 2 crosses containing Judee and Decade, see pedigree , <u>MTS1596</u>) // <u>Emerson</u> / <u>Spur</u>
	MTFH19132			((Karl 92 /10/ (UT000190 (SRW?), Hansel // "wheat" / Ag. podperae /5/ Najah /4/ Delmar /3/ Delmar / PI173438 // Columbia /6 /Hansel, UT1802) /9/ (UT1812, Weston /6/ Delmar /3/ Delmar / PI173438 /4/ Colorow /5/ Warrior / CI13837 /7/ "wheat" / Ag. podperae /8/ PI166921 / Hanse /3/ Delmar / Columbia // CI13837), MT02113)*4 /11/(MTS0359, Rampart / Mironovskaya 61), <u>MT1078</u> /12/ <u>Colter</u> / <u>Emerson</u>
	MTCL19149			((Judith / Yogo, MT9417) // Ogallala, MT0277) /8/ ((Tiber /5/ (MT8030, TAM W-103 /Froid /4/ Yogo // Turkey Red / Oro /3/ Centurk), MT9409)*2/ 6/ IMI Fidel, MTCL0309) /7/ CDC Teal 11A /9/ (MT02136, selection from a composite of 2 crosses - see pedigree), <u>MTCL1125</u>) /9/ (<u>MT1091</u> , Reeder/6*Yellowstone)
	MTCL19151			(selection from a composite of 2 crosses: 00X248, (Yellowstone sib, MT9982) /4/ ((MT8709, Erhardt sib) / NuWest // Erhardt, MTW0072) /3/ (NW97S151, KSSB0192-3 / NE89529) and 00X249, (Judith / (PI262605, Karagach, RWA resis.) /3/ (S86-740, Norstar / Plainsman V //Ulianovka) ,MTW0047)/ 4/ MTW0072 / NW97S151, <u>MT0871</u>) /5/ (<u>06X445B1-2</u> , SY Clearstone sib)
	MT19175			selection from a composite of 2 crosses: 11X202, (Wesley / NE93613, <u>SD08198</u>) // <u>Northern</u> ; 11X203, <u>SD08198</u> /12/ <u>MT1078</u> , ((Karl 92 /10/ (UT000190 (SRW?), Hansel // "wheat" / Ag. podperae /5/ Najah /4/ Delmar /3/ Delmar / PI173438 // Columbia /6 /Hansel, UT1802) /9/ (UT1812, Weston /6/ Delmar /3/ Delmar / PI173438 /4/ Colorow /5/ Warrior / CI13837 /7/ "wheat" / Ag. podperae /8/ PI166921 / Hanse /3/ Delmar / Columbia // CI13837), MT02113)*4 /11/(MTS0359, Rampart / Mironovskaya 61); and 11X204, <u>SD08198</u> /4/ (<u>MT10121</u> , Yellowstone*2 /3/ (Yellowstone sib, MT9982) // (MTS0222, Rampart*2 / Judith))

Table 1. 2021 Intrastate Winter Wheat Test : Statewide Summary

	Cultivar/Line	Pedigree	Yield bu/ac	Test weight lb/bu	Winter survival %	Heading date Julian	Plant height in	Stem solidness (5-25)	Sawfly cutting %	Protein %
	d = cultivars/lines dropped for 2022 test									
	+ = new for 2021, # = paid entry									
#	AAC Wildfire	Alberta/SECAN, 2015	49.4	58.5	95.6	169.3	29.6		20	14.0
#+	AP18 AX	Syngenta 2020	50.7	57.9	32.4	162.6	27.9		27	12.9
#+	Balance	Nutrien, 2020	47.7	57.9	4.7	165.1	27.9		39	14.8
#+	Battle AX	Colorado Wheat Fdn/Montech, 20	48.9	58.2	16.1	163.3	27.5		14	13.4
	Bobcat	Montana, 2019	51.2	59.1	70.2	166.6	26.9	23.2	6	13.8
	Brawl CL Plus	Plainsgold/Colorado Wheat Res F	49.7	59.4	27.7	160.8	28.9		19	14.1
#	d Byrd CL Plus	Plainsgold/Col. Wheat Res Fdn, 2	51.7	57.6	39.0	164.1	30.4		15	13.2
#+	CP7017AX	Winfield United (Croplan), 2020	47.8	57.5	31.0	162.8	26.8		25	13.1
#+	CP7050AX	Winfield United (Croplan), 2020	46.9	60.2	41.9	160.6	28.1		21	13.7
#+	d CP7869	Winfield United (Croplan), 2018	48.5	58.0	90.5	161.2	26.5		35	13.6
#	CP7909	Winfield United (Croplan), 2018	52.1	59.3	40.6	159.3	28.0		24	13.2
	Flathead	Montana, 2019	57.6	59.0	68.4	162.3	28.9		29	13.7
#+	Fortify SF	Plainsgold/Colorado Wheat Res F	49.9	60.1	33.7	163.2	28.8	14.5	31	13.0
	FourOsix	Montana, 2018	53.5	58.7	51.1	165.6	28.1		20	13.8
	Judee	Montana, 2011	43.1	58.8	14.3	165.9	28.6	18.7	23	14.6
	Keldin	WestBred, 2011	55.5	59.3	39.5	166.0	29.1		31	13.4
#	LCH18-7071 (LCS Steel A	Limagrain Cereal Seeds experime	50.7	58.8	39.1	166.8	29.1		35	12.6
#	LCS Helix AX	Limagrain Cereal Seeds, 2020	49.4	59.6	45.2	162.5	26.9		43	12.8
#+	LCS Julep	Limagrain Cereal Seeds, 2020	52.8	60.5	19.1	162.2	28.1		21	14.1
	Loma	Montana, 2016	56.9	58.8	91.3	167.9	28.1	18.2	13	13.6
#+	Milestone	Nutrien, 2020	52.8	56.7	8.9	166.3	27.1		34	13.4
	MT1745	Decade*2/NI06732	55.2	58.6	87.2	166.6	28.5		15	13.3
	d MT1872	MT0859//MT0840//MT0873	50.2	58.3	69.1	166.1	27.4		8	13.3
	+ MT19175	SD08198/Northern	51.8	57.7	68.1	168.0	27.0		16	13.6
	d MTCL1737	YLL-2CL/3/YLL*2/Pelsart//PROM/3	49.1	58.9	69.7	168.4	26.6		7	14.0
	+ d MTCL19149	MTCL1125//MT1091	51.5	58.1	9.6	166.9	28.1		25	13.6
	+ MTCL19151	MT0871/(06X445B1-2, SY Clearst	52.8	58.3	72.5	163.9	27.0		28	13.7
	+ MTFH19132	MT1078//Colter/Emerson	53.1	57.5	38.0	165.0	30.4		48	13.6
	d MTS18116	Loma*2/Warhorse	43.8	58.7	56.1	168.9	25.1	22.2	3	13.7
	MTS18149	Loma*2/AAC Gateway	56.5	59.5	80.1	168.6	26.8	17.2	12	13.8
	d MTS1831	MTS0907//MTS0827	48.8	59.0	50.8	169.1	25.9	21.7	1	13.5
	d MTS1855	05X438-aC71(MT0097*2//Jagalen	48.4	58.5	61.5	167.5	27.0	18.4	9	14.2
	+ MTS1903	(Judee sib, MTS0819)//08X350-A6	54.3	59.1	32.0	168.7	28.0	22.1	3	13.5
	+ MTS1908	(Judee sib, MTS0819)//08X350-A6	53.7	59.0	52.7	169.5	27.9	22.2	1	13.5
	+ d MTS1915	MTS1596//Emerson/Spur	48.1	58.8	59.6	168.9	25.9	22.2	1	13.7
#+	NAS-7653 (Ramsay)	Nutrien experimental line	56.6	58.5	43.5	166.1	28.7		33	13.4
	Northern	Montana, 2015	53.0	58.2	58.1	167.3	28.5		21	14.0
#+	NP13005004#49 (AP Solix	Syngenta experimental line	45.6	61.1	6.1	165.2	26.6		20	13.3
	StandClear CLP	Nutrien, 2020	49.7	59.3	72.9	165.4	28.8	18.0	37	13.8
#	d SY 517 CL2	Syngenta, 2018	43.9	59.6	9.8	161.1	27.1		25	14.2
	SY Clearstone 2CL	Montana/Syngenta, 2012	52.4	58.2	56.6	166.3	30.4		21	13.8
#	SY Wolverine	Syngenta 2019	47.5	59.7	30.6	162.3	26.9		18	13.6
	Warhorse	Montana, 2013	46.9	57.4	69.9	166.2	28.1	20.8	7	14.5
#+	d WB4401	WestBred, 2020	49.5	58.0	27.8	162.0	26.4		19	12.9
#	d WB4418	WestBred, 2018	49.7	58.5	26.4	162.3	26.6		10	13.3
#+	d WB4505	WestBred, 2019	51.8	58.8	41.3	162.6	28.2		41	12.9
#	d WB4792	WestBred, 2019	54.2	60.7	26.0	165.1	29.0		28	12.7
#+	Whistler	Plainsgold/Colorado Wheat Res F	51.7	58.8	70.5	164.4	29.5		36	13.0
	Yellowstone	Montana 2005	57.5	57.8	83.0	166.5	29.5		29	13.7
	Average		50.9	58.7	47.5	165.2	27.9	19.0	21.3	13.6
	LSD (0.05)		6.2	1.1	29.4	1.5	1.3	1.6	17.4	0.5
	C. V. (%)		13.2	2.0	36.0	0.8	4.6	8.3	40.7	3.9

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p = 0.05)

Table 2. 2021 Intrastate Winter Wheat Test (Exp. 3501): Bozeman

Entry	Cultivar/Line	Pedigree	Yield bu/ac	Test weight lb/bu	Heading date Julian	Plant height in	Protein %
	d = cultivars/lines dropped for 2022 test + = new for 2021, # = paid entry		LAT	LAT	LAT	LAT	Bulk
		lattice efficiency relative to RCB	143%	151%	173%	179%	
23 #+	LCS Julep	Limagrain Cereal Seeds, 2020	78.1	60.6	163.1	29.0	14.6
27 #	CP7909	Winfield United (Croplan), 2018	72.6	56.7	160.7	31.6	14.3
35 #+	NAS-7653 (Ramsay)	Nutrien experimental line	72.1	57.0	166.6	29.7	14.3
4	Brawl CL Plus	Plainsgold/Colorado Wheat Res Fd	69.9	57.7	162.3	31.3	14.7
10	Flathead	Montana, 2019	69.9	57.6	164.8	30.9	15.3
3	Keldin	WestBred, 2011	68.6	57.6	166.1	30.2	14.8
7	Northern	Montana, 2015	68.4	58.2	169.1	28.9	15.6
22 #	LCH18-7071 (LCS Steel A)	Limagrain Cereal Seeds experime	68.1	58.6	168.1	31.5	13.8
48 +	MTCL19151	MT0871/(06X445B1-2, SY Clearst	67.8	57.5	164.3	26.5	15.3
24 # d	Byrd CL Plus	Plainsgold/Col. Wheat Res Fdn, 20	67.5	56.1	164.2	30.4	14.6
46 +	MTFH19132	MT1078//Colter/Emerson	67.3	55.3	165.9	31.0	14.6
33 #+	Milestone	Nutrien, 2020	66.7	54.2	165.8	26.9	15.1
25 #+	Fortify SF	Plainsgold/Colorado Wheat Res Fd	65.7	59.4	164.4	29.9	13.8
36	MT1745	Decade*2/Ni06732	65.7	58.1	166.8	28.6	14.3
49 +	MT19175	SD08198/Northern	65.6	57.0	168.3	27.8	15.1
44 +	MTS1908	(Judee sib, MTS0819)//08X350-A6	65.4	59.4	170.0	27.2	15.1
34 #+	Balance	Nutrien, 2020	65.4	57.5	165.5	28.3	15.9
2	Yellowstone	Montana 2005	65.4	56.9	167.9	30.7	15.1
15 #+	AP18 AX	Syngenta 2020	64.0	56.0	164.2	29.2	14.4
6	Loma	Montana, 2016	63.9	58.0	169.3	28.2	14.8
16 #+	NP13005004#49 (AP Solir	Syngenta experimental line	63.9	61.2	166.7	27.3	14.2
43 +	MTS1903	(Judee sib, MTS0819)//08X350-A6	63.8	59.2	169.6	29.0	15.3
20 #+ d	WB4505	WestBred, 2019	63.8	57.6	164.3	29.2	14.4
18 # d	WB4792	WestBred, 2019	63.6	59.4	166.8	30.2	14.2
26 #+	Whistler	Plainsgold/Colorado Wheat Res Fd	63.3	56.1	165.5	30.9	14.6
14 #	SY Wolverine	Syngenta 2019	63.3	58.6	164.2	28.2	14.9
42 d	MT1872	MT0859//MT0840/MT0873	62.9	56.6	167.2	27.2	14.9
19 #+ d	WB4401	WestBred, 2020	62.9	54.8	163.1	27.9	14.5
41 d	MTS1855	05X438-aC71(MT0097*2//Jagalen	62.4	59.7	169.2	27.5	15.2
47 + d	MTCL19149	MTCL1125/MT1091	62.2	57.2	167.6	27.7	15.9
9	FourOsix	Montana, 2018	61.8	57.3	166.6	28.6	15.6
40	MTS18149	Loma*2/AAC Gateway	61.8	59.5	169.8	28.4	14.6
29 #+	CP7017AX	Winfield United (Croplan), 2020	61.8	55.8	163.9	27.8	14.1
13 # d	SY 517 CL2	Syngenta, 2018	61.3	56.4	162.5	29.5	14.9
30 #+	CP7050AX	Winfield United (Croplan), 2020	61.2	59.5	162.1	31.2	13.9
28 #+ d	CP7869	Winfield United (Croplan), 2018	61.0	53.7	162.7	28.5	15.0
8	SY Clearstone 2CL	Montana/Syngenta, 2012	60.9	56.6	167.3	30.0	16.1
21 #	LCS Helix AX	Limagrain Cereal Seeds, 2020	60.5	57.6	164.0	27.7	14.2
32 #	AAC Wildfire	Alberta/SECAN, 2015	59.6	58.2	170.7	29.9	15.6
12	StandClear CLP	Nutrien, 2020	59.1	58.4	166.3	28.8	14.6
31 #+	Battle AX	Colorado Wheat Fdn/Montech, 20	58.6	54.5	164.1	28.9	14.9
37 d	MTCL1737	YLL-2CL/3/YLL*2/Pelsart//PROM/3	57.0	60.0	169.6	27.8	15.3
5	Judee	Montana, 2011	55.5	57.4	166.5	29.3	16.2
11	Bobcat	Montana, 2019	55.4	58.3	167.8	26.8	15.2
17 # d	WB4418	WestBred, 2018	55.4	55.8	163.3	27.9	14.8
1	Warhorse	Montana, 2013	53.2	56.6	167.6	28.3	16.1
38 d	MTS1831	MTS0907/MTS0827	52.5	58.9	169.2	25.6	14.7
39 d	MTS18116	Loma*2/Warhorse	52.0	59.0	169.4	25.5	14.8
45 + d	MTS1915	MTS1596//Emerson/Spur	47.7	59.1	169.6	26.2	14.9
	Average		63.0	57.6	166.2	28.8	14.9
	LSD (0.05)		6.2	1.0	1.0	1.8	
	C. V. (%)		5.6	1.0	0.3	3.5	
	P-value (Varieties)		<.0001	<.0001	<.0001	<.0001	

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 3. 2021 Intrastate Winter Wheat Test (Exp. 3502): Havre

Entry	Cultivar/Line	Pedigree	Yield bu/ac	Test weight lb/bu	Stand %	Heading date Julian	Maturity date Julian	Days to maturity	Plant height in	Sawfly cutting %	Protein %
	d = cultivars/lines dropped for 2022 test + = new for 2021, # = paid entry		LAT	LAT	RCB	LAT	LAT	LAT	LAT	LAT	LAT
		lattice efficiency relative to RCB	139%	119%	104%	109%	108%	113%	135%	135%	166%
10	Flathead	Montana, 2019	35.2	51.8	98	156.3	185.5	29	30.4	35	17.1
27 #	CP7909	Winfield United (Croplan), 2018	34.5	52.3	99	153.9	184.3	30	29.6	38	16.5
30 #+	CP7050AX	Winfield United (Croplan), 2020	33.9	55.3	93	154.4	185.2	31	30.1	34	16.4
13 # d	SY 517 CL2	Syngenta, 2018	33.8	53.6	96	155.9	185.3	29	27.7	20	16.6
28 #+ d	CP7869	Winfield United (Croplan), 2018	32.5	50.3	99	155.4	184.6	29	27.6	27	17.1
17 # d	WB4418	WestBred, 2018	31.8	52.5	97	156.4	186.3	30	28.1	7	16.5
48 +	MTCL19151	MT0871/(06X445B1-2, SY Clearstr	31.1	50.2	100	159.5	186.4	27	29.9	35	17.5
29 #+	CP7017AX	Winfield United (Croplan), 2020	31.1	51.1	95	156.1	183.3	27	28.7	26	16.0
18 # d	WB4792	WestBred, 2019	30.0	54.8	96	160.5	189.7	29	29.1	29	17.1
21 #	LCS Helix AX	Limagrain Cereal Seeds, 2020	29.8	54.5	97	156.0	185.4	30	29.0	45	15.8
4	Brawi CL Plus	Plainsgold/Colorado Wheat Res Fc	29.5	52.1	97	156.0	185.4	29	30.1	24	17.6
20 #+ d	WB4505	WestBred, 2019	29.2	52.7	98	157.6	186.2	29	30.0	51	16.9
23 #+	LCS Julep	Limagrain Cereal Seeds, 2020	29.1	53.4	99	156.7	185.9	29	29.6	15	17.8
31 #+	Battle AX	Colorado Wheat Fdn/Montech, 201	29.1	51.1	97	157.0	187.7	31	30.7	22	17.3
16 #+	NP13005004#49 (AP Solid)	Syngenta experimental line	28.9	56.9	93	161.3	188.1	27	28.2	25	16.1
15 #+	AP18 AX	Syngenta 2020	28.6	52.1	98	156.3	185.8	29	30.3	34	15.8
3	Keldin	WestBred, 2011	28.5	52.7	98	162.7	189.3	27	31.5	37	18.7
14 #	SY Wolverine	Syngenta 2019	28.3	54.5	97	156.6	186.4	30	29.8	20	16.9
2	Yellowstone	Montana 2005	27.9	53.5	97	162.6	189.2	26	30.9	28	17.5
35 #+	NAS-7653 (Ramsay)	Nutrien experimental line	27.2	51.9	98	162.9	189.4	27	29.1	32	18.7
24 # d	Byrd CL Plus	Plainsgold/Col. Wheat Res Fdn, 20	26.7	51.9	100	158.3	186.6	28	31.9	25	17.5
40	MTS18149	Loma*2/AAC Gateway	25.9	54.5	99	163.7	188.4	25	26.9	19	18.2
22 #	LCH18-7071 (LCS Steel AX)	Limagrain Cereal Seeds experimer	25.8	54.6	99	162.7	189.3	27	29.7	41	16.8
33 #+	Milestone	Nutrien, 2020	25.8	51.8	92	162.6	189.8	27	26.0	41	16.8
11	Bobcat	Montana, 2019	25.5	54.8	100	163.1	188.0	25	26.6	9	17.8
6	Loma	Montana, 2016	24.2	53.2	99	163.8	189.9	26	28.1	10	18.3
34 #+	Balance	Nutrien, 2020	23.8	52.4	90	159.2	190.2	31	28.7	44	18.9
9	FourOsix	Montana, 2018	23.7	53.3	98	161.5	188.3	27	29.3	27	17.4
12	StandClear CLP	Nutrien, 2020	23.7	54.4	99	162.7	186.5	24	29.8	55	17.9
19 #+ d	WB4401	WestBred, 2020	23.3	51.9	96	157.5	185.9	28	26.7	24	16.1
46 +	MTFH19132	MT1078//Colter/Emerson	23.1	52.2	100	159.8	186.9	27	31.7	55	17.6
7	Northern	Montana, 2015	22.8	51.6	99	164.1	187.1	23	27.5	33	18.2
25 #+	Fortify SF	Plainsgold/Colorado Wheat Res Fc	22.8	54.4	98	157.9	187.0	29	30.9	49	15.9
26 #+	Whistler	Plainsgold/Colorado Wheat Res Fc	21.4	54.4	100	160.7	187.8	27	30.5	41	16.9
36	MT1745	Decade*2/NI06732	21.4	54.4	96	163.4	188.0	25	28.4	26	17.0
42 d	MT1872	MT0859//MT0840/MT0873	21.3	53.9	99	162.1	187.3	25	28.3	12	17.2
44 +	MTS1908	(Judee sib, MTS0819)//08X350-A6	21.0	54.3	98	165.0	188.5	24	26.6	0	18.0
47 + d	MTCL19149	MTCL1125/MT1091	20.7	51.9	99	162.7	188.6	26	31.2	37	17.5
1	Warhorse	Montana, 2013	20.6	51.5	99	162.8	189.1	26	26.6	13	18.3
49 +	MT19175	SD08198/Northern	19.8	53.2	98	164.0	189.3	25	27.9	25	17.6
41 d	MTS1855	05X438-aC71(MT0097*2//Jagalen	19.4	52.9	99	163.7	189.5	26	27.6	13	18.9
43 +	MTS1903	(Judee sib, MTS0819)//08X350-A6	19.4	54.0	99	164.7	190.4	26	28.2	3	18.0
8	SY Clearstone 2CL	Montana/Syngenta, 2012	18.8	54.6	99	162.8	188.6	26	31.5	26	17.6
37 d	MTCL1737	YLL-2CL/3/YLL*2/Pelsart//PROM/3	18.8	55.8	97	163.7	190.5	27	27.7	5	17.2
5	Judee	Montana, 2011	18.7	55.0	96	162.1	190.3	28	29.5	41	18.4
38 d	MTS1831	MTS0907/MTS0827	17.7	56.2	98	164.7	191.2	27	24.2	0	17.8
32 #	AAC Wildfire	Alberta/SECAN, 2015	17.6	54.1	98	164.5	189.7	25	27.1	17	17.6
39 d	MTS18116	Loma*2/Warhorse	17.6	55.5	95	163.4	189.7	26	25.1	4	17.9
45 + d	MTS1915	MTS1596//Emerson/Spur	16.5	54.6	97	164.1	189.4	25	23.8	0	17.3
	Average		25.3	53.4	97.5	160.5	187.8	27.3	28.7	26.1	17.4
	LSD (0.05)		3.3	1.4	3.0	1.7	1.8	2.4	2.1	14.4	0.4
	C. V. (%)		7.6	1.5	1.9	0.6	0.6	0.2	5.1	31.9	1.4
	P-value (Varieties)		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p = 0.05)

