



MONTANA
STATE UNIVERSITY

College of
**AGRICULTURE &
MONTANA AGRICULTURAL
EXPERIMENT STATION**

PROJECT TITLE:

2025 INTRASTATE DURUM ADVANCED YIELD TRIALS

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➤ Funding provided by the Montana Wheat and Barley Committee, U.S. Wheat and Barley Scab

Initiative and The Montana Agricultural Experiment Station.

OBJECTIVE:

To test advanced experimental durum lines for agronomic and quality traits relative to currently grown cultivars under Montana growing conditions.

METHODS:

In 2025, 20 experimental durum lines developed at MSU (MTD) and 10 released durum varieties including releases from WestBred, North Dakota Agriculture Experiment Station (NAES), University of Saskatchewan Crop Development Centre (CDC), Agriculture and Agri-Food Canada (AAC), and the Montana Agricultural Experiment Station (MAES) (Table 1). Experiments were carried out in collaboration with the MAES in Bozeman, MT (MSU-Post Agronomy Farm), and at off-campus Research Centers near Havre, MT (MSU-NARC), Sidney, MT (MSU-EARC), Conrad, MT (MSU-WTARC), and Moccasin, MT (MSU-CARC). Four off-station experiments were planted in Eastern Montana in Roosevelt, McCone, Valley, and Wibaux counties by EARC staff. Five off-station experiments were planted in North Central Montana near Loring, Turner, Chester, Valier (irrigated) and Choteau by NARC staff. Off-station trials did not encompass all experimental lines and consisted primarily of released varieties. Data was not obtained for the Valley Co. location due to drought and the Turner location due to hail. The on-station plots at WTARC were planted as demonstration plots and no data was collected.

There were three replicates of each line/variety grown at each location in either a randomized complete block design or an alpha-lattice design to determine statistical differences. Prior to planting, seed was treated with CruiserMaxx Vibrance for Cereals® (Syngenta) (5 fl oz/100 lb). Cooperators provided agronomic data including plant height, heading date, pest/disease ratings, lodging, grain protein content, grain test weight, and grain yield. Sub-samples from the three replicates per line per location from on-station locations were bulked and submitted to Dr. Linda Dykes (USDA-ARS, Fargo, ND) for analysis of seed traits, flour milling and semolina quality, and semolina mixing strength. Disease evaluations for Fusarium head blight were conducted by Dr. Frankie Crutcher in Sidney, MT (EARC). Disease evaluations for stripe rust were conducted at three locations in Washington state by Dr. Xianming Chen (USDA-ARS, Pullman, WA). Disease evaluations for tan spot were conducted in the greenhouse by Dr. Zhaohui Liu and Md. Mukul Islam (NDSU, Fargo, ND).

Mean agronomic performance for both irrigated on-station trials can be found in Table 2 and for all rainfed on-station trials in Table 3. Agronomic performance for individual on-station trials is found in Tables 4-9 and data for off-station trials is found in Tables 10-18. Mean seed quality is summarized in Table 19, milling data in Table 20, and semolina quality in Table 21. Disease evaluations for Fusarium head blight, stripe rust and tan spot are found in Tables 22-24.

Table 1. Varieties tested in 2025 Intrastate Durum Advanced Yield Trial.

ID	Source	Release Year⁴
AAC Stronghold ^{1,2}	AAC	2019
Alzada	WestBred	2004
CDC Defy ¹	CDC	2019
Divide	NAES	2005
Joppa	NAES	2013
Lustre ¹	MAES	2020
Mountrail	NAES	1998
MT Blackbeard ¹	MAES	2022
MT Raska	MAES	2022
ND Riveland ¹	NAES	2017
ND Stanley ¹	NAES	2021
MTD19011 ¹	MAES	2026
MTD19241 ^{1,2}	MAES	2026
MTD22011	MAES	EXP
MTD22013	MAES	EXP
MTD22016 ¹	MAES	EXP
MTD22030 ¹	MAES	EXP
MTD22045 ¹	MAES	EXP
MTD22075 ¹	MAES	EXP
MTD22090 ¹	MAES	EXP
MTD22175 ¹	MAES	EXP
MTD22206	MAES	EXP
MTD22417 ¹	MAES	EXP
MTD22419 ¹	MAES	EXP
MTD22431 ¹	MAES	EXP
MTD22447	MAES	EXP
MTD22473 ¹	MAES	EXP
MTD22627 ¹	MAES	EXP
MTD22999	MAES	EXP
MTD23067 ¹	MAES	EXP
MTD23103 ¹	MAES	EXP

¹Low cadmium accumulating line.

²Solid stem line.

³MAES- Montana Agricultural Experiment Station, NAES-North Dakota Agricultural Experiment Station, AAC-Agriculture and Agri-food Canada, CDC- Crop Development Centre – University of Saskatchewan, Canada

⁴Year released, EXP denotes experimental line.