Table 4. 2021 Intrastate Winter Wheat Test (Exp. 3503): Sidney

Entry	Cultivar/Line	Pedigree	Yield bu/ac	Test weight lb/bu	Winter survival %		Heading date Julian LAT	Plant height in RCB	Protein %
					21-Apr	later			
					LAT	LAT			
		lattice efficiency relative to RCB	145%	106%	106%	117%	107%	100%	182%
40	MTS18149	Loma*2/AAC Gateway	53.9	61.1	65.0	80.1	162.8	18.7	12.1
32 #	AAC Wildfire	Alberta/SECAN, 2015	53.5	59.0	84.0	95.6	162.6	24.5	12.0
2	Yellowstone	Montana 2005	53.1	60.5	58.7	83.0	159.9	23.0	12.0
49 +	MT19175	SD08198/Northern	52.3	60.5	55.7	68.1	161.2	21.5	11.6
36	MT1745	Decade*2/NI06732	51.9	60.7	74.0	87.2	159.7	23.2	11.7
6	Loma	Montana, 2016	51.4	61.5	75.5	91.3	159.8	22.2	11.9
26 #+	Whistler	Plainsgold/Colorado Wheat Res F	50.6	61.7	42.9	70.5	159.0	22.3	11.5
41	d MTS1855	05X438-aC71(MT0097*2//Jagalen	48.4	60.4	57.0	61.5	159.8	19.4	13.2
48 +	MTCL19151	MT0871/(06X445B1-2, SY Clearst	47.9	61.3	54.7	72.5	158.9	20.6	12.7
28 #+ d	CP7869	Winfield United (Croplan), 2018	47.5	63.0	66.5	90.5	155.7	19.4	11.6
22 #	LCH18-7071 (LCS Steel AX	now LCS Steel AX - Limagrain, 20	47.1	61.5	28.1	39.1	161.3	23.0	10.5
37	d MTCL1737	YLL-2CL/3/YLL*2/Pelsart//PROM/	46.8	60.1	48.6	69.7	160.5	20.5	13.1
11	Bobcat	Montana, 2019	46.3	62.1	63.0	70.2	160.8	21.9	12.3
10	Flathead	Montana, 2019	45.1	62.9	57.6	68.4	157.3	21.4	12.1
45 + d	MTS1915	MTS1596//Emerson/Spur	44.8	60.7	39.4	59.6	161.1	20.5	12.1
12	StandClear CLP	Nutrien, 2020	44.3	62.8	42.7	72.9	160.0	25.1	12.1
7	Northern	Montana, 2015	43.2	61.1	49.1	58.1	159.6	21.1	12.7
9	FourOsix	Montana, 2018	41.2	60.8	39.2	51.1	159.2	21.7	12.6
3	Keldin	WestBred, 2011	40.5	61.8	39.3	39.5	160.5	21.1	11.7
39	d MTS18116	Loma*2/Warhorse	40.2	61.0	35.6	56.1	163.2	21.1	12.4
42	d MT1872	MT0859//MT0840/MT0873	40.0	61.1	40.5	69.1	159.7	20.6	11.8
1	Warhorse	Montana, 2013	39.7	60.5	50.8	69.9	160.3	22.0	12.9
38	d MTS1831	MTS0907/MTS0827	39.3	60.9	36.3	50.8	163.1	21.2	12.2
46 +	MTFH19132	MT1078//Colter/Emerson	39.1	60.4	35.2	38.0	159.5	22.6	12.0
21 #	LCS Helix AX	Limagrain Cereal Seeds, 2020	38.9	63.8	25.0	45.2	156.8	21.3	11.6
44 +	MTS1908	(Judee sib, MTS0819)//08X350-A€	38.6	60.7	21.0	52.7	164.7	23.2	11.9
18 #	d WB4792	WestBred, 2019	38.5	64.6	21.7	26.0	158.9	22.4	10.7
43 +	MTS1903	(Judee sib, MTS0819)//08X350-A€	38.3	61.0	18.1	32.0	163.2	20.9	12.1
8	SY Clearstone 2CL	Montana/Syngenta, 2012	37.8	59.9	39.4	56.6	160.4	22.6	12.6
20 #+ d	WB4505	WestBred, 2019	37.7	63.0	29.1	41.3	157.5	20.3	11.8
25 #+	Fortify SF	Plainsgold/Colorado Wheat Res F	37.7	63.7	17.8	33.7	158.4	20.4	12.2
35 #+	NAS-7653 (Ramsay)	Nutrien experimental line	37.5	61.9	31.3	43.5	159.8	20.5	11.5
15 #+	AP18 AX	Syngenta 2020	34.9	62.0	14.9	32.4	158.0	21.3	12.0
47 + d	MTCL19149	MTCL1125/MT1091	34.8	60.6	11.8	9.6	161.9	19.4	12.1
30 #+	CP7050AX	Winfield United (Croplan), 2020	33.8	64.1	35.3	41.9	155.4	22.0	12.6
17 #	d WB4418	WestBred, 2018	33.5	63.1	19.0	26.4	157.5	19.0	11.9
29 #+	CP7017AX	Winfield United (Croplan), 2020	30.4	61.3	15.1	31.0	159.2	22.0	11.6
24 #	d Byrd CL Plus	Plainsgold/Col. Wheat Res Fdn, 21	30.3	61.5	15.8	39.0	159.2	22.7	11.4
31 #+	Battle AX	Colorado Wheat Fdn/Montech, 20	27.6	62.3	8.0	16.1	159.6	18.6	12.3
19 #+ d	WB4401	WestBred, 2020	27.4	61.3	22.5	27.8	157.2	18.0	11.4
27 #	CP7909	Winfield United (Croplan), 2018	27.2	63.2	24.9	40.6	154.2	20.9	11.4
14 #	SY Wolverine	Syngenta 2019	26.0	62.7	14.8	30.6	157.3	19.4	12.5
4	Brawl CL Plus	Plainsgold/Colorado Wheat Res F	24.4	63.5	13.8	27.7	155.0	20.8	13.2
23 #+	LCS Julep	Limagrain Cereal Seeds, 2020	23.8	65.3	11.9	19.1	157.1	21.6	13.0
33 #+	Milestone	Nutrien, 2020	23.6	58.7	2.0	8.9	163.5	22.7	12.3
34 #+	Balance	Nutrien, 2020	19.0	58.0	1.4	4.7	161.2	21.2	14.5
5	Judee	Montana, 2011	18.6	60.6	10.5	14.3	160.3	20.6	14.4
13 #	d SY 517 CL2	Syngenta, 2018	15.7	63.7	3.1	9.8	156.8	18.1	13.9
16 #+	NP13005004#49 (AP Solid)	Syngenta experimental line	11.6	64.5	4.1	6.1	159.0	19.7	12.8
Average			37.9	61.7	34.1	47.5	159.5	21.2	12.2
LSD (0.05)			9.0	1.0	17.2	29.4	2.1	3.2	0.7
C. V. (%)			13.7	1.0	29.8	36.0	0.8	9.2	3.3
P-value (Varieties)			<.0001	<.0001	<.0001	<.0001	<.0001	0.0089	<.0001

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 5. 2021 Intrastate Winter Wheat Test (Exp. 3504): Williston, ND

Severe drought - plots emerged in late spring after rains					
Entry #	Cultivar/Line	Pedigree	Yield bu/ac	Test weight lb/bu	Protein %
d = cultivars/lines dropped for 2022 test			LAT	LAT	LAT
+ = new for 2021, # = paid entry					
		lattice efficiency relative to RCB	478%	185%	374%
35 #+	NAS-7653 (Ramsay)	Nutrien experimental line	28.2	58.3	14.7
40	MTS18149	Loma*2/AAC Gateway	27.6	58.1	16.1
22 #	LCH18-7071 (LCS Steel AX)	Limagrain Cereal Seeds experime	27.6	58.4	13.5
2	Yellowstone	Montana 2005	27.4	57.8	15.5
47 + d	MTCL19149	MTCL1125/MT1091	27.2	58.0	15.4
42 d	MT1872	MT0859//MT0840/MT0873	27.0	58.9	15.1
45 + d	MTS1915	MTS1596//Emerson/Spur	26.9	59.4	15.6
7	Northern	Montana, 2015	26.8	58.1	15.5
43 +	MTS1903	(Judee sib, MTS0819)//08X350-A€	26.7	58.6	15.2
34 #+	Balance	Nutrien, 2020	26.2	58.1	16.7
3	Keldin	WestBred, 2011	26.1	58.2	14.9
10	Flathead	Montana, 2019	25.8	58.5	15.9
49 +	MT19175	SD08198/Northern	25.7	58.8	15.5
11	Bobcat	Montana, 2019	25.6	58.2	15.6
9	FourOsix	Montana, 2018	25.6	58.2	15.7
6	Loma	Montana, 2016	25.5	58.1	15.4
8	SY Clearstone 2CL	Montana/Syngenta, 2012	25.4	57.8	14.7
33 #+	Milestone	Nutrien, 2020	25.3	56.9	15.0
39 d	MTS18116	Loma*2/Warhorse	25.2	59.3	14.6
26 #+	Whistler	Plainsgold/Colorado Wheat Res F	25.2	58.9	14.7
36	MT1745	Decade*2/NI06732	25.1	58.9	14.7
38 d	MTS1831	MTS0907/MTS0827	24.9	58.8	14.7
37 d	MTCL1737	YLL-2CL/3/YLL*2/Pelsart//PROM/	24.4	58.4	16.2
32 #	AAC Wildfire	Alberta/SECAN, 2015	24.3	57.7	15.8
48 +	MTCL19151	MT0871//06X445B1-2, SY Clearst	23.9	58.5	15.5
23 #+	LCS Julep	Limagrain Cereal Seeds, 2020	23.8	61.3	15.9
44 +	MTS1908	(Judee sib, MTS0819)//08X350-A€	23.8	57.7	15.8
46 +	MTFH19132	MT1078//Colter/Emerson	23.7	57.2	16.4
31 #+	Battle AX	Colorado Wheat Fdn/Montech, 20	23.6	59.1	15.3
1	Warhorse	Montana, 2013	23.3	57.6	16.2
41 d	MTS1855	05X438-aC71(MT0097*2//Jagalen	22.9	58.8	15.9
28 #+ d	CP7869	Winfield United (Croplan), 2018	22.6	58.9	15.4
20 #+ d	WB4505	WestBred, 2019	22.6	59.8	14.5
15 #+	AP18 AX	Syngenta 2020	22.1	58.2	15.4
29 #+	CP7017AX	Winfield United (Croplan), 2020	22.0	58.5	14.7
5	Judee	Montana, 2011	22.0	59.3	16.6
18 # d	WB4792	WestBred, 2019	21.9	61.1	14.6
16 #+	NP13005004#49 (AP Solid)	Syngenta experimental line	21.7	60.4	16.0
24 # d	Byrd CL Plus	Plainsgold/Col. Wheat Res Fdn, 2	21.3	58.4	14.8
14 #	SY Wolverine	Syngenta 2019	21.2	59.4	15.9
21 #	LCS Helix AX	Limagrain Cereal Seeds, 2020	21.0	58.3	14.8
19 #+ d	WB4401	WestBred, 2020	20.7	58.9	14.9
12	StandClear CLP	Nutrien, 2020	20.4	59.0	16.2
25 #+	Fortify SF	Plainsgold/Colorado Wheat Res F	20.3	59.4	15.7
27 #	CP7909	Winfield United (Croplan), 2018	19.2	59.1	15.7
17 # d	WB4418	WestBred, 2018	18.9	58.5	16.3
30 #+	CP7050AX	Winfield United (Croplan), 2020	17.7	59.5	17.1
13 # d	SY 517 CL2	Syngenta, 2018	17.4	60.4	17.7
4	Brawl CL Plus	Plainsgold/Colorado Wheat Res F	16.4	59.2	16.7
Average			23.7	58.7	15.5
LSD (0.05)			3.1	0.9	0.6
C. V. (%)			7.4	0.9	2.0
P-value (Varieties)			<.0001	<.0001	<.0001

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p = 0.05)

Table 6. 2021 Intrastate Winter Wheat Test (Exp. 3505): Kalispell

Entry	Cultivar/Line	Pedigree	Yield bu/ac	Test weight lb/bu	Stand % 13-May	Heading date Julian	Plant height in	Protein %
			LAT	LAT	LAT	LAT	RCB	RCB
		lattice efficiency relative to RCB	133%	122%	109%	124%	104%	101%
2	Yellowstone	Montana 2005	146.3	57.1	95	165.7	33.6	12.0
40	MTS18149	Loma*2/AAC Gateway	144.1	58.2	96	168.5	31.7	12.0
35 #+	NAS-7653 (Ramsay)	Nutrien experimental line	140.5	58.0	96	166.0	31.8	11.2
33 #+	Milestone	Nutrien, 2020	140.2	56.7	94	166.6	30.8	11.2
43 +	MTS1903	(Judee sib, MTS0819)//08X350-Ac	139.0	59.2	96	169.9	33.7	11.3
44 +	MTS1908	(Judee sib, MTS0819)//08X350-Ac	138.8	59.2	96	170.2	33.9	11.2
6	Loma	Montana, 2016	138.6	58.3	95	168.9	31.1	11.7
36	MT1745	Decade*2/NI06732	137.7	58.4	96	168.4	33.6	11.4
8	SY Clearstone 2CL	Montana/Syngenta, 2012	134.7	57.9	95	166.2	36.0	11.8
18 # d	WB4792	WestBred, 2019	134.2	60.1	96	165.4	33.1	11.0
10	Flathead	Montana, 2019	133.8	58.1	96	159.0	29.9	11.7
3	Keldin	WestBred, 2011	130.9	59.1	96	165.9	32.7	11.7
46 +	MTFH19132	MT1078//Colter/Emerson	130.8	57.5	95	165.7	34.6	11.3
9	FourOsix	Montana, 2018	130.4	58.2	95	166.6	31.1	11.4
38 d	MTS1831	MTS0907/MTS0827	130.1	57.8	94	172.3	29.5	11.2
24 # d	Byrd CL Plus	Plainsgold/Col. Wheat Res Fdn, 2	129.3	57.3	96	165.3	35.3	11.1
7	Northern	Montana, 2015	129.2	57.8	97	167.1	34.2	11.7
34 #+	Balance	Nutrien, 2020	128.6	57.8	94	166.4	32.3	12.2
45 + d	MTS1915	MTS1596//Emerson/Spur	127.8	57.7	96	171.4	32.3	11.5
42 d	MT1872	MT0859//MT0840/MT0873	127.7	57.5	94	165.8	32.3	11.5
20 #+ d	WB4505	WestBred, 2019	126.1	58.4	95	160.0	30.8	10.8
32 #	AAC Wildfire	Alberta/SECAN, 2015	126.0	59.4	95	169.3	36.0	11.8
47 + d	MTCL19149	MTCL1125/MT1091	125.6	57.8	95	166.1	32.5	11.1
37 d	MTCL1737	YLL-2CL/3/YLL*2/Pelsart//PROM/	125.1	56.6	94	170.8	30.4	11.5
15 #+	AP18 AX	Syngenta 2020	123.8	57.2	95	160.7	31.1	11.7
11	Bobcat	Montana, 2019	123.3	58.7	96	166.0	32.5	12.0
25 #+	Fortify SF	Plainsgold/Colorado Wheat Res F	123.1	58.6	95	161.0	33.8	11.5
19 #+ d	WB4401	WestBred, 2020	122.6	58.1	96	158.7	31.2	11.0
23 #+	LCS Julep	Limagrain Cereal Seeds, 2020	121.1	57.9	94	161.0	30.9	12.2
17 # d	WB4418	WestBred, 2018	119.7	56.2	95	161.2	28.6	11.4
26 #+	Whistler	Plainsgold/Colorado Wheat Res F	119.5	58.8	96	163.8	33.8	11.1
49 +	MT19175	SD08198/Northern	117.5	56.2	97	169.7	30.2	11.8
31 #+	Battle AX	Colorado Wheat Fdn/Montech, 20	115.8	58.6	94	162.6	30.4	11.9
22 #	LCH18-7071 (LCS Steel AX)	Limagrain Cereal Seeds experime	114.2	56.6	97	166.3	34.6	11.8
48 +	MTCL19151	MT0871//06X445B1-2, SY Clearst	113.1	57.1	93	164.3	29.2	12.1
12	StandClear CLP	Nutrien, 2020	113.0	58.7	94	164.9	33.6	12.0
21 #	LCS Helix AX	Limagrain Cereal Seeds, 2020	112.3	57.9	97	160.8	30.0	11.3
28 #+ d	CP7869	Winfield United (Croplan), 2018	112.0	57.5	93	158.3	27.6	11.9
41 d	MTS1855	05X438-aC71(MT0097*2//Jagalen	111.6	59.4	97	167.9	32.2	11.8
39 d	MTS18116	Loma*2/Warhorse	111.3	57.3	97	170.8	27.1	11.4
1	Warhorse	Montana, 2013	110.9	56.4	96	166.1	33.9	12.7
4	Brawl CL Plus	Plainsgold/Colorado Wheat Res F	107.6	58.7	97	158.8	31.6	13.6
29 #+	CP7017AX	Winfield United (Croplan), 2020	104.7	56.8	96	162.5	26.5	11.9
14 #	SY Wolverine	Syngenta 2019	102.7	57.2	97	159.2	29.6	11.6
5	Judee	Montana, 2011	102.5	59.1	95	165.6	33.1	12.2
16 #+	NP13005004#49 (AP Solid)	Syngenta experimental line	102.0	58.8	96	166.4	29.6	12.0
27 #	CP7909	Winfield United (Croplan), 2018	101.3	58.5	94	154.3	30.6	12.9
30 #+	CP7050AX	Winfield United (Croplan), 2020	100.7	58.2	95	158.0	29.6	12.8
13 # d	SY 517 CL2	Syngenta, 2018	94.7	58.8	92	159.2	29.6	13.0
	Average		122.4	58.0	95.4	164.8	31.7	11.7
	LSD (0.05)		17.6	1.1	ns	1.6	2.1	0.6
	C. V. (%)		8.3	1.1	2.2	0.6	4.1	3.3
	P-value (Varieties)		<.0001	<.0001	0.7917	<.0001	<.0001	<.0001

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 7. 2021 Intrastate Winter Wheat Test (Exp. 3507): Moccasin

Entry	Cultivar/Line	Pedigree	Yield bu/ac	Test weight lb/bu	Heading date from Jan-1	Plant height in	Protein %
	d = cultivars/lines dropped for 2022 test + = new for 2021, # = paid entry		LAT	LAT	LAT	RCB	LAT
		lattice efficiency relative to RCB	155%	118%	108%	101%	119%
14 #	SY Wolverine	Syngenta 2019	38.8	62.3	167.1	22.0	10.3
10	Flathead	Montana, 2019	38.6	61.9	166.5	23.3	10.7
8	SY Clearstone 2CL	Montana/Syngenta, 2012	36.8	59.8	169.4	24.7	10.4
49 +	MT19175	SD08198/Northern	36.5	60.3	172.5	22.0	10.4
24 # d	Byrd CL Plus	Plainsgold/Col. Wheat Res Fdn, 2	36.5	60.2	168.4	25.3	9.5
15 #+	AP18 AX	Syngenta 2020	35.5	61.0	166.6	21.3	9.6
27 #	CP7909	Winfield United (Croplan), 2018	35.3	61.6	163.3	22.0	10.1
36	MT1745	Decade*2/NI06732	35.2	60.9	171.2	23.3	10.2
4	Brawl CL Plus	Plainsgold/Colorado Wheat Res F	35.2	63.9	163.5	24.0	10.6
31 #+	Battle AX	Colorado Wheat Fdn/Montech, 20	35.1	60.6	166.9	21.0	9.1
7	Northern	Montana, 2015	35.0	61.0	171.6	24.0	10.7
17 # d	WB4418	WestBred, 2018	34.9	62.6	165.8	21.7	10.0
48 +	MTCL19151	MT0871/(06X445B1-2, SY Clearst	34.8	62.1	166.5	22.7	10.0
26 #+	Whistler	Plainsgold/Colorado Wheat Res F	34.7	61.6	167.5	24.3	9.9
40	MTS18149	Loma*2/AAC Gateway	34.5	60.5	173.6	21.3	11.4
20 #+ d	WB4505	WestBred, 2019	34.4	61.6	167.1	22.7	10.4
25 #+	Fortify SF	Plainsgold/Colorado Wheat Res F	34.2	62.0	167.3	22.7	10.0
18 # d	WB4792	WestBred, 2019	34.2	62.2	168.2	24.7	9.3
29 #+	CP7017AX	Winfield United (Croplan), 2020	34.0	59.8	165.3	23.7	10.6
3	Keldin	WestBred, 2011	33.9	61.5	170.3	26.7	10.3
43 +	MTS1903	(Judee sib, MTS0819)//08X350-A(	33.9	61.2	172.3	23.7	10.6
2	Yellowstone	Montana 2005	33.9	60.4	170.9	22.7	10.3
47 + d	MTCL19149	MTCL1125/MT1091	33.8	60.9	171.1	23.0	10.5
11	Bobcat	Montana, 2019	33.0	61.3	171.1	22.0	10.5
6	Loma	Montana, 2016	32.9	61.0	171.7	23.3	10.5
30 #+	CP7050AX	Winfield United (Croplan), 2020	32.8	63.6	164.2	23.3	11.1
46 +	MTFH19132	MT1078//Colter/Emerson	32.6	60.0	168.1	24.3	10.1
1	Warhorse	Montana, 2013	32.3	61.4	169.8	23.3	11.1
33 #+	Milestone	Nutrien, 2020	32.3	60.2	169.2	22.7	10.9
19 #+ d	WB4401	WestBred, 2020	32.1	59.4	165.4	21.7	11.0
23 #+	LCS Julep	Limagrain Cereal Seeds, 2020	32.0	64.4	165.9	22.3	11.2
42 d	MT1872	MT0859//MT0840/MT0873	32.0	61.4	169.4	23.7	10.4
9	FourOsix	Montana, 2018	31.9	60.4	169.1	22.7	10.9
21 #	LCS Helix AX	Limagrain Cereal Seeds, 2020	31.7	61.9	167.6	21.7	10.2
41 d	MTS1855	05X438-aC71(MT0097*2//Jagalen	31.7	61.2	171.8	22.0	10.8
16 #+	NP13005004#49 (AP Solid	Syngenta experimental line	31.6	63.8	168.9	22.3	10.8
12	StandClear CLP	Nutrien, 2020	31.5	61.4	168.4	21.7	10.9
35 #+	NAS-7653 (Ramsay)	Nutrien experimental line	31.5	61.1	170.3	25.7	10.6
44 +	MTS1908	(Judee sib, MTS0819)//08X350-A(	31.4	60.9	173.1	24.0	11.1
22 #	LCH18-7071 (LCS Steel A	Limagrain Cereal Seeds experime	31.2	60.1	170.5	24.7	9.9
32 #	AAC Wildfire	Alberta/SECAN, 2015	31.0	59.0	174.1	24.0	11.6
5	Judee	Montana, 2011	30.9	61.2	169.7	24.0	11.0
34 #+	Balance	Nutrien, 2020	30.2	60.3	167.6	22.3	11.5
13 # d	SY 517 CL2	Syngenta, 2018	29.8	62.6	162.9	22.7	10.9
37 d	MTCL1737	YLL-2CL/3/YLL*2/Pelsart//PROM/	29.7	61.2	172.3	22.3	11.1
45 + d	MTS1915	MTS1596//Emerson/Spur	28.4	60.8	173.4	20.7	11.8
38 d	MTS1831	MTS0907/MTS0827	27.7	60.5	172.1	23.0	11.3
39 d	MTS18116	Loma*2/Warhorse	26.4	60.7	172.9	21.3	10.7
28 #+ d	CP7869	Winfield United (Croplan), 2018	22.5	61.1	165.9	22.7	11.7
	Average		32.9	61.2	168.9	23.0	10.6
	LSD (0.05)		6.8	0.9	1.4	2.6	0.9
	C. V. (%)		11.8	0.8	0.5	6.9	4.7
	P-value (Varieties)		0.0482	<.0001	<.0001	0.0127	<.0001

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p = 0.05)

Table 8. 2021 Intrastate Winter Wheat Test (Exp. 3508): Huntley

Entry	Cultivar/Line	Pedigree	Yield bu/ac	Test weight lb/bu	Plant height in	Grain moisture %	Protein %
	d = cultivars/lines dropped for 2022 test + = new for 2021, # = paid entry		LAT	RCB	LAT	LAT	LAT
		lattice efficiency relative to RCB	134%	100%	110%	106%	114%
27 #	CP7909	Winfield United (Croplan), 2018	69.5	61.0	33.7	7.7	13.3
48 +	MTCL19151	MT0871/(06X445B1-2, SY Clearst	65.6	59.2	32.3	7.1	14.6
8	SY Clearstone 2CL	Montana/Syngenta, 2012	64.8	58.8	35.0	7.2	15.2
6	Loma	Montana, 2016	63.8	58.2	30.8	7.1	14.8
9	FourOsix	Montana, 2018	63.4	59.1	32.3	7.0	14.6
35 #+	NAS-7653 (Ramsay)	Nutrien experimental line	63.1	58.1	31.8	7.0	14.7
30 #+	CP7050AX	Winfield United (Croplan), 2020	61.7	62.2	32.3	7.9	13.7
47 + d	MTCL19149	MTCL1125/MT1091	61.6	58.0	32.2	6.8	15.1
31 #+	Battle AX	Colorado Wheat Fdn/Montech, 20	61.4	55.8	31.7	7.6	14.6
18 # d	WB4792	WestBred, 2019	61.3	60.1	33.1	7.7	14.3
12	StandClear CLP	Nutrien, 2020	60.5	58.9	31.7	7.7	14.9
43 +	MTS1903	(Judee sib, MTS0819)//08X350-A(	60.3	58.4	30.1	7.3	14.9
4	Brawl CL Plus	Plainsgold/Colorado Wheat Res F	60.2	59.2	33.8	7.2	15.1
44 +	MTS1908	(Judee sib, MTS0819)//08X350-A(	60.2	58.0	30.0	7.4	14.7
25 #+	Fortify SF	Plainsgold/Colorado Wheat Res F	60.1	60.7	34.3	7.7	13.7
19 #+ d	WB4401	WestBred, 2020	60.0	56.0	31.5	7.0	14.2
36	MT1745	Decade*2/NI06732	59.3	58.8	32.9	7.1	14.8
20 #+ d	WB4505	WestBred, 2019	59.2	58.7	33.5	7.2	14.0
3	Keldin	WestBred, 2011	59.0	58.1	31.1	7.1	15.1
2	Yellowstone	Montana 2005	58.8	56.8	33.6	7.2	15.2
10	Flathead	Montana, 2019	58.6	57.2	32.7	7.2	15.5
14 #	SY Wolverine	Syngenta 2019	58.6	59.9	30.4	7.5	14.7
17 # d	WB4418	WestBred, 2018	58.1	59.5	31.1	7.2	14.0
37	MTCL1737	YLL-2CL/3/YLL*2/Pelsart//PROM/	57.7	59.1	29.6	7.1	15.0
21 #	LCS Helix AX	Limagrain Cereal Seeds, 2020	57.5	59.3	30.7	7.7	13.4
11	Bobcat	Montana, 2019	57.2	57.9	28.9	7.2	15.0
29 #+	CP7017AX	Winfield United (Croplan), 2020	57.1	56.8	30.9	7.5	14.0
24 # d	Byrd CL Plus	Plainsgold/Col. Wheat Res Fdn, 2	56.8	57.5	33.9	7.3	15.0
16 #+	NP13005004#49 (AP Solid)	Syngenta experimental line	56.7	60.5	30.0	7.7	14.1
46 +	MTFH19132	MT1078//Colter/Emerson	55.9	57.0	35.5	6.9	15.3
7	Northern	Montana, 2015	55.8	57.7	31.8	6.8	15.7
15 #+	AP18 AX	Syngenta 2020	55.7	56.3	30.9	7.4	13.9
13 # d	SY 517 CL2	Syngenta, 2018	55.2	58.6	32.7	7.5	15.3
23 #+	LCS Julep	Limagrain Cereal Seeds, 2020	55.1	61.0	32.6	7.6	15.1
40	MTS18149	Loma*2/AAC Gateway	55.0	58.4	30.4	7.1	15.4
26 #+	Whistler	Plainsgold/Colorado Wheat Res F	54.3	56.7	34.2	7.5	14.8
22 #	LCH18-7071 (LCS Steel AX)	Limagrain Cereal Seeds experime	54.2	58.0	31.8	7.5	14.3
33 #+	Milestone	Nutrien, 2020	54.0	53.6	29.6	6.6	15.1
49 +	MT19175	SD08198/Northern	53.9	55.8	29.8	7.1	15.3
5	Judee	Montana, 2011	53.2	58.2	33.4	7.6	15.9
1	Warhorse	Montana, 2013	50.8	57.2	32.3	6.7	16.3
34 #+	Balance	Nutrien, 2020	50.6	57.5	31.5	7.2	16.4
38	MTS1831	MTS0907/MTS0827	50.0	58.1	29.3	7.1	14.9
28 #+ d	CP7869	Winfield United (Croplan), 2018	48.7	57.4	30.0	7.3	15.0
32 #	AAC Wildfire	Alberta/SECAN, 2015	48.4	57.4	31.6	6.9	15.9
42	MT1872	MT0859//MT0840/MT0873	48.3	56.9	29.6	7.2	14.4
41	MTS1855	05X438-aC71(MT0097*2//Jagalen	46.7	57.5	31.1	6.8	16.4
45 + d	MTS1915	MTS1596//Emerson/Spur	44.2	57.6	28.0	6.9	15.2
39	MTS18116	Loma*2/Warhorse	39.8	57.6	26.7	6.9	16.1
	Average		56.8	58.2	31.6	7.2	14.9
	LSD (0.05)		9.2	1.8	1.9	0.5	1.1
	C. V. (%)		9.4	1.9	51.7	4.2	4.3
	P-value (Varieties)						

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p = 0.05)

Table 9. 2021 Intrastate Winter Wheat Test (Exp. 3518): Conrad

Entry	Cultivar/Line	Pedigree	Yield bu/ac	Test weight lb/bu	Heading date Julian	Plant height in	Protein %
	d = cultivars/lines dropped for 2022 test						
	+ = new for 2021, # = paid entry		LAT	LAT	RCB	LAT	LAT
		lattice efficiency relative to RCB	145%	124%	100%	108%	149%
6	Loma	Montana, 2016	70.0	61.7	173.7	29.9	11.4
36	MT1745	Decade*2/NI06732	67.9	62.3	170.0	29.4	11.1
23 #+	LCS Julep	Limagrain Cereal Seeds, 2020	66.3	64.7	169.3	29.1	12.4
2	Yellowstone	Montana 2005	64.6	61.1	172.0	31.8	11.4
46 +	MTFH19132	MT1078//Colter/Emerson	63.9	60.3	170.7	32.5	11.3
9	FourOsix	Montana, 2018	62.8	61.5	170.7	30.5	11.1
45 + d	MTS1915	MTS1596//Emerson/Spur	62.3	61.5	174.0	28.4	10.6
42 d	MT1872	MT0859//MT0840/MT0873	61.6	61.9	172.3	29.1	10.9
40	MTS18149	Loma*2/AAC Gateway	61.6	61.4	173.3	29.0	11.1
10	Flathead	Montana, 2019	60.6	62.3	170.0	31.3	11.2
18 # d	WB4792	WestBred, 2019	60.4	63.8	170.7	29.0	10.4
11	Bobcat	Montana, 2019	58.9	62.4	171.0	29.3	11.3
38 d	MTS1831	MTS0907/MTS0827	58.5	61.9	173.3	26.2	10.9
7	Northern	Montana, 2015	58.5	61.8	172.3	30.1	10.6
24 # d	Byrd CL Plus	Plainsgold/Col. Wheat Res Fdn, 2	58.5	61.2	169.3	32.4	10.3
8	SY Clearstone 2CL	Montana/Syngenta, 2012	58.4	61.0	171.7	31.9	11.0
27 #	CP7909	Winfield United (Croplan), 2018	57.6	61.9	169.3	26.8	10.8
49 +	MT19175	SD08198/Northern	57.4	61.3	172.3	28.1	10.7
41 d	MTS1855	05X438-aC71(MT0097*2//Jagalen	57.2	62.1	172.3	27.3	11.1
1	Warhorse	Montana, 2013	56.8	61.6	170.7	29.3	11.4
19 #+ d	WB4401	WestBred, 2020	56.7	61.9	170.0	25.5	10.0
3	Keldin	WestBred, 2011	56.2	62.2	170.7	28.8	10.9
47 + d	MTCL19149	MTCL1125/MT1091	55.8	60.6	172.0	29.0	10.7
43 +	MTS1903	(Judee sib, MTS0819)//08X350-Ac	55.3	61.6	172.7	29.3	10.8
33 #+	Milestone	Nutrien, 2020	55.0	60.1	170.3	28.3	10.5
20 #+ d	WB4505	WestBred, 2019	54.9	61.5	169.0	29.4	10.0
44 +	MTS1908	(Judee sib, MTS0819)//08X350-Ac	54.1	61.5	173.7	28.9	11.0
35 #+	NAS-7653 (Ramsay)	Nutrien experimental line	53.9	61.7	170.7	29.6	11.2
12	StandClear CLP	Nutrien, 2020	53.6	62.7	170.0	29.9	11.2
32 #	AAC Wildfire	Alberta/SECAN, 2015	53.5	61.9	174.3	31.6	10.6
5	Judee	Montana, 2011	53.5	62.9	171.0	29.9	11.8
26 #+	Whistler	Plainsgold/Colorado Wheat Res F	53.0	62.6	170.0	29.7	10.8
4	Brawl CL Plus	Plainsgold/Colorado Wheat Res F	52.6	63.4	169.3	27.2	11.2
15 #+	AP18 AX	Syngenta 2020	52.3	61.7	169.7	28.7	10.0
39 d	MTS18116	Loma*2/Warhorse	51.0	62.1	173.7	26.1	10.6
29 #+	CP7017AX	Winfield United (Croplan), 2020	49.9	61.4	170.0	25.4	11.1
17 # d	WB4418	WestBred, 2018	49.8	62.0	169.7	26.0	11.3
21 #	LCS Helix AX	Limagrain Cereal Seeds, 2020	49.1	62.9	169.7	25.6	10.1
48 +	MTCL19151	MT0871/(06X445B1-2, SY Clearst	48.9	61.8	169.7	25.9	11.4
16 #+	NP13005004#49 (AP Solid)	Syngenta experimental line	48.6	63.8	169.0	27.1	11.2
31 #+	Battle AX	Colorado Wheat Fdn/Montech, 20	48.6	62.5	169.3	28.2	10.9
25 #+	Fortify SF	Plainsgold/Colorado Wheat Res F	47.3	62.2	170.0	28.4	10.9
22 #	LCH18-7071 (LCS Steel AX)	Limagrain Cereal Seeds experime	47.1	61.3	171.7	27.2	10.0
34 #+	Balance	Nutrien, 2020	46.6	61.3	170.7	28.2	11.8
28 #+ d	CP7869	Winfield United (Croplan), 2018	46.5	62.4	169.0	26.9	11.2
37 d	MTCL1737	YLL-2CL/3/YLL*2/Pelsart//PROM/	45.7	60.7	173.3	26.6	11.3
14 #	SY Wolverine	Syngenta 2019	44.8	63.0	169.3	25.6	11.1
30 #+	CP7050AX	Winfield United (Croplan), 2020	44.3	62.6	169.7	26.4	11.6
13 # d	SY 517 CL2	Syngenta, 2018	40.1	63.5	169.3	26.4	11.8
	Average		54.9	62.0	170.9	28.5	11.0
	LSD (0.05)		14.4	0.8	2.6	2.5	0.9
	C. V. (%)		15.1	0.7	0.9	5.1	5.0
	P-value (Varieties)		0.0201	<.0001	<.0001	<.0001	0.0003

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p = 0.05)

Table 10. 2021 Intrastate Winter Wheat Test (Exp. 35FB): Fort Benton/Carter (Nutrien)

Entry	Cultivar/Line	Pedigree	Yield bu/ac	Test weight lb/bu	Plant height in	Sawfly cutting %	Protein %
d = cultivars/lines dropped for 2022 test							
+ = new for 2021, # = paid entry			RCB	Bulk	RCB	RCB	Bulk
22-Jul							
3	Keldin	WestBred, 2011	55.4	60.2	31.0	24	12.9
35 #+	NAS-7653 (Ramsay)	Nutrien experimental line	55.1	58.7	31.7	34	13.5
33 #+	Milestone	Nutrien, 2020	52.7	56.6	30.0	27	13.3
43 +	MTS1903	(Judee sib, MTS0819)//08X350-Af	52.0	59.5	29.3	2	13.3
4	Brawl CL Plus	Plainsgold/Colorado Wheat Res F	51.9	60.1	32.7	14	13.9
27 #	CP7909	Winfield United (Croplan), 2018	51.7	59.4	29.0	10	13.4
10	Flathead	Montana, 2019	50.4	61.0	31.3	22	13.4
44 +	MTS1908	(Judee sib, MTS0819)//08X350-Af	49.9	59.7	29.7	2	13.0
13 # d	SY 517 CL2	Syngenta, 2018	47.3	61.3	29.7	30	14.0
16 #+	NP13005004#49 (AP Solid)	Syngenta experimental line	45.7	63.3	28.3	15	12.4
23 #+	LCS Julep	Limagrain Cereal Seeds, 2020	45.7	60.9	29.7	27	14.3
17 # d	WB4418	WestBred, 2018	45.0	58.4	30.0	12	13.3
14 #	SY Wolverine	Syngenta 2019	44.1	60.5	30.3	15	14.1
40	MTS18149	Loma*2/AAC Gateway	44.0	60.5	28.0	5	12.9
18 # d	WB4792	WestBred, 2019	43.7	61.5	30.7	27	12.9
21 #	LCS Helix AX	Limagrain Cereal Seeds, 2020	43.6	59.8	29.3	40	13.4
26 #+	Whistler	Plainsgold/Colorado Wheat Res F	43.1	57.5	30.0	30	13.1
28 #+ d	CP7869	Winfield United (Croplan), 2018	43.0	56.8	29.0	44	13.7
48 +	MTCL19151	MT0871/(06X445B1-2, SY Clearst	42.3	57.8	29.0	20	14.2
6	Loma	Montana, 2016	42.1	58.9	31.0	15	13.2
46 +	MTFH19132	MT1078//Colter/Emerson	41.4	56.9	31.0	40	13.7
12	StandClear CLP	Nutrien, 2020	41.4	58.1	30.0	19	14.1
47 + d	MTCL19149	MTCL1125/MT1091	41.4	57.2	29.7	12	14.3
22 #	LCH18-7071 (LCS Steel AX)	Limagrain Cereal Seeds experime	41.3	57.1	30.3	29	13.1
2	Yellowstone	Montana 2005	40.5	56.2	29.7	30	14.3
9	FourOsix	Montana, 2018	40.3	57.2	28.7	14	14.7
31 #+	Battle AX	Colorado Wheat Fdn/Montech, 20	40.2	55.8	30.7	5	14.2
19 #+ d	WB4401	WestBred, 2020	39.9	57.8	28.7	14	13.1
15 #+	AP18 AX	Syngenta 2020	39.2	57.4	30.0	20	13.2
34 #+	Balance	Nutrien, 2020	39.0	56.7	30.7	34	15.2
29 #+	CP7017AX	Winfield United (Croplan), 2020	38.9	56.1	29.0	24	13.7
20 #+ d	WB4505	WestBred, 2019	38.7	57.2	29.7	30	13.7
24 # d	Byrd CL Plus	Plainsgold/Col. Wheat Res Fdn, 2	38.3	53.3	31.0	5	14.9
38	MTS1831	MTS0907/MTS0827	38.3	58.1	28.3	3	13.9
25 #+	Fortify SF	Plainsgold/Colorado Wheat Res F	37.8	59.8	29.7	12	13.2
49 +	MT19175	SD08198/Northern	37.5	56.5	28.7	7	14.3
7	Northern	Montana, 2015	37.0	56.6	30.0	9	15.0
37	MTCL1737	YLL-2CL/3/YLL*2/Pelsart//PROM/	37.0	57.3	28.0	9	15.2
30 #+	CP7050AX	Winfield United (Croplan), 2020	36.0	60.3	30.0	9	14.0
11	Bobcat	Montana, 2019	35.6	58.0	27.3	3	14.6
41	MTS1855	05X438-aC71(MT0097*2//Jagalen	35.1	56.7	29.0	4	14.8
1	Warhorse	Montana, 2013	34.3	54.1	28.7	1	15.8
8	SY Clearstone 2CL	Montana/Syngenta, 2012	34.0	55.9	31.7	17	14.7
45 + d	MTS1915	MTS1596//Emerson/Spur	33.9	57.9	27.0	1	14.4
5	Judee	Montana, 2011	32.6	56.1	29.0	5	14.8
36	MT1745	Decade*2/NI06732	32.4	55.3	28.3	4	14.8
42	MT1872	MT0859//MT0840/MT0873	31.0	53.5	28.7	4	13.8
32 #	AAC Wildfire	Alberta/SECAN, 2015	30.5	57.0	31.7	22	14.7
39	MTS18116	Loma*2/Warhorse	30.5	56.6	28.0	2	15.0
Average			41.3	57.9	29.6	23.3	13.9
LSD (0.05)			11.5		2.0	13.4	
C. V. (%)			17.3		4.1	35.4	
P-value (Varieties)			<.0001		<.0001	<.0001	