Table 2. Agronomic Data All On-station Irrigated 2025 Durum Advanced Yield Trials (n=2).

ID	Yield (bu/ac)	Test Weight (lbs/bu)	Protein (%)	Plant Height (inch)	Heading Date (Julian)
Alzada	99.9	62.2	14.3	28.3	175.7
CDC Defy	118.9	63.3	13.5	36.9	177.3
Divide	108.9	62.7	14.1	36.4	179.5
Joppa	114.7	63.2	13.5	35.2	178.7
Lustre	95.2	62.4	13.6	35.7	179.5
MT Blackbeard	114.9	63.1	14.2	38.7	181.2
MT Raska	101.3	63.5	14.2	27.4	175.2
MTD19011	115.2	62.0	14.0	34.6	178.7
MTD19241	115.0	62.6	14.1	32.9	178.2
MTD22011	113.4	62.4	13.9	34.4	180.0
MTD22013	116.2	62.2	14.0	31.5	178.3
MTD22016	111.3	63.2	13.7	35.6	180.0
MTD22030	127.1	63.3	12.7	35.9	179.5
MTD22045	112.9	63.4	13.4	34.6	177.3
MTD22075	113.3	63.1	14.4	34.8	178.7
MTD22090	106.1	62.7	14.3	36.2	180.0
MTD22175	117.0	62.4	14.0	34.6	178.2
MTD22206	112.5	63.8	14.6	34.5	179.0
MTD22417	123.3	63.8	14.0	40.3	181.2
MTD22419	117.4	63.4	13.7	36.4	180.2
MTD22431	102.6	62.7	13.5	36.8	180.5
MTD22447	106.0	63.2	14.6	35.3	179.0
MTD22473	116.7	62.3	13.7	36.2	180.0
MTD22627	110.0	63.6	14.1	37.7	180.5
MTD22999	89.6	62.9	14.5	25.2	173.8
MTD23067	<u>125.9</u>	61.9	13.9	29.6	177.8
MTD23103	107.1	62.3	14.8	31.6	175.2
Mountrail	109.3	62.8	13.8	34.0	178.3
ND Riveland	113.8	63.0	14.0	37.6	178.8
ND Stanley	120.0	63.8	14.0	33.9	180.2
Mean	111.8	62.9	14.0	34.4	178.7
LSD (0.05)	14.8	0.7	0.5	1.9	1.1
Pr > F	<0.0001	0.0097	0.0019	<0.0001	<0.0001

¹Grain yield reported on a 13% moisture basis.²Grain protein reported on a 12% moisture basis.³>50% of heads 100% out of boot.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 3. Agronomic Data All On-station Rainfed 2025 Durum Advanced Yield Trials (n=4).

ID	Yield (bu/ac)	Test Weight (lbs/bu)	Protein (%)	Plant Height (inch)	Heading Date (Julian)
Alzada	53.5	60.3	13.7	28.3	172.2
CDC Defy	58.8	62.5	13.5	33.6	173.5
Divide	55.1	61.5	13.6	34.0	175.6
Joppa	52.1	61.5	13.9	33.0	175.1
Lustre	53.9	60.8	13.6	32.3	175.4
MT Blackbeard	57.9	62.0	13.8	35.6	176.9
MT Raska	53.3	62.3	13.7	26.4	172.6
MTD19011	59.3	61.2	13.5	32.9	175.1
MTD19241	59.7	61.7	13.7	32.7	174.8
MTD22011	50.2	61.7	14.5	31.6	176.7
MTD22013	53.8	61.0	14.3	29.4	174.9
MTD22016	52.3	61.8	14.0	33.0	176.3
MTD22030	60.8	61.8	13.1	33.2	175.5
MTD22045	56.7	61.9	13.4	32.9	174.2
MTD22075	57.1	61.7	14.3	32.3	174.8
MTD22090	52.7	61.6	14.2	33.0	176.3
MTD22175	56.8	59.8	14.2	31.0	173.4
MTD22206	54.7	62.7	14.6	32.2	175.7
MTD22417	58.4	62.7	13.9	36.0	176.9
MTD22419	55.7	62.2	14.0	33.8	175.8
MTD22431	55.5	62.2	13.2	34.0	176.2
MTD22447	48.9	61.9	14.8	32.9	175.0
MTD22473	57.3	60.8	13.7	33.4	175.9
MTD22627	55.0	62.8	14.0	34.0	176.4
MTD22999	50.8	62.4	13.9	23.2	170.4
MTD23067	61.3	60.5	13.9	27.3	173.8
MTD23103	55.3	61.0	14.5	30.9	172.4
Mountrail	56.7	61.3	13.6	32.8	175.0
ND Riveland	55.9	61.5	14.1	34.4	175.6
ND Stanley	57.0	62.5	14.3	32.5	175.9
Mean	55.6	61.6	13.9	32.1	174.9
LSD (0.05)	6.0	0.6	0.6	1.3	1.0
Pr > F	0.0004	<0.0001	<0.0001	<0.0001	<0.0001

¹Grain yield reported on a 13% moisture basis.²Grain protein reported on a 12% moisture basis.³>50% of heads 100% out of boot. N=3.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 4. Agronomic Data Bozeman 2025 Irrigated Durum Advanced Yield Trial.