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 11. 2021 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Yield (bu/a)

Cultivar/Line	Bozeman LAT	Havre LAT	Sidney LAT	Williston LAT	Kalispell LAT	Moccasin LAT	Huntley LAT	Conrad LAT	Ft. Benton RCB	9 Loc Avg.
lattice efficiency	143%	139%	145%	478%	133%	155%	134%	145%		
Flathead	69.9	35.2	45.1	25.8	133.8	38.6	58.6	60.6	50.4	57.6
Yellowstone	65.4	27.9	53.1	27.4	146.3	33.9	58.8	64.6	40.5	57.5
Loma	63.9	24.2	51.4	25.5	138.6	32.9	63.8	70.0	42.1	56.9
#+ NAS-7653 (Ramsay)	72.1	27.2	37.5	28.2	140.5	31.5	63.1	53.9	55.1	56.6
MTS18149	61.8	25.9	53.9	27.6	144.1	34.5	55.0	61.6	44.0	56.5
Keldin	68.6	28.5	40.5	26.1	130.9	33.9	59.0	56.2	55.4	55.5
MT1745	65.7	21.4	51.9	25.1	137.7	35.2	59.3	67.9	32.4	55.2
+ MTS1903	63.8	19.4	38.3	26.7	139.0	33.9	60.3	55.3	52.0	54.3
# d WB4792	63.6	30.0	38.5	21.9	134.2	34.2	61.3	60.4	43.7	54.2
+ MTS1908	65.4	21.0	38.6	23.8	138.8	31.4	60.2	54.1	49.9	53.7
FourOsix	61.8	23.7	41.2	25.6	130.4	31.9	63.4	62.8	40.3	53.5
+ MTFH19132	67.3	23.1	39.1	23.7	130.8	32.6	55.9	63.9	41.4	53.1
Northern	68.4	22.8	43.2	26.8	129.2	35.0	55.8	58.5	37.0	53.0
#+ LCS Julep	78.1	29.1	23.8	23.8	121.1	32.0	55.1	66.3	45.7	52.8
#+ Milestone	66.7	25.8	23.6	25.3	140.2	32.3	54.0	55.0	52.7	52.8
+ MTCL19151	67.8	31.1	47.9	23.9	113.1	34.8	65.6	48.9	42.3	52.8
SY Clearstone 2CL	60.9	18.8	37.8	25.4	134.7	36.8	64.8	58.4	34.0	52.4
# CP7909	72.6	34.5	27.2	19.2	101.3	35.3	69.5	57.6	51.7	52.1
+ MT19175	65.6	19.8	52.3	25.7	117.5	36.5	53.9	57.4	37.5	51.8
#+ d WB4505	63.8	29.2	37.7	22.6	126.1	34.4	59.2	54.9	38.7	51.8
# d Byrd CL Plus	67.5	26.7	30.3	21.3	129.3	36.5	56.8	58.5	38.3	51.7
#+ Whistler	63.3	21.4	50.6	25.2	119.5	34.7	54.3	53.0	43.1	51.7
+ d MTCL19149	62.2	20.7	34.8	27.2	125.6	33.8	61.6	55.8	41.4	51.5
Bobcat	55.4	25.5	46.3	25.6	123.3	33.0	57.2	58.9	35.6	51.2
#+ AP18 AX	64.0	28.6	34.9	22.1	123.8	35.5	55.7	52.3	39.2	50.7
# LCH18-7071 (LCS Steel)	68.1	25.8	47.1	27.6	114.2	31.2	54.2	47.1	41.3	50.7
d MT1872	62.9	21.3	40.0	27.0	127.7	32.0	48.3	61.6	31.0	50.2
#+ Fortify SF	65.7	22.8	37.7	20.3	123.1	34.2	60.1	47.3	37.8	49.9
Brawl CL Plus	69.9	29.5	24.4	16.4	107.6	35.2	60.2	52.6	51.9	49.7
StandClear CLP	59.1	23.7	44.3	20.4	113.0	31.5	60.5	53.6	41.4	49.7
# d WB4418	55.4	31.8	33.5	18.9	119.7	34.9	58.1	49.8	45.0	49.7
#+ d WB4401	62.9	23.3	27.4	20.7	122.6	32.1	60.0	56.7	39.9	49.5
# AAC Wildfire	59.6	17.6	53.5	24.3	126.0	31.0	48.4	53.5	30.5	49.4
# LCS Helix AX	60.5	29.8	38.9	21.0	112.3	31.7	57.5	49.1	43.6	49.4
d MTCL1737	57.0	18.8	46.8	24.4	125.1	29.7	57.7	45.7	37.0	49.1
#+ Battle AX	58.6	29.1	27.6	23.6	115.8	35.1	61.4	48.6	40.2	48.9
d MTS1831	52.5	17.7	39.3	24.9	130.1	27.7	50.0	58.5	38.3	48.8
#+ d CP7869	61.0	32.5	47.5	22.6	112.0	22.5	48.7	46.5	43.0	48.5
d MTS1855	62.4	19.4	48.4	22.9	111.6	31.7	46.7	57.2	35.1	48.4
+ d MTS1915	47.7	16.5	44.8	26.9	127.8	28.4	44.2	62.3	33.9	48.1
#+ CP7017AX	61.8	31.1	30.4	22.0	104.7	34.0	57.1	49.9	38.9	47.8
#+ Balance	65.4	23.8	19.0	26.2	128.6	30.2	50.6	46.6	39.0	47.7
# SY Wolverine	63.3	28.3	26.0	21.2	102.7	38.8	58.6	44.8	44.1	47.5
#+ CP7050AX	61.2	33.9	33.8	17.7	100.7	32.8	61.7	44.3	36.0	46.9
Warhorse	53.2	20.6	39.7	23.3	110.9	32.3	50.8	56.8	34.3	46.9
#+ NP13005004#49 (AP Soli)	63.9	28.9	11.6	21.7	102.0	31.6	56.7	48.6	45.7	45.6
# d SY 517 CL2	61.3	33.8	15.7	17.4	94.7	29.8	55.2	40.1	47.3	43.9
d MTS18116	52.0	17.6	40.2	25.2	111.3	26.4	39.8	51.0	30.5	43.8
Judee	55.5	18.7	18.6	22.0	102.5	30.9	53.2	53.5	32.6	43.1
Average	63.0	25.3	37.9	23.7	122.4	32.9	56.8	54.9	41.3	50.9
LSD (0.05)	6.2	3.3	9.0	3.1	17.6	6.8	9.2	14.4	11.5	6.2
C. V. (%)	5.6	7.6	13.7	7.4	8.3	11.8	9.4	15.1	17.3	13.2
P-value (Varieties)	<.0001	<.0001	<.0001	<.0001	<.0001	0.0482		0.0201	<.0001	<.0001

+ = new for 2021, # = paid entry

d = cultivars/lines dropped for 2022 test

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p = 0.05)

Table 12. 2021 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Test Weight (lb/bu)

Cultivar/Line	Bozeman LAT	Havre LAT	Sidney LAT	Williston LAT	Kalispell LAT	Moccasin LAT	Huntley RCB	Conrad LAT	Ft. Benton Bulk	9 Loc Avg.
lattice efficiency	151%	119%	106%	185%	122%	118%	100%	124%		
#+ NP13005004#49 (AP Soli	61.2	56.9	64.5	60.4	58.8	60.5	60.5	63.8	63.3	61.1
# d WB4792	59.4	54.8	64.6	61.1	60.1	60.9	60.1	63.8	61.5	60.7
#+ LCS Julep	60.6	53.4	65.3	61.3	57.9	59.4	61.0	64.7	60.9	60.5
#+ CP7050AX	59.5	55.3	64.1	59.5	58.2	60.4	62.2	62.6	60.3	60.2
#+ Fortify SF	59.4	54.4	63.7	59.4	58.6	62.6	60.7	62.2	59.8	60.1
# SY Wolverine	58.6	54.5	62.7	59.4	57.2	61.4	59.9	63.0	60.5	59.7
# LCS Helix AX	57.6	54.5	63.8	58.3	57.9	62.2	59.3	62.9	59.8	59.6
# d SY 517 CL2	56.4	53.6	63.7	60.4	58.8	60.5	58.6	63.5	61.3	59.6
MTS18149	59.5	54.5	61.1	58.1	58.2	63.6	58.4	61.4	60.5	59.5
Brawl CL Plus	57.7	52.1	63.5	59.2	58.7	61.0	59.2	63.4	60.1	59.4
# CP7909	56.7	52.3	63.2	59.1	58.5	61.3	61.0	61.9	59.4	59.3
Keldin	57.6	52.7	61.8	58.2	59.1	63.8	58.1	62.2	60.2	59.3
StandClear CLP	58.4	54.4	62.8	59.0	58.7	60.7	58.9	62.7	58.1	59.3
Bobcat	58.3	54.8	62.1	58.2	58.7	61.2	57.9	62.4	58.0	59.1
+ MTS1903	59.2	54.0	61.0	58.6	59.2	60.2	58.4	61.6	59.5	59.1
Flathead	57.6	51.8	62.9	58.5	58.1	61.4	57.2	62.3	61.0	59.0
d MTS1831	58.9	56.2	60.9	58.8	57.8	60.6	58.1	61.9	58.1	59.0
+ MTS1908	59.4	54.3	60.7	57.7	59.2	60.3	58.0	61.5	59.7	59.0
d MTCL1737	60.0	55.8	60.1	58.4	56.6	62.0	59.1	60.7	57.3	58.9
Judee	57.4	55.0	60.6	59.3	59.1	61.0	58.2	62.9	56.1	58.8
# LCH18-7071 (LCS Steel /	58.6	54.6	61.5	58.4	56.6	62.6	58.0	61.3	57.1	58.8
Loma	58.0	53.2	61.5	58.1	58.3	61.6	58.2	61.7	58.9	58.8
+ d MTS1915	59.1	54.6	60.7	59.4	57.7	61.1	57.6	61.5	57.9	58.8
#+ d WB4505	57.6	52.7	63.0	59.8	58.4	60.0	58.7	61.5	57.2	58.8
#+ Whistler	56.1	54.4	61.7	58.9	58.8	62.1	56.7	62.6	57.5	58.8
FourOsix	57.3	53.3	60.8	58.2	58.2	62.3	59.1	61.5	57.2	58.7
d MTS18116	59.0	55.5	61.0	59.3	57.3	59.8	57.6	62.1	56.6	58.7
MT1745	58.1	54.4	60.7	58.9	58.4	60.1	58.8	62.3	55.3	58.6
# AAC Wildfire	58.2	54.1	59.0	57.7	59.4	61.4	57.4	61.9	57.0	58.5
d MTS1855	59.7	52.9	60.4	58.8	59.4	59.0	57.5	62.1	56.7	58.5
#+ NAS-7653 (Ramsay)	57.0	51.9	61.9	58.3	58.0	60.9	58.1	61.7	58.7	58.5
# d WB4418	55.8	52.5	63.1	58.5	56.2	60.8	59.5	62.0	58.4	58.5
d MT1872	56.6	53.9	61.1	58.9	57.5	64.4	56.9	61.9	53.5	58.3
+ MTCL19151	57.5	50.2	61.3	58.5	57.1	61.6	59.2	61.8	57.8	58.3
#+ Battle AX	54.5	51.1	62.3	59.1	58.6	63.9	55.8	62.5	55.8	58.2
Northern	58.2	51.6	61.1	58.1	57.8	61.2	57.7	61.8	56.6	58.2
SY Clearstone 2CL	56.6	54.6	59.9	57.8	57.9	61.2	58.8	61.0	55.9	58.2
+ d MTCL19149	57.2	51.9	60.6	58.0	57.8	61.6	58.0	60.6	57.2	58.1
#+ d CP7869	53.7	50.3	63.0	58.9	57.5	61.9	57.4	62.4	56.8	58.0
#+ d WB4401	54.8	51.9	61.3	58.9	58.1	60.9	56.0	61.9	57.8	58.0
#+ AP18 AX	56.0	52.1	62.0	58.2	57.2	60.4	56.3	61.7	57.4	57.9
#+ Balance	57.5	52.4	58.0	58.1	57.8	61.5	57.5	61.3	56.7	57.9
Yellowstone	56.9	53.5	60.5	57.8	57.1	60.3	56.8	61.1	56.2	57.8
+ MT19175	57.0	53.2	60.5	58.8	56.2	60.2	55.8	61.3	56.5	57.7
# d Byrd CL Plus	56.1	51.9	61.5	58.4	57.3	61.0	57.5	61.2	53.3	57.6
#+ CP7017AX	55.8	51.1	61.3	58.5	56.8	59.8	56.8	61.4	56.1	57.5
+ MTFH19132	55.3	52.2	60.4	57.2	57.5	61.1	57.0	60.3	56.9	57.5
Warhorse	56.6	51.5	60.5	57.6	56.4	61.2	57.2	61.6	54.1	57.4
#+ Milestone	54.2	51.8	58.7	56.9	56.7	61.9	53.6	60.1	56.6	56.7
Average	57.6	53.4	61.7	58.7	58.0	61.2	58.2	62.0	57.9	58.7
LSD (0.05)	1.0	1.4	1.0	0.9	1.1	0.9	1.8	0.8		1.1
C. V. (%)	1.0	1.5	1.0	0.9	1.1	0.8	1.9	0.7		2.0
P-value (Varieties)	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001		<.0001

+ = new for 2021, # = paid entry

d = cultivars/lines dropped for 2022 test

bold = indicates highest value within a column

1/ = not in overall statistics, due to no value at Sidney

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p = 0.05)

Table 13. 2021 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Heading Date (days from Jan. 1)

		spring emergence									
Cultivar/Line		Bozeman	Havre	Sidney	Williston	Kalispell	Moccasin	Huntley	Conrad	Ft. Benton	6 Loc
		LAT	LAT	LAT	no data	LAT	LAT	no data	RCB	no data	Avg.
	lattice efficiency	173%	109%	107%		124%	108%		100%		
#	CP7909	160.7	153.9	154.2		154.3	171.1		169.3		159.3
#+	CP7050AX	162.1	154.4	155.4		158.0	169.1		169.7		160.6
	Brawl CL Plus	162.3	156.0	155.0		158.8	171.7		169.3		160.8
#	d SY 517 CL2	162.5	155.9	156.8		159.2	173.6		169.3		161.1
#+	d CP7869	162.7	155.4	155.7		158.3	166.5		169.0		161.2
#+	d WB4401	163.1	157.5	157.2		158.7	173.1		170.0		162.0
#+	LCS Julep	163.1	156.7	157.1		161.0	165.4		169.3		162.2
	Flathead	164.8	156.3	157.3		159.0	168.4		170.0		162.3
#	SY Wolverine	164.2	156.6	157.3		159.2	169.4		169.3		162.3
#	d WB4418	163.3	156.4	157.5		161.2	173.4		169.7		162.3
#	LCS Helix AX	164.0	156.0	156.8		160.8	168.2		169.7		162.5
#+	AP18 AX	164.2	156.3	158.0		160.7	170.9		169.7		162.6
#+	d WB4505	164.3	157.6	157.5		160.0	168.1		169.0		162.6
#+	CP7017AX	163.9	156.1	159.2		162.5	169.4		170.0		162.8
#+	Fortify SF	164.4	157.9	158.4		161.0	162.9		170.0		163.2
#+	Battle AX	164.1	157.0	159.6		162.6	163.5		169.3		163.3
+	MTCL19151	164.3	159.5	158.9		164.3	163.3		169.7		163.9
#	d Byrd CL Plus	164.2	158.3	159.2		165.3	171.6		169.3		164.1
#+	Whistler	165.5	160.7	159.0		163.8	166.5		170.0		164.4
+	MTFH19132	165.9	159.8	159.5		165.7	165.9		170.7		165.0
#+	Balance	165.5	159.2	161.2		166.4	170.3		170.7		165.1
#	d WB4792	166.8	160.5	158.9		165.4	171.1		170.7		165.1
#+	NP13005004#49	166.7	161.3	159.0		166.4	172.1		169.0		165.2
	StandClear CLP	166.3	162.7	160.0		164.9	172.9		170.0		165.4
	FourOsix	166.6	161.5	159.2		166.6	167.1		170.7		165.6
	Judee	166.5	162.1	160.3		165.6	166.6		171.0		165.9
	Keldin	166.1	162.7	160.5		165.9	168.9		170.7		166.0
d	MT1872	167.2	162.1	159.7		165.8	165.9		172.3		166.1
#+	NAS-7653	166.6	162.9	159.8		166.0	171.2		170.7		166.1
	Warhorse	167.6	162.8	160.3		166.1	172.3		170.7		166.2
#+	Milestone	165.8	162.6	163.5		166.6	167.6		170.3		166.3
	SY Clearstone 2CL	167.3	162.8	160.4		166.2	171.8		171.7		166.3
	Yellowstone	167.9	162.6	159.9		165.7	172.5		172.0		166.5
	Bobcat	167.8	163.1	160.8		166.0	169.7		171.0		166.6
	MT1745	166.8	163.4	159.7		168.4	170.5		170.0		166.6
#	LCS 18-7071 AX	168.1	162.7	161.3		166.3	165.8		171.7		166.8
+	d MTCL19149	167.6	162.7	161.9		166.1	167.5		172.0		166.9
	Northern	169.1	164.1	159.6		167.1	172.3		172.3		167.3
d	MTS1855	169.2	163.7	159.8		167.9	174.1		172.3		167.5
	Loma	169.3	163.8	159.8		168.9	167.1		173.7		167.9
+	MT19175	168.3	164.0	161.2		169.7	168.4		172.3		168.0
d	MTCL1737	169.6	163.7	160.5		170.8	167.3		173.3		168.4
	MTS18149	169.8	163.7	162.8		168.5	164.2		173.3		168.6
+	MTS1903	169.6	164.7	163.2		169.9	169.2		172.7		168.7
d	MTS18116	169.4	163.4	163.2		170.8	165.3		173.7		168.9
+	d MTS1915	169.6	164.1	161.1		171.4	170.3		174.0		168.9
d	MTS1831	169.2	164.7	163.1		172.3	166.9		173.3		169.1
#	AAC Wildfire	170.7	164.5	162.6		169.3	169.8		174.3		169.3
+	MTS1908	170.0	165.0	164.7		170.2	167.6		173.7		169.5
Average		166.2	160.5	159.5		164.8	168.9		170.9		165.2
LSD (0.05)		1.0	1.7	2.1		1.6	1.4		2.6		1.5
C. V. (%)		0.3	0.6	0.8		0.6	0.5		0.9		0.8
P-value (Varieties)		<.0001	<.0001	<.0001		<.0001	<.0001		<.0001		<.0001

+ = new for 2021, # = paid entry

d = cultivars/lines dropped for 2022 test

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p = 0.05)

Table 14. 2021 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Plant Height (in)

Cultivar/Line	Bozeman LAT	Havre LAT	Sidney RCB	Williston no data	Kalispell RCB	Moccasin RCB	Huntley LAT	Conrad LAT	Ft. Benton RCB	8 Loc Avg.
lattice efficiency	179%	135%	100%		104%	101%	110%	108%		
d MTS18116	25.5	25.1	21.1		27.1	23.7	26.7	26.1	28.0	25.1
d MTS1831	25.6	24.2	21.2		29.5	21.0	29.3	26.2	28.3	25.9
+ d MTS1915	26.2	23.8	20.5		32.3	25.7	28.0	28.4	27.0	25.9
##+ d WB4401	27.9	26.7	18.0		31.2	24.0	31.5	25.5	28.7	26.4
##+ d CP7869	28.5	27.6	19.4		27.6	23.3	30.0	26.9	29.0	26.5
d MTCL1737	27.8	27.7	20.5		30.4	22.7	29.6	26.6	28.0	26.6
##+ NP13005004#49	27.3	28.2	19.7		29.6	23.0	30.0	27.1	28.3	26.6
# d WB4418	27.9	28.1	19.0		28.6	20.7	31.1	26.0	30.0	26.6
##+ CP7017AX	27.8	28.7	22.0		26.5	24.7	30.9	25.4	29.0	26.8
MTS18149	28.4	26.9	18.7		31.7	23.3	30.4	29.0	28.0	26.8
Bobcat	26.8	26.6	21.9		32.5	24.0	28.9	29.3	27.3	26.9
# LCS Helix AX	27.7	29.0	21.3		30.0	24.7	30.7	25.6	29.3	26.9
# SY Wolverine	28.2	29.8	19.4		29.6	23.7	30.4	25.6	30.3	26.9
+ MT19175	27.8	27.9	21.5		30.2	25.3	29.8	28.1	28.7	27.0
+ MTCL19151	26.5	29.9	20.6		29.2	22.0	32.3	25.9	29.0	27.0
d MTS1855	27.5	27.6	19.4		32.2	24.0	31.1	27.3	29.0	27.0
##+ Milestone	26.9	26.0	22.7		30.8	21.7	29.6	28.3	30.0	27.1
# d SY 517 CL2	29.5	27.7	18.1		29.6	21.3	32.7	26.4	29.7	27.1
d MT1872	27.2	28.3	20.6		32.3	22.3	29.6	29.1	28.7	27.4
##+ Battle AX	28.9	30.7	18.6		30.4	24.0	31.7	28.2	30.7	27.5
##+ AP18 AX	29.2	30.3	21.3		31.1	22.7	30.9	28.7	30.0	27.9
##+ Balance	28.3	28.7	21.2		32.3	26.7	31.5	28.2	30.7	27.9
+ MTS1908	27.2	26.6	23.2		33.9	22.3	30.0	28.9	29.7	27.9
# CP7909	31.6	29.6	20.9		30.6	22.0	33.7	26.8	29.0	28.0
+ MTS1903	29.0	28.2	20.9		33.7	22.7	30.1	29.3	29.3	28.0
##+ CP7050AX	31.2	30.1	22.0		29.6	22.7	32.3	26.4	30.0	28.1
FourOsix	28.6	29.3	21.7		31.1	22.0	32.3	30.5	28.7	28.1
##+ LCS Julep	29.0	29.6	21.6		30.9	21.7	32.6	29.1	29.7	28.1
Loma	28.2	28.1	22.2		31.1	22.7	30.8	29.9	31.0	28.1
+ d MTCL19149	27.7	31.2	19.4		32.5	24.3	32.2	29.0	29.7	28.1
Warhorse	28.3	26.6	22.0		33.9	23.7	32.3	29.3	28.7	28.1
##+ d WB4505	29.2	30.0	20.3		30.8	24.3	33.5	29.4	29.7	28.2
MT1745	28.6	28.4	23.2		33.6	24.7	32.9	29.4	28.3	28.5
Northern	28.9	27.5	21.1		34.2	22.3	31.8	30.1	30.0	28.5
Judee	29.3	29.5	20.6		33.1	21.3	33.4	29.9	29.0	28.6
##+ NAS-7653	29.7	29.1	20.5		31.8	23.3	31.8	29.6	31.7	28.7
##+ Fortify SF	29.9	30.9	20.4		33.8	22.7	34.3	28.4	29.7	28.8
StandClear CLP	28.8	29.8	25.1		33.6	21.3	31.7	29.9	30.0	28.8
Brawl CL Plus	31.3	30.1	20.8		31.6	23.3	33.8	27.2	32.7	28.9
Flathead	30.9	30.4	21.4		29.9	21.7	32.7	31.3	31.3	28.9
# d WB4792	30.2	29.1	22.4		33.1	23.0	33.1	29.0	30.7	29.0
Keldin	30.2	31.5	21.1		32.7	22.3	31.1	28.8	31.0	29.1
# LCS 18-7071 AX	31.5	29.7	23.0		34.6	21.7	31.8	27.2	30.3	29.1
##+ Whistler	30.9	30.5	22.3		33.8	22.7	34.2	29.7	30.0	29.5
Yellowstone	30.7	30.9	23.0		33.6	22.0	33.6	31.8	29.7	29.5
# AAC Wildfire	29.9	27.1	24.5		36.0	23.3	31.6	31.6	31.7	29.6
# d Byrd CL Plus	30.4	31.9	22.7		35.3	24.0	33.9	32.4	31.0	30.4
+ MTFH19132	31.0	31.7	22.6		34.6	22.7	35.5	32.5	31.0	30.4
SY Clearstone 2CL	30.0	31.5	22.6		36.0	22.0	35.0	31.9	31.7	30.4
Average	28.8	28.7	21.2		31.7	23.0	31.6	28.5	29.6	27.9
LSD (0.05)	1.8	2.1	3.2		2.1	2.6	1.9	2.5	2.0	1.3
C. V. (%)	3.5	5.1	9.2		4.1	6.9	51.7	5.1	4.1	4.6
P-value (Varieties)	<.0001	<.0001	0.0089		<.0001	0.0127		<.0001	<.0001	<.0001

+ = new for 2021, # = paid entry

d = cultivars/lines dropped for 2022 test

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p=0.05)

Table 15. 2021 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Sawfly cutting (%)

Cultivar/Line	Havre LAT	Fort Benton RCB	2 Loc Avg.
lattice efficiency	135%	22-Jul	
+ d MTS1915	0	1	1
+ MTS1908	0	2	1
d MTS1831	0	3	1
+ MTS1903	3	2	3
d MTS18116	4	2	3
Bobcat	9	3	6
d MTCL1737	5	9	7
Warhorse	13	1	7
d MT1872	12	4	8
d MTS1855	13	4	9
# d WB4418	7	12	10
MTS18149	19	5	12
Loma	10	15	13
#+ Battle AX	22	5	14
MT1745	26	4	15
# d Byrd CL Plus	25	5	15
+ MT19175	25	7	16
# SY Wolverine	20	15	18
Brawl CL Plus	24	14	19
#+ d WB4401	24	14	19
# AAC Wildfire	17	22	20
#+ NP13005004#49	25	15	20
FourOsix	27	14	20
#+ LCS Julep	15	27	21
Northern	33	9	21
#+ CP7050AX	34	9	21
SY Clearstone 2CL	26	17	21
Judee	41	5	23
# CP7909	38	10	24
+ d MTCL19149	37	12	25
#+ CP7017AX	26	24	25
# d SY 517 CL2	20	30	25
#+ AP18 AX	34	20	27
+ MTCL19151	35	20	28
# d WB4792	29	27	28
Flathead	35	22	29
Yellowstone	28	30	29
Keldin	37	24	31
#+ Fortify SF	49	12	31
#+ NAS-7653	32	34	33
#+ Milestone	41	27	34
# LCS 18-7071 AX	41	29	35
#+ d CP7869	27	44	35
#+ Whistler	41	30	36
StandClear CLP	55	19	37
#+ Balance	44	34	39
#+ d WB4505	51	30	41
# LCS Helix AX	45	40	43
+ MTFH19132	55	40	48
Average	26.1	23.3	21.3
LSD (0.05)	14.4	13.4	17.4
C. V. (%)	31.9	35.4	40.7
P-value (Varieties)	<.0001	<.0001	<.0001

+ = new for 2021, # = paid entry

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p = 0.05)

Table 16. 2021 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Grain Protein (%)

Cultivar/Line	Bozeman Bulk	Havre LAT	Sidney LAT	Williston LAT	Kalispell RCB	Moccasin LAT	Huntley LAT	Conrad LAT	Ft. Benton Bulk	9 Loc Avg.
lattice efficiency		166%	182%	374%	101%	119%	114%	149%		
#+ Balance	15.9	18.9	14.5	16.7	12.2	10.3	16.4	11.8	15.2	14.8
Judee	16.2	18.4	14.4	16.6	12.2	9.6	15.9	11.8	14.8	14.6
Warhorse	16.1	18.3	12.9	16.2	12.7	10.6	16.3	11.4	15.8	14.5
d MTS1855	15.2	18.9	13.2	15.9	11.8	11.6	16.4	11.1	14.8	14.2
# d SY 517 CL2	14.9	16.6	13.9	17.7	13.0	11.4	15.3	11.8	14.0	14.2
Brawl CL Plus	14.7	17.6	13.2	16.7	13.6	10.5	15.1	11.2	13.9	14.1
#+ LCS Julep	14.6	17.8	13.0	15.9	12.2	11.0	15.1	12.4	14.3	14.1
# AAC Wildfire	15.6	17.6	12.0	15.8	11.8	11.1	15.9	10.6	14.7	14.0
d MTCL1737	15.3	17.2	13.1	16.2	11.5	10.0	15.0	11.3	15.2	14.0
Northern	15.6	18.2	12.7	15.5	11.7	11.1	15.7	10.6	15.0	14.0
Bobcat	15.2	17.8	12.3	15.6	12.0	11.0	15.0	11.3	14.6	13.8
FourOsix	15.6	17.4	12.6	15.7	11.4	10.3	14.6	11.1	14.7	13.8
MTS18149	14.6	18.2	12.1	16.1	12.0	11.1	15.4	11.1	12.9	13.8
StandClear CLP	14.6	17.9	12.1	16.2	12.0	10.7	14.9	11.2	14.1	13.8
SY Clearstone 2CL	16.1	17.6	12.6	14.7	11.8	10.8	15.2	11.0	14.7	13.8
#+ CP7050AX	13.9	16.4	12.6	17.1	12.8	10.9	13.7	11.6	14.0	13.7
Flathead	15.3	17.1	12.1	15.9	11.7	10.9	15.5	11.2	13.4	13.7
+ MTCL19151	15.3	17.5	12.7	15.5	12.1	10.1	14.6	11.4	14.2	13.7
d MTS18116	14.8	17.9	12.4	14.6	11.4	10.6	16.1	10.6	15.0	13.7
+ d MTS1915	14.9	17.3	12.1	15.6	11.5	10.6	15.2	10.6	14.4	13.7
Yellowstone	15.1	17.5	12.0	15.5	12.0	10.4	15.2	11.4	14.3	13.7
#+ d CP7869	15.0	17.1	11.6	15.4	11.9	10.7	15.0	11.2	13.7	13.6
Loma	14.8	18.3	11.9	15.4	11.7	10.4	14.8	11.4	13.2	13.6
+ MT19175	15.1	17.6	11.6	15.5	11.8	9.5	15.3	10.7	14.3	13.6
+ d MTCL19149	15.9	17.5	12.1	15.4	11.1	9.9	15.1	10.7	14.3	13.6
+ MTFH19132	14.6	17.6	12.0	16.4	11.3	11.7	15.3	11.3	13.7	13.6
# SY Wolverine	14.9	16.9	12.5	15.9	11.6	10.4	14.7	11.1	14.1	13.6
d MTS1831	14.7	17.8	12.2	14.7	11.2	9.1	14.9	10.9	13.9	13.5
+ MTS1903	15.3	18.0	12.1	15.2	11.3	10.9	14.9	10.8	13.3	13.5
+ MTS1908	15.1	18.0	11.9	15.8	11.2	11.5	14.7	11.0	13.0	13.5
#+ Battle AX	14.9	17.3	12.3	15.3	11.9	10.6	14.6	10.9	14.2	13.4
Keldin	14.8	18.7	11.7	14.9	11.7	10.8	15.1	10.9	12.9	13.4
#+ Milestone	15.1	16.8	12.3	15.0	11.2	10.2	15.1	10.5	13.3	13.4
#+ NAS-7653 (Ramsay)	14.3	18.7	11.5	14.7	11.2	10.2	14.7	11.2	13.5	13.4
MT1745	14.3	17.0	11.7	14.7	11.4	9.9	14.8	11.1	14.8	13.3
d MT1872	14.9	17.2	11.8	15.1	11.5	11.2	14.4	10.9	13.8	13.3
#+ NP13005004#49 (AP Solid)	14.2	16.1	12.8	16.0	12.0	11.3	14.1	11.2	12.4	13.3
# d WB4418	14.8	16.5	11.9	16.3	11.4	11.8	14.0	11.3	13.3	13.3
# d Byrd CL Plus	14.6	17.5	11.4	14.8	11.1	10.7	15.0	10.3	14.9	13.2
# CP7909	14.3	16.5	11.4	15.7	12.9	10.5	13.3	10.8	13.4	13.2
#+ CP7017AX	14.1	16.0	11.6	14.7	11.9	10.4	14.0	11.1	13.7	13.1
#+ Fortify SF	13.8	15.9	12.2	15.7	11.5	10.9	13.7	10.9	13.2	13.0
#+ Whistler	14.6	16.9	11.5	14.7	11.1	10.0	14.8	10.8	13.1	13.0
#+ AP18 AX	14.4	15.8	12.0	15.4	11.7	10.3	13.9	10.0	13.2	12.9
#+ d WB4401	14.5	16.1	11.4	14.9	11.0	11.1	14.2	10.0	13.1	12.9
#+ d WB4505	14.4	16.9	11.8	14.5	10.8	10.1	14.0	10.0	13.7	12.9
# LCS Helix AX	14.2	15.8	11.6	14.8	11.3	9.3	13.4	10.1	13.4	12.8
# d WB4792	14.2	17.1	10.7	14.6	11.0	10.5	14.3	10.4	12.9	12.7
# LCH18-7071 (LCS Steel A)	13.8	16.8	10.5	13.5	11.8	10.0	14.3	10.0	13.1	12.6
Average	14.9	17.4	12.2	15.5	11.7	10.6	14.9	11.0	13.9	13.6
LSD (0.05)		0.4	0.7	0.6	0.6	0.9	1.1	0.9		0.5
C. V. (%)		1.4	3.3	2.0	3.3	4.7	4.3	5.0		3.9
P-value (Varieties)		<.0001	<.0001	<.0001	<.0001	<.0001		0.0003		<.0001

+ = new for 2021, # = paid entry

d = cultivars/lines dropped for 2022 test

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p=0.05)

Table 17a. 2021 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Stem Solidness (5-25)

Cultivar/Line d = cultivars/lines dropped for 2022 test	Pedigree	Bozeman	Conrad	Havre	Moccasin	Northern Seeds - Carter	5 Loc Average
	stem clipping date	6-Jul	13-Jul	29-Jun	13-Jul	29-Jun	
	% sawfly Infestation	0%	68%	34%	4%	32%	
Bobcat	Montana, 2019	21.2	24.4	22.8	23.8	23.7	23.2
d MTS18116	Loma*2/Warhorse	19.0	22.8	22.9	24.5	21.7	22.2
+ d MTS1915	MTS1596//Emerson/Spur	20.4	23.3	22.8	23.3	21.0	22.2
+ MTS1908	(Judee sib, MTS0819)//08X350-A6/Warhorse	21.3	21.9	23.9	21.9	22.1	22.2
+ MTS1903	(Judee sib, MTS0819)//08X350-A6/Warhorse	19.8	21.7	22.9	23.4	22.7	22.1
d MTS1831	MTS0907/MTS0827	18.6	22.4	23.0	23.4	21.0	21.7
Warhorse	Montana, 2013	18.3	20.0	21.1	23.2	21.6	20.8
Judee	Montana, 2011	15.0	20.2	18.6	22.1	17.8	18.7
d MTS1855	05X438-aC71(MT0097*2//Jagalene/Choteau)/Roughrider	14.8	20.1	18.1	20.9	18.1	18.4
Loma	Montana, 2016	14.2	20.1	17.2	21.8	17.7	18.2
StandClear CLP	Nutrien, 2020	15.6	19.4	18.8	18.3	17.6	18.0
MTS18149	Loma*2/AAC Gateway	11.5	20.0	17.0	22.6	14.8	17.2
#+ Fortify SF	Plainsgold/Colorado Wheat Res Fdn, 2019	12.1	16.7	15.0	16.2	12.4	14.5
Yellowstone	Montana 2005	5.7	8.7	6.1	8.7	6.0	7.0
Average		16.3	20.1	19.3	21.0	18.5	19.0
LSD (0.05)		1.6	2.6	1.9	2.3	2.6	1.6
C. V. (%)		5.9	6.0	6.0	6.4	8.3	6.6
P-value (Varieties)		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

+ = new for 2021, # = paid entry

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 17b. 2021 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Sawfly Infested Stems (0-5)

Cultivar/Line		Pedigree	Bozeman	Conrad	Havre	Moccasin	Northern Seeds - Carter	3 Loc Average
d = cultivars/lines dropped for 2022 test								
			stem clipping date	6-Jul	13-Jul	29-Jun	13-Jul	29-Jun
			% sawfly Infestation	0%	68%	34%	4%	32%
	Bobcat	Montana, 2019		1.5	1.0		1.0	1.2
+	MTS1903	(Judee sib, MTS0819)//08X350-A6/Warhorse		2.5	0.7		1.3	1.5
	MTS1831	MTS0907/MTS0827		2.5	0.7		2.0	1.7
	MTS18116	Loma*2/Warhorse		3.5	1.0		0.7	1.7
+	MTS1908	(Judee sib, MTS0819)//08X350-A6/Warhorse		2.0	1.7		2.0	1.9
	StandClear CLP	Nutrien, 2020		3.5	1.3		1.3	2.1
	Yellowstone	Montana 2005		5.0	0.7		0.7	2.1
	MTS1855	05X438-aC71(MT0097*2//Jagalene/Choteau)/Roughrider		3.5	2.0		2.0	2.5
	Judee	Montana, 2011		4.0	1.7		2.0	2.6
#+	Fortify SF	Plainsgold/Colorado Wheat Res Fdn, 2019		5.0	1.0		1.7	2.6
+	MTS1915	MTS1596//Emerson/Spur		3.0	3.7		1.3	2.7
	MTS18149	Loma*2/AAC Gateway		3.5	2.3		2.3	2.7
	Warhorse	Montana, 2013		4.5	3.7		0.7	2.9
	Loma	Montana, 2016		3.5	2.3		3.3	3.1
Average				3.3	1.7		1.6	2.2
LSD (0.05)				1.3	1.7		ns	ns
C. V. (%)				17.3	59.9		70.9	41.3
P-value (Varieties)				0.0011	0.0078		0.2580	0.3658

Table 18. 2021 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Stripe Rust Evaluation, including data fom Pullman and Mt. Vernon, WA

Cultivar/Line d = cultivars/lines dropped for 2022 test + = new for 2021, # = paid entry	Stripe Rust					
	Pullman, WA		MT. Vernon, WA			
	Milk		Stem elong.		Heading/flowering	
	IT ^{1/}	%	IT ^{1/}	%	IT ^{1/}	%
# AAC Wildfire	no data		3	5	3	40
#+ AP18 AX			2	10	2,8	5,80
#+ Balance			2	5	2	5
#+ Battle AX			8	20	8	90
#+ Bobcat			2	5	2	5
# Brawl CL Plus			8	30	5	30
# d Byrd CL Plus			2	5	5	40
#+ CP7017AX			3	5	2	5
#+ CP7050AX			8	30	8	90
#+ d CP7869			5	5	2	5
# CP7909			8	20	5	15
# Flathead			2	5	2	5
#+ Fortify SF			8	40	5	40
# FourOsix			5	5	2	15
# Judee			5	10	3	20
# Keldin			8	10	3	20
# LCH18-7071 (LCS Steel AX)			8	30	5	30
# LCS Helix AX			8	20	2	10
#+ LCS Julep			5	5	2	5
#+ Loma			8	20	2	15
#+ Milestone			8	10	2	10
# MT1745			3	10	2	15
# d MT1872			3	10	2	5
+ MT19175			2	5	2	5
# d MTCL1737			8	10	2	15
+ d MTCL19149			5	10	2	15
+ MTCL19151			5	10	2	5
+ MTFH19132			2	5	2	10
# d MTS18116			3	10	2	10
# MTS18149			2	5	2	10
# d MTS1831			5	10	2	10
# d MTS1855			3	10	2	15
+ MTS1903			2	5	2	5
+ MTS1908			2	5	2	5
+ d MTS1915			2	5	2	2
#+ NAS-7653 (Ramsay)			8	10	3	30
# Northern			8	10	2	15
#+ NP13005004#49 (AP Solid)			8	30	2,8	5,80
# StandClear CLP			8	10	2	5
# d SY 517 CL2			8	10	2	5
# SY Clearstone 2CL			8	10	2	15
# SY Wolverine			2	5	3	15
# Warhorse			5	5	2,8	5,80
#+ d WB4401			8	10	3	20
# d WB4418			8	30	2	5
#+ d WB4505			8	20	3	20
# d WB4792			2	5	2	5
#+ Whistler			8	30	2	5
#+ Yellowstone			8	5	2,8	5,100
Average				12		17

^{1/} Infection Type (IT) was recorded based on the 0-9 scale with ITs 8 and 9 combined as 8 (the most susceptible reaction) in field data. Generally IT 0-3 are considered resistant, 4-6 intermediate, and 7-9 susceptible. Heterogenous reactions of an entry were indicated by two or more ITs separated by "," for most plants with the first IT and few plants with the second IT or connected with "-" for entries containing plants with continuous ITs.

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p = 0.05)

Table 19. 2021 Winter Wheat Quality Drill Strips, Northern Agricultural Research Center

Entry	ID	Yield*	Test Weight	Moisture	Protein	Head Date	Plant Ht	Sawfly
		bu/ac	lb/bu	%	%	day	in	% cut
1	Jagalene	27.8	54.2	9.5	18.0	6/6/21	31.9	45.0
2	SY Monument	31.2	53.3	9.8	17.7	6/7/21	30.3	39.0
3	Yellowstone	27.5	53.3	9.8	17.7	6/10/21	33.2	38.0
4	d MTS1855	21.1	53.5	9.6	18.7	6/10/21	27.6	32.0
5	d MTS18116	22.2	54.5	9.6	18.4	6/12/21	27.0	8.0
6	MTS18149	26.5	51.9	9.8	18.5	6/12/21	27.3	36.0
7	d MT1872	23.8	53.4	9.7	17.5	6/9/21	29.1	34.0

d = cultivars/lines dropped for 2022 test

*Yield adjusted to 13% moisture.

Seeded September 18, 2020

Harvested July 19, 2021

Precipitation:

Seeding to Harvest: 7.50"

April 1 to June 30: 3.76"

Table 20. 2018-2021 Intrastate Winter Wheat Test (Exp. 3501): Bozeman Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21
	1y	2y	3y	4y	1y	2y	3y	4y	1y	2y	3y	4y
# AAC Wildfire	59.6	76.7	92.9	103.5	58.2	60.1	61.0	61.8	15.6	14.6	13.9	13.5
#+ AP18 AX	64.0				56.0				14.4			
#+ Balance	65.4				57.5				15.9			
#+ Battle AX	58.6				54.5				14.9			
Bobcat	55.4	73.0	88.5	100.0	58.3	60.5	61.4	62.3	15.2	14.1	13.3	13.0
Brawl CL Plus	69.9	71.9	90.0	96.3	57.7	60.7	62.0	62.8	14.7	15.0	14.1	14.0
# Byrd CL Plus	67.5	80.4	99.6	108.6	56.1	59.7	60.8	61.7	14.6	13.7	12.8	12.4
#+ CP7017AX	61.8				55.8				14.1			
#+ CP7050AX	61.2				59.5				13.9			
#+ CP7869	61.0				53.7				15.0			
# CP7909	72.6	73.5			56.7	59.8			14.3	13.9		
Flathead	69.9	75.3	95.1	104.0	57.6	60.3	61.5	62.3	15.3	14.7	13.6	13.3
#+ Fortify SF	65.7				59.4				13.8			
FourOsix	61.8	82.9	98.1	107.2	57.3	60.2	61.1	62.0	15.6	14.4	13.6	13.2
Judee	55.5	73.9	90.1	99.6	57.4	60.4	61.4	62.3	16.2	15.2	14.2	13.7
Keldin	68.6	84.4	107.2	116.5	57.6	60.3	61.4	62.2	14.8	14.3	13.4	13.1
# LCH18-7071 (LCS Steel AX)	68.1	80.7			58.6	60.8			13.8	12.7		
# LCS Helix AX	60.5	70.5			57.6	60.7			14.2	14.1		
#+ LCS Julep	78.1				60.6				14.6			
Loma	63.9	80.2	96.4	107.2	58.0	59.8	60.8	61.6	14.8	14.2	13.3	13.0
#+ Milestone	66.7				54.2				15.1			
MT1745	65.7	79.3	98.6		58.1	60.9	61.7		14.3	13.5	12.8	
MT1872	62.9	78.9			56.6	60.1			14.9	14.3		
+ MT19175	65.6				57.0				15.1			
MTCL1737	57.0	74.9	91.6		60.0	60.6	61.1		15.3	14.2	13.6	
+ MTCL19149	62.2				57.2				15.9			
+ MTCL19151	67.8				57.5				15.3			
+ MTFH19132	67.3				55.3				14.6			
MTS18116	52.0	74.3			59.0	61.3			14.8	13.6		
MTS18149	61.8	77.5			59.5	60.6			14.6	14.0		
MTS1831	52.5	73.0			58.9	60.8			14.7	13.6		
MTS1855	62.4	81.0			59.7	61.3			15.2	14.1		
+ MTS1903	63.8				59.2				15.3			
+ MTS1908	65.4				59.4				15.1			
+ MTS1915	47.7				59.1				14.9			
#+ NAS-7653 (Ramsay)	72.1				57.0				14.3			
Northern	68.4	84.2	104.5	115.3	58.2	60.4	61.3	61.9	15.6	14.2	13.3	13.0
#+ NP13005004#49 (AP Solid)	63.9				61.2				14.2			
StandClear CLP	59.1	74.3	92.1	102.9	58.4	61.1	62.0	62.6	14.6	14.2	13.6	13.4
# SY 517 CL2	61.3	61.4	80.0	88.5	56.4	60.0	61.5	62.5	14.9	15.3	14.4	13.9
SY Clearstone 2CL	60.9	76.5	99.2	110.0	56.6	59.2	60.0	60.8	16.1	14.8	14.0	13.6
# SY Wolverine	63.3	71.6	85.2		58.6	60.8	61.6		14.9	14.4	13.8	
Warhorse	53.2	63.5	82.0	91.7	56.6	59.0	60.2	61.1	16.1	15.3	14.4	14.1
#+ WB4401	62.9				54.8				14.5			
# WB4418	55.4	64.6	80.4		55.8	59.2	60.0		14.8	13.9	13.1	
#+ WB4505	63.8				57.6				14.4			
# WB4792	63.6	76.6			59.4	61.8			14.2	13.3		
#+ Whistler	63.3				56.1				14.6			
Yellowstone	65.4	79.2	100.2	109.5	56.9	59.2	60.2	61.1	15.1	14.2	13.4	13.0
Average	63.0	75.5	93.2	104.0	57.6	60.3	61.1	61.9	14.9	14.2	13.6	13.3
LSD (0.05)	6.2	ns	11.9	9.5	1.0	ns	ns	0.8		ns	0.9	0.7
C.V.	5.6	11.0	7.7	6.4	1.0	1.7	1.3	0.9		4.5	3.9	3.7

+ = new for 2021, # = paid entry

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 21. 2018-2021 Intrastate Winter Wheat Test (Exp. 3502): Havre Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21
	1y	2y	3y	4y	1y	2y	3y	4y	1y	2y	3y	4y
# AAC Wildfire	17.6	34.8	41.2	49.0	54.1	57.8	58.1	59.2	17.6	15.7	15.3	15.0
#+ AP18 AX	28.6				52.1				15.8			
#+ Balance	23.8				52.4				18.9			
#+ Battle AX	29.1				51.1				17.3			
Bobcat	25.5	42.5	49.2	52.6	54.8	58.7	59.3	60.2	17.8	16.1	15.7	15.4
Brawl CL Plus	29.5	38.3	42.9	46.6	52.1	57.8	59.2	60.5	17.6	15.8	15.6	15.2
# Byrd CL Plus	26.7	42.2	45.1	48.6	51.9	57.5	58.5	59.7	17.5	15.3	14.8	14.3
#+ CP7017AX	31.1				51.1				16.0			
#+ CP7050AX	33.9				55.3				16.4			
#+ CP7869	32.5				50.3				17.1			
# CP7909	34.5	32.2			52.3	57.4			16.5	15.0		
Flathead	35.2	42.8	44.9	49.0	51.8	57.5	58.4	59.7	17.1	15.5	15.4	15.0
#+ Fortify SF	22.8				54.4				15.9			
FourOsix	23.7	38.4	44.8	48.7	53.3	57.8	58.5	59.5	17.4	15.8	15.5	15.4
Judee	18.7	34.8	40.7	44.5	55.0	59.3	60.0	60.9	18.4	16.8	16.5	16.2
Keldin	28.5	43.3	46.3	51.9	52.7	57.4	58.2	59.4	18.7	16.5	16.0	15.5
# LCH18-7071 (LCS Steel AX)	25.8	40.1			54.6	58.4			16.8	14.7		
# LCS Helix AX	29.8	40.8			54.5	58.9			15.8	14.5		
#+ LCS Julep	29.1				53.4				17.8			
Loma	24.2	38.6	42.8	47.2	53.2	57.7	58.3	59.4	18.3	16.5	16.1	15.7
#+ Milestone	25.8				51.8				16.8			
MT1745	21.4	35.8	43.0		54.4	58.7	59.4		17.0	15.3	15.0	
MT1872	21.3	37.1			53.9	58.2			17.2	15.6		
+ MT19175	19.8				53.2				17.6			
MTCL1737	18.8	35.3	42.3		55.8	58.5	58.5		17.2	15.9	15.5	
+ MTCL19149	20.7				51.9				17.5			
+ MTCL19151	31.1				50.2				17.5			
+ MTFH19132	23.1				52.2				17.6			
MTS18116	17.6	37.0			55.5	59.8			17.9	15.6		
MTS18149	25.9	41.3			54.5	58.5			18.2	16.5		
MTS1831	17.7	35.0			56.2	60.1			17.8	15.6		
MTS1855	19.4	36.3			52.9	57.7			18.9	16.6		
+ MTS1903	19.4				54.0				18.0			
+ MTS1908	21.0				54.3				18.0			
+ MTS1915	16.5				54.6				17.3			
#+ NAS-7653 (Ramsay)	27.2				51.9				18.7			
Northern	22.8	36.1	43.3	46.6	51.6	56.8	58.0	59.1	18.2	16.5	15.9	15.5
#+ NP13005004#49 (AP Solid)	28.9				56.9				16.1			
StandClear CLP	23.7	38.6	46.3	48.6	54.4	58.4	59.2	60.1	17.9	16.0	15.7	15.5
# SY 517 CL2	33.8	39.3	41.6	44.1	53.6	58.7	59.5	60.7	16.6	15.5	15.6	15.3
SY Clearstone 2CL	18.8	35.6	42.7	47.5	54.6	58.1	58.6	59.3	17.6	16.2	15.9	15.5
# SY Wolverine	28.3	38.7	42.1		54.5	58.8	59.3		16.9	15.7	15.7	
Warhorse	20.6	36.0	39.5	43.9	51.5	56.8	57.9	59.1	18.3	16.6	16.4	16.1
#+ WB4401	23.3				51.9				16.1			
# WB4418	31.8	39.1	43.9		52.5	57.0	57.9		16.5	15.0	14.8	
#+ WB4505	29.2				52.7				16.9			
# WB4792	30.0	42.0			54.8	59.7			17.1	15.1		
#+ Whistler	21.4				54.4				16.9			
Yellowstone	27.9	40.7	45.4	49.5	53.5	57.5	58.2	58.8	17.5	16.0	15.7	15.3
Average	25.3	38.3	43.6	47.9	53.4	58.2	58.7	59.7	17.4	15.8	15.6	15.4
LSD (0.05)	3.3	ns	ns	ns	1.4	ns	ns	1.2	0.4	0.9	0.7	0.6
C.V.	7.6	16.9	11.1	10.0	1.5	1.7	1.6	1.4	1.4	2.9	2.7	2.6

+ = new for 2021, # = paid entry

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 22. 2018-2021 Intrastate Winter Wheat Test (Exp. 3503): Sidney Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21
	1y	2y	3y	4y	1y	2y	3y	4y	1y	2y	3y	4y
# AAC Wildfire	53.5	56.5	<u>67.3</u>	68.0	59.0	58.9	60.8	61.0	12.0	13.1	13.1	12.4
#+ AP18 AX	34.9				62.0				12.0			
#+ Balance	19.0				58.0				14.5			
#+ Battle AX	27.6				62.3				12.3			
Bobcat	46.3	52.5	56.7	58.6	62.1	60.8	61.9	62.4	12.3	13.0	13.1	12.6
Brawl CL Plus	24.4	40.1	38.7	44.2	63.5	62.4	62.7	63.1	13.2	13.3	14.1	13.6
# Byrd CL Plus	30.3	45.0	47.0	54.6	61.5	60.0	61.0	61.4	11.4	12.0	12.2	11.6
#+ CP7017AX	30.4				61.3				11.6			
#+ CP7050AX	33.8				64.1				12.6			
#+ CP7869	47.5				63.0				11.6			
# CP7909	27.2	38.9			63.2	61.6			11.4	12.0		
Flathead	45.1	52.7	57.3	57.3	62.9	61.6	62.4	62.8	12.1	12.7	13.0	12.4
#+ Fortify SF	37.7				63.7				12.2			
FourOsix	41.2	51.2	55.6	58.7	60.8	60.5	61.3	61.6	12.6	13.2	13.5	12.8
Judee	18.6	34.5	50.0	54.2	60.6	60.9	62.3	62.7	14.4	14.6	14.4	<u>13.7</u>
Keldin	40.5	51.9	56.9	65.7	61.8	61.2	62.1	62.6	11.7	12.2	12.8	12.2
# LCH18-7071 (LCS Steel AX)	47.1	50.9			61.5	61.2			10.5	11.2		
# LCS Helix AX	38.9	48.0			63.8	62.8			11.6	11.9		
#+ LCS Julep	23.8				<u>65.3</u>				13.0			
Loma	51.4	56.0	61.2	63.9	61.5	60.8	61.3	61.5	11.9	12.9	13.2	12.9
#+ Milestone	23.6				58.7				12.3			
MT1745	51.9	55.0	65.9		60.7	59.7	61.1		11.7	12.4	12.5	
MT1872	40.0	48.9			61.1	60.5			11.8	12.3		
+ MT19175	52.3				60.5				11.6			
MTCL1737	46.8	55.2	62.2		60.1	60.0	60.9		13.1	13.7	13.6	
+ MTCL19149	34.8				60.6				12.1			
+ MTCL19151	47.9				61.3				12.7			
+ MTFH19132	39.1				60.4				12.0			
MTS18116	40.2	50.9			61.0	60.9			12.4	12.9		
MTS18149	<u>53.9</u>	57.0			61.1	60.7			12.1	12.9		
MTS1831	39.3	49.8			60.9	61.0			12.2	12.6		
MTS1855	48.4	54.1			60.4	60.4			13.2	13.7		
+ MTS1903	38.3				61.0				12.1			
+ MTS1908	38.6				60.7				11.9			
+ MTS1915	44.8				60.7				12.1			
#+ NAS-7653 (Ramsay)	37.5				61.9				11.5			
Northern	43.2	54.2	65.0	<u>69.7</u>	61.1	60.5	61.5	62.0	12.7	13.4	13.5	12.9
#+ NP13005004#49 (AP Solid)	11.6				64.5				12.8			
StandClear CLP	44.3	49.5	59.4	62.0	62.8	60.8	62.0	62.6	12.1	12.9	13.3	12.3
# SY 517 CL2	15.7	30.4	29.0	36.9	63.7	62.5	62.8	<u>63.2</u>	13.9	13.8	14.5	13.6
SY Clearstone 2CL	37.8	52.3	59.4	60.9	59.9	59.6	60.7	60.9	12.6	13.3	13.3	12.8
# SY Wolverine	26.0	38.5	34.1		62.7	61.1	61.4		12.5	12.8	13.6	
Warhorse	39.7	46.4	48.7	53.8	60.5	59.8	60.9	61.3	12.9	13.6	14.3	13.7
#+ WB4401	27.4				61.3				11.4			
# WB4418	33.5	45.0	43.6		63.1	61.4	61.9		11.9	12.2	12.5	
#+ WB4505	37.7				63.0				11.8			
# WB4792	38.5	50.2			64.6	<u>63.7</u>			10.7	11.5		
#+ Whistler	50.6				61.7				11.5			
Yellowstone	53.1	<u>62.1</u>	65.8	67.6	60.5	60.5	61.3	61.5	12.0	12.7	12.9	12.3
Average	37.9	49.2	53.9	58.4	61.7	60.9	61.6	62.0	12.2	12.8	13.3	12.8
LSD (0.05)	9.0	11.6	16.3	13.2	1.0	1.8	ns	1.2	0.7	0.8	1.0	0.8
C.V.	13.7	11.4	18.3	15.8	1.0	1.4	1.6	1.3	3.3	3.0	4.6	4.6

+ = new for 2021, # = paid entry

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 23. 2018-2021 Intrastate Winter Wheat Test (Exp. 3504): Williston Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21
	1y	2y	3y	4y	1y	2y	3y	4y	1y	2y	3y	4y
# AAC Wildfire	24.3	39.8	44.5	47.2	57.7	58.8	59.3	59.8	15.8	15.3	15.8	15.3
#+ AP18 AX	22.1				58.2				15.4			
#+ Balance	26.2				58.1				16.7			
#+ Battle AX	23.6				59.1				15.3			
Bobcat	25.6	38.2	44.6	45.2	58.2	59.5	59.9	59.8	15.6	15.1	15.8	15.4
Brawl CL Plus	16.4	31.3	35.4	36.2	59.2	60.2	60.4	60.6	16.7	15.1	16.3	15.7
# Byrd CL Plus	21.3	36.6	40.6	41.3	58.4	59.0	59.7	59.7	14.8	13.4	14.3	13.9
#+ CP7017AX	22.0				58.5				14.7			
#+ CP7050AX	17.7				59.5				17.1			
#+ CP7869	22.6				58.9				15.4			
# CP7909	19.2	31.8			59.1	59.6			15.7	13.9		
Flathead	25.8	36.3	39.1	40.4	58.5	59.3	59.7	59.8	15.9	14.1	15.5	15.0
#+ Fortify SF	20.3				59.4				15.7			
FourOsix	25.6	39.6	45.3	45.7	58.2	59.6	60.0	60.0	15.7	14.4	15.2	14.9
Judee	22.0	34.9	39.7	40.8	59.3	60.5	61.0	61.0	16.6	16.2	16.9	16.3
Keldin	26.1	39.2	43.6	44.0	58.2	59.6	60.1	60.3	14.9	13.7	14.7	14.2
# LCH18-7071 (LCS Steel AX)	27.6	41.9			58.4	59.5			13.5	13.3		
# LCS Helix AX	21.0	35.2			58.3	59.6			14.8	13.4		
#+ LCS Julep	23.8				61.3				15.9			
Loma	25.5	37.9	44.5	45.1	58.1	59.2	59.7	59.7	15.4	14.6	15.5	15.1
#+ Milestone	25.3				56.9				15.0			
MT1745	25.1	37.9	42.7		58.9	59.4	59.9		14.7	13.6	14.5	
MT1872	27.0	34.9			58.9	59.6			15.1	14.0		
+ MT19175	25.7				58.8				15.5			
MTCL1737	24.4	38.4	44.3		58.4	59.4	59.5		16.2	15.4	16.1	
+ MTCL19149	27.2				58.0				15.4			
+ MTCL19151	23.9				58.5				15.5			
+ MTFH19132	23.7				57.2				16.4			
MTS18116	25.2	37.7			59.3	60.7			14.6	14.2		
MTS18149	27.6	39.2			58.1	59.3			16.1	15.6		
MTS1831	24.9	37.0			58.8	60.5			14.7	14.2		
MTS1855	22.9	37.3			58.8	59.9			15.9	15.8		
+ MTS1903	26.7				58.6				15.2			
+ MTS1908	23.8				57.7				15.8			
+ MTS1915	26.9				59.4				15.6			
#+ NAS-7653 (Ramsay)	28.2				58.3				14.7			
Northern	26.8	42.3	45.9	45.8	58.1	59.6	60.0	60.2	15.5	15.2	16.0	15.6
#+ NP13005004#49 (AP Solid)	21.7				60.4				16.0			
StandClear CLP	20.4	35.2	40.4	41.0	59.0	59.9	60.0	59.8	16.2	14.7	15.9	15.4
# SY 517 CL2	17.4	31.9	35.9	36.8	60.4	60.4	60.8	60.7	17.7	15.6	16.2	15.5
SY Clearstone 2CL	25.4	39.5	41.5	42.5	57.8	59.1	59.4	59.5	14.7	14.2	15.5	15.1
# SY Wolverine	21.2	33.3	38.1		59.4	59.9	60.1		15.9	14.3	15.6	
Warhorse	23.3	33.5	39.3	40.8	57.6	58.5	59.5	59.6	16.2	15.0	16.0	15.6
#+ WB4401	20.7				58.9				14.9			
# WB4418	18.9	33.3	35.1		58.5	59.7	59.1		16.3	14.4	15.6	
#+ WB4505	22.6				59.8				14.5			
# WB4792	21.9	38.0			61.1	61.5			14.6	13.6		
#+ Whistler	25.2				58.9				14.7			
Yellowstone	27.4	38.1	43.9	44.7	57.8	59.2	59.5	59.7	15.5	14.7	15.4	15.0
Average	23.7	36.8	41.3	42.8	58.7	59.7	59.9	60.0	15.5	14.5	15.6	15.2
LSD (0.05)	3.1	5.5	4.8	3.8	0.9	1.1	ns	0.7	0.6	1.7	1.2	0.9
C.V.	7.4	7.2	7.0	6.3	0.9	0.9	1.1	0.9	2.0	5.6	4.6	4.1

+ = new for 2021, # = paid entry

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 24. 2018-2021 Intrastate Winter Wheat Test (Exp. 3505): Kalispell Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21
	1y	2y	3y	4y	1y	2y	3y	4y	1y	2y	3y	4y
# AAC Wildfire	126.0	141.5	139.1	125.1	59.4	59.3	60.3	59.2	11.8	11.0	10.1	10.6
#+ AP18 AX	123.8				57.2				11.7			
#+ Balance	128.6				57.8				12.2			
#+ Battle AX	115.8				58.6				11.9			
Bobcat	123.3	131.4	126.8	118.6	58.7	61.3	61.5	61.1	12.0	11.1	10.3	10.7
Brawl CL Plus	107.6	121.6	117.7	110.0	58.7	61.1	61.1	60.9	13.6	12.5	11.4	11.6
# Byrd CL Plus	129.3	144.0	138.1	121.1	57.3	59.8	59.7	58.6	11.1	10.1	9.3	9.9
#+ CP7017AX	104.7				56.8				11.9			
#+ CP7050AX	100.7				58.2				12.8			
#+ CP7869	112.0				57.5				11.9			
# CP7909	101.3	111.9			58.5	61.0			12.9	11.3		
Flathead	133.8	146.7	143.4	134.1	58.1	60.8	60.9	61.2	11.7	10.9	10.0	10.3
#+ Fortify SF	123.1				58.6				11.5			
FourOsix	130.4	137.1	134.4	123.9	58.2	60.5	60.4	60.6	11.4	10.6	9.7	10.1
Judee	102.5	124.4	128.0	119.6	59.1	61.6	61.8	61.0	12.2	11.3	10.4	11.1
Keldin	130.9	149.3	144.6	133.8	59.1	61.0	60.9	61.2	11.7	10.8	9.9	10.2
# LCH18-7071 (LCS Steel AX)	114.2	132.3			56.6	59.1			11.8	10.7		
# LCS Helix AX	112.3	135.8			57.9	60.6			11.3	10.5		
#+ LCS Julep	121.1				57.9				12.2			
Loma	138.6	150.7	143.9	129.8	58.3	59.8	60.4	59.1	11.7	11.1	10.3	10.8
#+ Milestone	140.2				56.7				11.2			
MT1745	137.7	152.3	143.0		58.4	60.5	60.6		11.4	10.8	9.8	
MT1872	127.7	141.3			57.5	60.5			11.5	10.8		
+ MT19175	117.5				56.2				11.8			
MTCL1737	125.1	140.9	138.1		56.6	58.9	59.4		11.5	11.0	10.1	
+ MTCL19149	125.6				57.8				11.1			
+ MTCL19151	113.1				57.1				12.1			
+ MTFH19132	130.8				57.5				11.3			
MTS18116	111.3	133.7			57.3	59.0			11.4	10.7		
MTS18149	144.1	145.4			58.2	58.4			12.0	11.3		
MTS1831	130.1	148.1			57.8	58.7			11.2	10.7		
MTS1855	111.6	132.6			59.4	61.0			11.8	11.1		
+ MTS1903	139.0				59.2				11.3			
+ MTS1908	138.8				59.2				11.2			
+ MTS1915	127.8				57.7				11.5			
#+ NAS-7653 (Ramsay)	140.5				58.0				11.2			
Northern	129.2	146.6	144.1	127.6	57.8	59.5	60.0	59.1	11.7	11.0	10.1	10.7
#+ NP13005004#49 (AP Solid)	102.0				58.8				12.0			
StandClear CLP	113.0	131.2	128.3	117.6	58.7	61.2	61.6	61.3	12.0	11.3	10.4	11.0
# SY 517 CL2	94.7	108.4	103.4	90.9	58.8	61.8	62.3	60.7	13.0	11.9	11.1	11.3
SY Clearstone 2CL	134.7	148.4	145.7	131.7	57.9	59.9	60.1	59.9	11.8	10.8	9.8	10.1
# SY Wolverine	102.7	129.8	123.6		57.2	60.4	60.7		11.6	10.9	10.0	
Warhorse	110.9	124.7	122.6	115.0	56.4	59.3	59.7	60.0	12.7	11.8	10.7	11.2
#+ WB4401	122.6				58.1				11.0			
# WB4418	119.7	132.8	129.2		56.2	58.2	58.6		11.4	10.8	10.0	
#+ WB4505	126.1				58.4				10.8			
# WB4792	134.2	153.9			60.1	61.2			11.0	10.1		
#+ Whistler	119.5				58.8				11.1			
Yellowstone	146.3	154.0	145.3	129.9	57.1	59.3	59.7	59.3	12.0	11.1	10.1	10.3
Average	122.4	137.5	133.6	121.9	58.0	60.1	60.5	60.2	11.7	11.0	10.2	10.7
LSD (0.05)	17.6	15.0	11.3	11.8	1.1	ns	1.4	ns	0.6	0.7	0.4	0.5
C.V.	8.3	5.7	5.1	6.8	1.1	1.9	1.4	2.4	3.3	2.9	2.4	3.6

+ = new for 2021, # = paid entry

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 25. 2018-2021 Intrastate Winter Wheat Test (Exp. 3507): Moccasin Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21
	1y	2y	3y	4y	1y	2y	3y	4y	1y	2y	3y	4y
# AAC Wildfire	31.0	45.2	56.1	58.4	59.0	62.3	61.9	61.8	11.6	11.1	10.6	10.9
#+ AP18 AX	35.5				61.0				9.6			
#+ Balance	30.2				60.3				11.5			
#+ Battle AX	35.1				60.6				9.1			
Bobcat	33.0	44.0	53.1	55.8	61.3	62.4	62.8	63.0	10.5	10.4	10.2	10.6
Brawl CL Plus	35.2	40.5	48.0	51.0	63.9	63.1	63.7	63.8	10.6	11.6	11.4	11.9
# Byrd CL Plus	36.5	51.4	59.6	<u>61.7</u>	60.2	62.9	62.3	62.7	9.5	9.3	9.2	9.8
#+ CP7017AX	34.0				59.8				10.6			
#+ CP7050AX	32.8				63.6				11.1			
#+ CP7869	22.5				61.1				11.7			
# CP7909	35.3	39.1			61.6	62.1			10.1	11.0		
Flathead	38.6	42.8	50.0	53.9	61.9	62.4	62.9	63.1	10.7	11.1	10.7	11.1
#+ Fortify SF	34.2				62.0				10.0			
FourOsix	31.9	47.0	56.7	59.9	60.4	63.0	63.0	63.2	10.9	10.6	10.2	10.8
Judee	30.9	43.5	52.2	53.4	61.2	63.0	63.5	63.6	11.0	11.0	10.7	11.2
Keldin	33.9	47.3	55.9	58.3	61.5	63.9	63.7	63.6	10.3	10.6	10.3	10.7
# LCH18-7071 (LCS Steel AX)	31.2	48.0			60.1	62.9			9.9	9.5		
# LCS Helix AX	31.7	42.1			61.9	62.9			10.2	10.7		
#+ LCS Julep	32.0				<u>64.4</u>				11.2			
Loma	32.9	46.2	54.6	57.8	61.0	62.5	62.6	62.6	10.5	10.5	10.2	10.6
#+ Milestone	32.3				60.2				10.9			
MT1745	35.2	45.9	56.5		60.9	62.4	62.6		10.2	10.5	10.3	
MT1872	32.0	44.4			61.4	64.6			10.4	11.0		
+ MT19175	36.5				60.3				10.4			
MTCL1737	29.7	45.9	54.4		61.2	62.5	62.0		11.1	10.6	10.3	
+ MTCL19149	33.8				60.9				10.5			
+ MTCL19151	34.8				62.1				10.0			
+ MTFH19132	32.6				60.0				10.1			
MTS18116	26.4	42.7			60.7	62.1			10.7	10.0		
MTS18149	34.5	47.6			60.5	63.0			11.4	10.8		
MTS1831	27.7	41.3			60.5	62.5			11.3	10.4		
MTS1855	31.7	44.5			61.2	61.7			10.8	10.6		
+ MTS1903	33.9				61.2				10.6			
+ MTS1908	31.4				60.9				11.1			
+ MTS1915	28.4				60.8				11.8			
#+ NAS-7653 (Ramsay)	31.5				61.1				10.6			
Northern	35.0	47.4	58.1	59.9	61.0	62.4	62.6	62.7	10.7	10.9	10.5	11.0
#+ NP13005004#49 (AP Solid)	31.6				63.8				10.8			
StandClear CLP	31.5	43.2	51.4	55.7	61.4	62.9	63.2	63.2	10.9	11.1	10.9	11.3
# SY 517 CL2	29.8	32.4	46.0	49.6	62.6	62.7	62.8	63.2	10.9	12.5	11.8	12.0
SY Clearstone 2CL	36.8	47.2	58.3	61.0	59.8	62.2	62.3	62.3	10.4	10.5	10.1	10.5
# SY Wolverine	<u>38.8</u>	43.3	53.3		62.3	62.7	62.9		10.3	10.6	10.6	
Warhorse	32.3	41.8	49.8	52.3	61.4	62.5	62.9	62.8	11.1	11.1	10.8	11.3
#+ WB4401	32.1				59.4				11.0			
# WB4418	34.9	42.8	52.2		62.6	62.1	62.3		10.0	10.6	10.5	
#+ WB4505	34.4				61.6				10.4			
# WB4792	34.2	46.6			62.2	63.1			9.3	9.5		
#+ Whistler	34.7				61.6				9.9			
Yellowstone	33.9	45.6	54.3	58.2	60.4	61.5	61.9	62.0	10.3	10.5	10.2	10.6
Average	32.9	44.2	53.7	56.4	61.2	62.6	62.7	62.9	10.6	10.6	10.5	10.9
LSD (0.05)	6.8	ns	ns	6.1	0.9	ns	ns	1.1	0.9	ns	0.9	0.7
C.V.	11.8	12.6	8.9	7.6	0.8	1.8	1.4	1.3	4.7	7.2	5.3	4.6

+ = new for 2021, # = paid entry

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 26. 2018-2021 Intrastate Winter Wheat Test (Exp. 3508): Huntley Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21
	1y	2y	3y	4y	1y	2y	3y	4y	1y	2y	3y	4y
# AAC Wildfire	48.4	62.7	74.4	80.5	57.4	60.3	60.9	61.3	15.9	15.0	14.2	13.9
#+ AP18 AX	55.7				56.3				13.9			
#+ Balance	50.6				57.5				16.4			
#+ Battle AX	61.4				55.8				14.6			
Bobcat	57.2	67.4	78.2	83.9	57.9	60.5	61.0	61.3	15.0	14.6	14.0	13.7
Brawl CL Plus	60.2	70.3	87.9	94.5	59.2	62.2	62.7	62.8	15.1	14.6	14.0	13.7
# Byrd CL Plus	56.8	77.6	91.6	100.1	57.5	60.7	60.7	61.0	15.0	13.8	12.9	12.6
#+ CP7017AX	57.1				56.8				14.0			
#+ CP7050AX	61.7				62.2				13.7			
#+ CP7869	48.7				57.4				15.0			
# CP7909	69.5	73.6			61.0	62.8			13.3	13.0		
Flathead	58.6	70.0	86.9	94.4	57.2	61.1	61.5	61.9	15.5	14.6	13.8	13.3
#+ Fortify SF	60.1				60.7				13.7			
FourOsix	63.4	73.7	84.2	90.9	59.1	61.6	61.6	61.7	14.6	14.2	13.6	13.3
Judee	53.2	66.1	76.0	82.1	58.2	61.0	61.0	61.3	15.9	15.1	14.3	13.9
Keldin	59.0	75.7	94.8	105.2	58.1	61.2	61.6	62.0	15.1	14.3	13.3	12.9
# LCH18-7071 (LCS Steel AX)	54.2	67.8			58.0	60.7			14.3	13.7		
# LCS Helix AX	57.5	68.0			59.3	62.1			13.4	13.1		
#+ LCS Julep	55.1				61.0				15.1			
Loma	63.8	73.8	80.3	84.7	58.2	60.3	60.3	60.5	14.8	14.5	13.7	13.4
#+ Milestone	54.0				53.6				15.1			
MT1745	59.3	71.0	84.9		58.8	61.2	61.2		14.8	14.0	13.3	
MT1872	48.3	70.1			56.9	60.9			14.4	13.8		
+ MT19175	53.9				55.8				15.3			
MTCL1737	57.7	71.8	86.8		59.1	61.1	61.2		15.0	14.2	13.4	
+ MTCL19149	61.6				58.0				15.1			
+ MTCL19151	65.6				59.2				14.6			
+ MTFH19132	55.9				57.0				15.3			
MTS18116	39.8	55.4			57.6	60.8			16.1	14.5		
MTS18149	55.0	66.1			58.4	60.5			15.4	14.7		
MTS1831	50.0	63.5			58.1	61.4			14.9	13.7		
MTS1855	46.7	65.4			57.5	60.3			16.4	15.6		
+ MTS1903	60.3				58.4				14.9			
+ MTS1908	60.2				58.0				14.7			
+ MTS1915	44.2				57.6				15.2			
#+ NAS-7653 (Ramsay)	63.1				58.1				14.7			
Northern	55.8	70.0	83.6	89.8	57.7	60.7	61.2	61.5	15.7	15.2	14.2	13.7
#+ NP13005004#49 (AP Solid)	56.7				60.5				14.1			
StandClear CLP	60.5	72.6	85.3	90.2	58.9	61.5	61.9	62.2	14.9	14.6	13.9	13.7
# SY 517 CL2	55.2	65.2	85.7	94.5	58.6	62.0	62.7	62.9	15.3	14.8	13.9	13.4
SY Clearstone 2CL	64.8	76.7	88.2	92.0	58.8	60.9	60.5	60.8	15.2	14.6	13.7	13.4
# SY Wolverine	58.6	70.8	91.5		59.9	62.6	62.7		14.7	13.9	13.2	
Warhorse	50.8	63.8	78.3	86.4	57.2	60.0	60.7	61.2	16.3	15.1	14.4	14.2
#+ WB4401	60.0				56.0				14.2			
# WB4418	58.1	66.8	80.4		59.5	62.0	61.8		14.0	13.5	13.0	
#+ WB4505	59.2				58.7				14.0			
# WB4792	61.3	67.0			60.1	62.7			14.3	13.3		
#+ Whistler	54.3				56.7				14.8			
Yellowstone	58.8	71.5	82.9	88.3	56.8	60.1	60.2	60.5	15.2	14.2	13.6	13.3
Average	56.8	69.1	84.3	90.5	58.2	61.1	61.3	61.5	14.9	14.3	13.7	13.5
LSD (0.05)	9.2	ns	ns	9.8	1.8	1.5	1.2	0.9	1.1	0.9	0.6	0.5
C.V.	9.4	7.9	8.4	7.6	1.9	1.2	1.2	1.1	4.3	3.2	2.7	2.8

+ = new for 2021, # = paid entry

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 27. 2018-2021 Intrastate Winter Wheat Test (Exp. 3518): Conrad Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21
	1y	2y	3y	4y	1y	2y	3y	4y	1y	2y	3y	4y
# AAC Wildfire	53.5	80.6	70.5	68.3	61.9	62.1	60.6	60.6	10.6	11.1	12.3	12.7
#+ AP18 AX	52.3				61.7				10.0			
#+ Balance	46.6				61.3				11.8			
#+ Battle AX	48.6				62.5				10.9			
Bobcat	58.9	82.6	77.8	75.1	62.4	63.0	61.3	61.7	11.3	11.5	12.3	12.9
Brawl CL Plus	52.6	66.8	71.0	69.6	63.4	64.0	62.1	62.5	11.2	12.2	12.5	12.7
# Byrd CL Plus	58.5	84.5	78.2	77.8	61.2	62.0	60.0	60.2	10.3	10.6	11.5	11.9
#+ CP7017AX	49.9				61.4				11.1			
#+ CP7050AX	44.3				62.6				11.6			
#+ CP7869	46.5				62.4				11.2			
# CP7909	57.6	70.0			61.9	62.6			10.8	11.6		
Flathead	60.6	80.8	74.9	69.4	62.3	62.6	60.3	60.6	11.2	11.6	12.2	13.0
#+ Fortify SF	47.3				62.2				10.9			
FourOsix	62.8	86.0	78.8	74.3	61.5	61.9	60.0	60.3	11.1	11.5	12.2	12.7
Judee	53.5	72.7	64.7	62.8	62.9	63.4	61.3	61.8	11.8	11.8	12.8	13.4
Keldin	56.2	72.1	72.3	69.6	62.2	62.6	60.7	61.1	10.9	11.6	12.3	12.7
# LCH18-7071 (LCS Steel AX)	47.1	67.4			61.3	61.5			10.0	10.7		
# LCS Helix AX	49.1	73.6			62.9	63.5			10.1	10.7		
#+ LCS Julep	66.3				64.7				12.4			
Loma	70.0	86.9	79.3	75.6	61.7	62.0	60.3	60.9	11.4	11.5	12.3	13.0
#+ Milestone	55.0				60.1				10.5			
MT1745	67.9	84.2	80.0		62.3	62.5	60.6		11.1	11.2	11.8	
MT1872	61.6	79.9			61.9	63.0			10.9	11.3		
+ MT19175	57.4				61.3				10.7			
MTCL1737	45.7	72.1	71.6		60.7	61.0	59.6		11.3	11.5	12.2	
+ MTCL19149	55.8				60.6				10.7			
+ MTCL19151	48.9				61.8				11.4			
+ MTFH19132	63.9				60.3				11.3			
MTS18116	51.0	80.0			62.1	62.6			10.6	10.6		
MTS18149	61.6	84.4			61.4	61.8			11.1	11.7		
MTS1831	58.5	80.0			61.9	62.7			10.9	10.9		
MTS1855	57.2	76.4			62.1	62.3			11.1	11.3		
+ MTS1903	55.3				61.6				10.8			
+ MTS1908	54.1				61.5				11.0			
+ MTS1915	62.3				61.5				10.6			
#+ NAS-7653 (Ramsay)	53.9				61.7				11.2			
Northern	58.5	88.2	81.8	75.1	61.8	61.9	60.3	60.8	10.6	11.4	12.3	12.8
#+ NP13005004#49 (AP Solid)	48.6				63.8				11.2			
StandClear CLP	53.6	80.4	75.1	74.2	62.7	63.4	61.6	61.7	11.2	11.7	12.6	12.9
# SY 517 CL2	40.1	58.6	60.4	62.5	63.5	63.8	62.2	62.4	11.8	12.5	12.6	12.6
SY Clearstone 2CL	58.4	75.6	71.3	69.8	61.0	60.9	59.1	59.3	11.0	11.0	11.9	12.5
# SY Wolverine	44.8	61.2	64.6		63.0	63.2	62.0		11.1	11.6	12.3	
Warhorse	56.8	77.9	68.5	63.9	61.6	61.9	59.6	59.8	11.4	11.8	12.6	13.2
#+ WB4401	56.7				61.9				10.0			
# WB4418	49.8	72.6	69.1		62.0	62.2	60.1		11.3	11.4	12.0	
#+ WB4505	54.9				61.5				10.0			
# WB4792	60.4	83.3			63.8	63.9			10.4	10.7		
#+ Whistler	53.0				62.6				10.8			
Yellowstone	64.6	77.4	70.7	67.1	61.1	61.5	59.7	60.0	11.4	11.6	12.2	12.8
Average	54.9	77.0	72.7	70.3	62.0	62.5	60.6	60.9	11.0	11.4	12.3	12.8
LSD (0.05)	14.4	13.8	ns	ns	0.8	0.8	0.9	0.7	0.9	0.8	ns	ns
C.V.	15.1	8.7	12.1	11.9	0.7	0.6	0.9	0.8	5.0	3.5	4.3	4.8

+ = new for 2021, # = paid entry

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 28. 2018-2021 Intrastate Winter Wheat Test (Exp. 35FB): Ft. Benton Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21
	1y	2y	3y	4y	1y	2y	3y	4y	1y	2y	3y	4y
# AAC Wildfire	30.5	50.0	48.3	53.8	57.0	59.5	59.8	59.9	14.7	13.3	13.3	13.0
#+ AP18 AX	39.2				57.4				13.2			
#+ Balance	39.0				56.7				15.2			
#+ Battle AX	40.2				55.8				14.2			
Bobcat	35.6	47.7	52.5	56.5	58.0	60.1	60.3	60.6	14.6	13.7	13.5	13.0
Brawl CL Plus	51.9	52.3	55.2	57.2	60.1	61.5	61.3	61.7	13.9	14.3	13.7	13.4
# Byrd CL Plus	38.3	54.8	52.0	57.4	53.3	58.0	57.6	58.3	14.9	13.2	12.8	12.5
#+ CP7017AX	38.9				56.1				13.7			
#+ CP7050AX	36.0				60.3				14.0			
#+ CP7869	43.0				56.8				13.7			
# CP7909	51.7	49.1			59.4	60.7			13.4	13.6		
Flathead	50.4	54.0	55.6	56.4	61.0	61.3	60.8	60.6	13.4	13.6	13.2	12.8
#+ Fortify SF	37.8				59.8				13.2			
FourOsix	40.3	50.2	52.3	52.6	57.2	59.4	59.2	59.4	14.7	13.7	13.5	13.2
Judee	32.6	47.2	51.8	54.8	56.1	59.8	60.3	60.5	14.8	14.2	13.9	13.6
Keldin	55.4	58.8	57.7	58.3	60.2	61.0	60.6	60.5	12.9	12.9	12.9	12.7
# LCH18-7071 (LCS Steel AX)	41.3	52.6			57.1	59.8			13.1	12.9		
# LCS Helix AX	43.6	49.5			59.8	61.3			13.4	13.1		
#+ LCS Julep	45.7				60.9				14.3			
Loma	42.1	52.0	54.6	57.7	58.9	60.4	60.3	60.0	13.2	13.4	13.3	13.0
#+ Milestone	52.7				56.6				13.3			
MT1745	32.4	48.1	51.9		55.3	59.2	59.4		14.8	13.5	13.1	
MT1872	31.0	47.8			53.5	58.3			13.8	13.3		
+ MT19175	37.5				56.5				14.3			
MTCL1737	37.0	52.9	53.1		57.3	58.9	58.9		15.2	14.0	13.9	
+ MTCL19149	41.4				57.2				14.3			
+ MTCL19151	42.3				57.8				14.2			
+ MTFH19132	41.4				56.9				13.7			
MTS18116	30.5	51.2			56.6	60.2			15.0	13.5		
MTS18149	44.0	57.7			60.5	61.1			12.9	13.2		
MTS1831	38.3	50.8			58.1	60.8			13.9	13.0		
MTS1855	35.1	53.7			56.7	59.5			14.8	13.5		
+ MTS1903	52.0				59.5				13.3			
+ MTS1908	49.9				59.7				13.0			
+ MTS1915	33.9				57.9				14.4			
#+ NAS-7653 (Ramsay)	55.1				58.7				13.5			
Northern	37.0	55.1	55.4	59.0	56.6	59.6	59.8	59.8	15.0	13.9	13.7	13.3
#+ NP13005004#49 (AP Solid)	45.7				63.3				12.4			
StandClear CLP	41.4	52.0	53.5	53.4	58.1	60.0	60.0	60.2	14.1	14.0	13.6	13.3
# SY 517 CL2	47.3	47.7	51.6	53.4	61.3	62.0	61.7	61.8	14.0	14.4	14.0	13.6
SY Clearstone 2CL	34.0	48.4	51.1	55.5	55.9	58.5	58.7	58.8	14.7	13.8	13.5	13.2
# SY Wolverine	44.1	49.2	47.5		60.5	60.8	60.8		14.1	13.8	13.9	
Warhorse	34.3	49.0	51.8	57.0	54.1	58.1	59.1	59.5	15.8	14.7	14.3	13.9
#+ WB4401	39.9				57.8				13.1			
# WB4418	45.0	57.0	56.0		58.4	59.9	60.0		13.3	12.9	12.7	
#+ WB4505	38.7				57.2				13.7			
# WB4792	43.7	52.0			61.5	62.2			12.9	12.6		
#+ Whistler	43.1				57.5				13.1			
Yellowstone	40.5	50.4	50.9	55.7	56.2	58.6	58.7	58.7	14.3	13.7	13.4	13.1
Average	41.3	51.5	52.8	55.9	57.9	60.0	59.9	60.0	13.9	13.5	13.5	13.2
LSD (0.05)	11.5	ns	ns	ns		ns	ns	1.8		ns	ns	ns
C.V.	17.3	17.0	13.4	12.7		3.0	2.3	2.1		6.6	5.3	4.7

+ = new for 2021, # = paid entry

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 29. 2018-2021 Intrastate Winter Wheat Test (Exp. 35): Combined Locations Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21
location-years	9	18	27	36	9	18	27	36	9	18	27	36
# AAC Wildfire	49.4	65.3	70.5	72.6	58.5	59.9	60.3	60.5	14.0	13.3	13.2	13.0
#+ AP18 AX	50.7				57.9				12.9			
#+ Balance	47.7				57.9				14.8			
#+ Battle AX	48.9				58.2				13.4			
Bobcat	51.2	64.3	69.7	71.8	59.1	60.7	61.0	61.4	13.8	13.3	13.1	13.0
Brawl CL Plus	49.7	59.2	65.2	67.3	59.4	61.4	61.7	62.1	14.1	13.8	13.7	13.5
# Byrd CL Plus	51.7	68.5	72.4	74.6	57.6	59.9	60.0	60.4	13.2	12.4	12.2	12.1
#+ CP7017AX	47.8				57.5				13.1			
#+ CP7050AX	46.9				60.2				13.7			
#+ CP7869	48.5				58.0				13.6			
# CP7909	52.1	57.8			59.3	60.8			13.2	12.8		
Flathead	57.6	66.8	71.9	73.2	59.0	60.7	60.9	61.3	13.7	13.2	13.0	12.9
#+ Fortify SF	49.9				60.1				13.0			
FourOsix	53.5	67.3	72.3	73.5	58.7	60.5	60.6	60.9	13.8	13.2	13.0	12.9
Judee	43.1	59.1	65.9	68.0	58.8	61.1	61.4	61.7	14.6	14.0	13.8	13.7
Keldin	55.5	69.1	75.5	78.2	59.3	60.9	61.0	61.4	13.4	13.0	12.8	12.7
# LCH18-7071 (LCS Steel AX)	50.7	64.6			58.8	60.4			12.6	12.1		
# LCS Helix AX	49.4	62.6			59.6	61.3			12.8	12.4		
#+ LCS Julep	52.8				60.5				14.1			
Loma	56.9	69.1	73.1	74.3	58.8	60.2	60.5	60.6	13.6	13.2	13.1	13.0
#+ Milestone	52.8				56.7				13.4			
MT1745	55.2	67.7	74.1		58.6	60.5	60.7		13.3	12.7	12.6	
MT1872	50.2	64.8			58.3	60.6			13.3	12.9		
+ MT19175	51.8				57.7				13.6			
MTCL1737	49.1	65.2	71.6		58.9	60.1	60.1		14.0	13.4	13.2	
+ MTCL19149	51.5				58.1				13.6			
+ MTCL19151	52.8				58.3				13.7			
+ MTFH19132	53.1				57.5				13.6			
MTS18116	43.8	62.5			58.7	60.8			13.7	12.8		
MTS18149	56.5	68.4			59.5	60.4			13.8	13.4		
MTS1831	48.8	64.2			59.0	60.9			13.5	12.7		
MTS1855	48.4	64.6			58.5	60.4			14.2	13.6		
+ MTS1903	54.3				59.1				13.5			
+ MTS1908	53.7				59.0				13.5			
+ MTS1915	48.1				58.8				13.7			
#+ NAS-7653 (Ramsay)	56.6				58.5				13.4			
Northern	53.0	69.3	75.7	76.5	58.2	60.1	60.5	60.8	14.0	13.5	13.3	13.2
#+ NP13005004#49 (AP Solid)	45.6				61.1				13.3			
StandClear CLP	49.7	64.1	70.2	71.7	59.3	61.0	61.3	61.5	13.8	13.4	13.3	13.2
# SY 517 CL2	43.9	52.8	59.3	61.9	59.6	61.5	61.8	62.0	14.2	14.0	13.8	13.5
SY Clearstone 2CL	52.4	66.7	73.0	74.5	58.2	59.8	59.9	60.2	13.8	13.2	13.1	13.0
# SY Wolverine	47.5	59.6	64.5		59.7	61.1	61.3		13.6	13.1	13.2	
Warhorse	46.9	59.6	64.5	67.2	57.4	59.5	60.0	60.5	14.5	13.9	13.8	13.7
#+ WB4401	49.5				58.0				12.9			
# WB4418	49.7	61.5	65.5		58.5	60.2	60.2		13.3	12.7	12.7	
#+ WB4505	51.8				58.8				12.9			
# WB4792	54.2	67.7			60.7	62.2			12.7	12.2		
#+ Whistler	51.7				58.8				13.0			
Yellowstone	57.5	68.8	73.3	74.5	57.8	59.7	59.9	60.2	13.7	13.2	13.0	12.9
Average	50.9	64.3	69.9	72.0	58.7	60.6	60.7	61.0	13.6	13.1	13.1	13.1
LSD (0.05)	6.2	4.5	4.2	3.6	1.1	0.6	0.5	0.4	0.5	0.4	0.3	0.2
C.V.	13.2	10.6	11.1	10.7	2.0	1.6	1.4	1.4	3.9	4.4	4.0	4.1

+ = new for 2021, # = paid entry

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 30. 2018-2021 Intrastate Winter Wheat Test (Exp. 35): Combined Locations Winter Survival and associated Yield (Locations: Williston (2019, 2020), Sidney (2018, 2019, 2021), and Conrad (2020) = 6 locations

location-years	Winter Survival (%)				Yield under Winterkill conditions			
	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21
	1	3	5	6	1	3	5	6
# AAC Wildfire	96	85	73	71	53.5	72.1	71.9	71.6
#+ AP18 AX	32				34.9			
#+ Balance	5				19.0			
#+ Battle AX	16				27.6			
Bobcat	70	69	59	58	46.3	67.7	65.2	65.0
Brawl CL Plus	28	61	56	54	24.4	50.5	46.2	48.6
# Byrd CL Plus	39	69	58	58	30.3	64.2	58.5	61.6
#+ CP7017AX	31				30.4			
#+ CP7050AX	42				33.8			
#+ CP7869	91				47.5			
# CP7909	41	57			27.2	51.3		
Flathead	68	79	69	65	45.1	64.2	60.8	60.2
#+ Fortify SF	34				37.7			
FourOsix	51	72	61	59	41.2	68.0	65.0	65.5
Judee	14	58	56	55	18.6	52.8	57.7	59.2
Keldin	40	60	54	55	40.5	60.3	60.0	65.4
# LCH18-7071 (LCS Steel)	39	48			47.1	63.6		
# LCS Helix AX	45	68			38.9	62.1		
#+ LCS Julep	19				23.8			
Loma	91	83	70	66	51.4	68.5	67.0	67.9
#+ Milestone	9				23.6			
MT1745	87	80	70		51.9	67.7	68.6	
MT1872	69	71			40.0	60.3		
+ MT19175	68				52.3			
MTCL1737	70	74	64		46.8	65.9	66.0	
+ MTCL19149	10				34.8			
+ MTCL19151	72				47.9			
+ MTFH19132	38				39.1			
MTS18116	56	68			40.2	66.4		
MTS18149	80	75			53.9	70.6		
MTS1831	51	68			39.3	63.2		
MTS1855	62	71			48.4	65.2		
+ MTS1903	32				38.3			
+ MTS1908	53				38.6			
+ MTS1915	60				44.8			
#+ NAS-7653 (Ramsay)	44				37.5			
Northern	58	75	63	61	43.2	72.9	71.7	73.7
#+ NP13005004#49 (AP S)	6				11.6			
StandClear CLP	73	79	68	67	44.3	67.1	66.3	66.9
# SY 517 CL2	10	43	43	42	15.7	46.4	41.9	45.0
SY Clearstone 2CL	57	74	65	62	37.8	61.3	60.6	61.4
# SY Wolverine	31	57	48		26.0	49.6	44.4	
Warhorse	70	76	64	62	39.7	60.8	57.3	59.3
#+ WB4401	28				27.4			
# WB4418	26	59	54		33.5	58.9	51.2	
#+ WB4505	41				37.7			
# WB4792	26	61			38.5	66.3		
#+ Whistler	70				50.6			
Yellowstone	83	78	67	66	53.1	64.0	64.2	65.6
Average	47.5	68.6	61.1	60.0	37.9	62.6	60.2	62.5
LSD (0.05)	29.4	22.6	15.3	13.4	9.0	10.9	11.2	9.8
C.V.	36.0	20.1	19.8	19.3	13.7	10.7	14.7	13.6

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Table 31. 2018-2021 Intrastate Winter Wheat Test (Exp. 35): Combined Locations Heading Date, Height, and Lodging

Cultivar/Line	Heading Date (Julian)				Plant Height (in)				Lodging %
	2021	2020-21	2019-21	2018-21	2021	2020-21	2019-21	2018-21	2019
location-years	6	12	20		8	14	23		1
# AAC Wildfire	169.3	168.2	170.1	168.6	29.6	30.0	30.9	31.6	24
##+ AP18 AX	162.6				27.9				
##+ Balance	165.1				27.9				
##+ Battle AX	163.3				27.5				
Bobcat	166.6	165.6	166.9	165.5	26.9	27.2	27.8	27.9	10
Brawl CL Plus	160.8	159.1	159.7	158.3	28.9	28.4	28.7	28.7	8
# Byrd CL Plus	164.1	162.0	163.0	161.3	30.4	30.3	30.7	31.1	19
##+ CP7017AX	162.8				26.8				
##+ CP7050AX	160.6				28.1				
##+ CP7869	161.2				26.5				
# CP7909	159.3	157.6			28.0	27.1			
Flathead	162.3	160.4	161.6	160.1	28.9	28.9	29.4	29.6	0
##+ Fortify SF	163.2				28.8				
FourOsix	165.6	164.0	165.2	163.7	28.1	28.2	28.7	29.0	0
Judee	165.9	164.9	165.9	164.4	28.6	29.0	29.8	30.2	6
Keldin	166.0	164.9	166.4	164.8	29.1	29.1	29.5	29.9	3
# LCH18-7071 (LCS Steel	166.8	165.5			29.1	29.4			
# LCS Helix AX	162.5	160.5			26.9	27.2			
##+ LCS Julep	162.2				28.1				
Loma	167.9	167.2	168.3	166.9	28.1	28.0	28.5	28.7	15
##+ Milestone	166.3				27.1				
MT1745	166.6	165.5	166.9		28.5	28.9	29.6		0
MT1872	166.1	164.8			27.4	27.9			
+ MT19175	168.0				27.0				
MTCL1737	168.4	167.2	168.7		26.6	26.7	27.5		0
+ MTCL19149	166.9				28.1				
+ MTCL19151	163.9				27.0				
+ MTFH19132	165.0				30.4				
MTS18116	168.9	167.6			25.1	25.9			
MTS18149	168.6	167.5			26.8	26.9			
MTS1831	169.1	168.2			25.9	26.3			
MTS1855	167.5	166.6			27.0	27.4			
+ MTS1903	168.7				28.0				
+ MTS1908	169.5				27.9				
+ MTS1915	168.9				25.9				
##+ NAS-7653 (Ramsay)	166.1				28.7				
Northern	167.3	166.0	167.5	166.2	28.5	29.2	29.9	30.2	22
##+ NP13005004#49 (AP Sol	165.2				26.6				
StandClear CLP	165.4	164.6	165.9	164.4	28.8	29.1	29.7	30.0	15
# SY 517 CL2	161.1	159.7	160.5	158.9	27.1	26.7	27.1	27.5	0
SY Clearstone 2CL	166.3	165.4	166.6	165.5	30.4	30.9	31.5	32.2	32
# SY Wolverine	162.3	160.3	161.4		26.9	26.6	26.7		0
Warhorse	166.2	165.1	166.4	165.1	28.1	28.3	29.0	29.2	6
##+ WB4401	162.0				26.4				
# WB4418	162.3	160.7	161.6		26.6	26.6	26.8		3
##+ WB4505	162.6				28.2				
# WB4792	165.1	164.1			29.0	28.9			
##+ Whistler	164.4				29.5				
Yellowstone	166.5	165.4	166.8	165.7	29.5	30.2	31.1	31.5	3
Average	165.2	164.2	165.2	164.0	27.9	28.2	29.1	29.8	12.0
LSD (0.05)	1.5	0.9	0.7	0.6	1.3	0.9	0.7	0.7	8.0
C.V.	0.8	0.7	0.7	0.6	4.6	4.4	4.4	4.5	17.1

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Table 32. 2018-2021 Intrastate Winter Wheat Test (Exp. 35): Combined Locations Sawfly Cutting and Yield

Cultivar/Line	Sawfly Cutting (%) Conrad, Havre and Ft. Benton				Yield under cutting greater than 10%			
	Test Average above 10%				2021	2020-21	2019-21	2018-21
	2021	2020-21	2019-21	2018-21				
location-years	2	4	7	9	2	4	7	9
# AAC Wildfire	20	26	35	30	24.1	52.0	51.0	54.3
#+ AP18 AX	27				33.9			
#+ Balance	39				31.4			
#+ Battle AX	14				34.7			
Bobcat	6	8	10	8	30.6	56.7	60.0	61.7
Brawl CL Plus	19	19	30	29	40.7	52.4	57.5	59.0
# Byrd CL Plus	15	21	28	29	32.5	58.3	56.6	60.7
#+ CP7017AX	25				35.0			
#+ CP7050AX	21				35.0			
#+ CP7869	35				37.8			
# CP7909	24	31			43.1	49.6		
Flathead	29	26	38	41	42.8	59.2	58.3	57.8
#+ Fortify SF	31				30.3			
FourOsix	20	33	44	46	32.0	56.6	57.8	57.7
Judee	23	21	27	25	25.7	48.5	50.9	53.0
Keldin	31	36	47	45	42.0	57.5	58.7	59.1
# LCH18-7071 (LCS Steel	35	36			33.6	52.3		
# LCS Helix AX	43	32			36.7	55.8		
#+ LCS Julep	21				37.4			
Loma	13	18	24	22	33.2	55.8	56.9	58.9
#+ Milestone	34				39.3			
MT1745	15	20	26		26.9	51.1	56.2	
MT1872	8	13			26.2	50.8		
+ MT19175	16				28.7			
MTCL1737	7	15	25		27.9	51.5	55.2	
+ MTCL19149	25				31.1			
+ MTCL19151	28				36.7			
+ MTFH19132	48				32.3			
MTS18116	3	5			24.1	53.3		
MTS18149	12	15			35.0	58.4		
MTS1831	1	4			28.0	52.4		
MTS1855	9	22			27.3	50.8		
+ MTS1903	3				35.7			
+ MTS1908	1				35.5			
+ MTS1915	1				25.2			
#+ NAS-7653 (Ramsay)	33				41.2			
Northern	21	20	30	30	29.9	56.8	58.6	59.4
#+ NP13005004#49 (AP So	20				37.3			
StandClear CLP	37	36	39	36	32.6	56.4	58.4	59.2
# SY 517 CL2	25	26	33	31	40.6	50.7	53.2	55.6
SY Clearstone 2CL	21	30	44	46	26.4	49.5	53.4	56.5
# SY Wolverine	18	25	32		36.2	49.7	51.9	
Warhorse	7	13	14	11	27.5	51.3	51.3	53.5
#+ WB4401	19				31.6			
# WB4418	10	15	22		38.4	54.6	55.5	
#+ WB4505	41				34.0			
# WB4792	28	24			36.9	58.5		
#+ Whistler	36				32.3			
Yellowstone	29	32	42	45	34.2	53.0	53.7	55.8
Average	21.3	22.1	31.1	31.6	33.1	53.7	55.5	57.5
LSD (0.05)	17.4	12.6	10.0	11.0	8.1	ns	ns	ns
C.V.	40.7	40.5	30.4	37.4	12.1	14.2	12.3	12.2

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