ID	Yield ¹ (bu/ac)	Test Weight (lbs/bu)	Protein ² (%)	Plant Height (inches)	Heading ³ (Julian)
Alzada	97.2	61.5	15.3	26.3	183.4
CDC Defy	127.6	62.4	14.7	35.4	184.2
Divide	109.8	61.3	15.2	33.7	187.0
Joppa	112.4	62.2	14.6	33.7	185.9
Lustre	75.2	61.3	14.7	33.7	186.7
Mountrail	104.8	61.8	15.0	33.2	185.6
MT Blackbeard	120.1	63.0	15.0	38.5	188.4
MT Raska	87.5	63.3	15.5	25.7	181.9
ND Riveland	113.7	61.9	15.2	35.2	185.9
ND Stanley	118.7	62.8	14.9	32.8	186.8
MTD19011	103.9	61.0	15.6	32.3	185.8
MTD19241	107.8	61.8	15.3	30.7	185.3
MTD22011	114.0	61.7	14.9	33.0	186.9
MTD22013	109.0	61.3	15.3	30.3	184.8
MTD22016	107.4	62.2	15.2	34.1	187.4
MTD22030	125.8	62.9	13.7	35.2	186.2
MTD22045	104.2	62.6	14.8	33.4	183.9
MTD22075	115.7	62.5	15.7	34.2	185.2
MTD22090	103.1	61.9	15.5	34.6	188.0
MTD22175	122.3	61.6	15.0	32.6	184.3
MTD22206	112.5	62.9	15.9	32.4	185.4
MTD22417	<u>132.3</u>	62.8	14.8	39.0	187.5
MTD22419	115.1	62.6	15.0	35.3	187.5
MTD22431	99.7	62.0	14.7	35.2	186.6
MTD22447	102.3	62.1	15.7	34.1	185.5
MTD22473	117.5	61.6	14.9	35.2	187.2
MTD22627	106.2	63.4	15.3	36.1	187.3
MTD22999	69.8	62.3	15.8	23.2	180.8
MTD23067	128.1	62.3	14.4	28.5	184.8
MTD23103	115.4	61.8	15.1	31.1	182.0
Average	109.3	62.2	15.1	33.0	185.6
LSD(0.05)	23.6	0.6	0.3	1.6	1.2
Prob > F	0.001	<.0001	<.0001	<.0001	<.0001
CV%	12.2	0.5	1.3	2.6	0.4
Lattice RE% ⁴	124.0	130.3	166.1	155.8	114.6

¹Grain yield reported on a 13% moisture basis.²Grain protein reported on a 12% moisture basis.³>50% of heads 100% out of boot.⁴Adjusted means provided for Lattice RE% values equal to or greater than 100.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 5. Agronomic Data Bozeman 2025 Rainfed Durum Advanced Yield Trial.

ID	Yield ¹ (bu/ac)	Test Weight (lbs/bu)	Protein ² (%)	Plant Height (inches)	Heading ³ (Julian)
Alzada	66.6	61.2	14.2	26.2	181.6
CDC Defy	82.2	63.1	14.1	33.1	183.2
Divide	68.6	62.1	14.1	33.6	186.2
Joppa	80.2	62.9	14.4	32.9	184.8
Lustre	71.3	61.9	14.4	32.8	185.7
Mountrail	84.2	62.2	13.7	32.9	184.7
MT Blackbeard	85.9	63.2	14.1	35.8	187.9
MT Raska	63.7	64.1	14.3	25.8	180.3
ND Riveland	75.8	62.7	14.7	35.3	185.4
ND Stanley	90.4	63.9	14.0	33.5	186.5
MTD19011	82.2	62.1	14.2	33.3	184.4
MTD19241	81.6	62.2	14.0	33.6	184.1
MTD22011	69.4	63.2	15.6	32.1	186.4
MTD22013	74.5	62.7	14.5	30.7	183.9
MTD22016	75.6	63.5	14.1	32.4	186.7
MTD22030	89.0	62.9	13.3	33.5	186.0
MTD22045	74.2	63.2	13.9	32.8	183.3
MTD22075	83.5	63.2	14.7	34.3	185.0
MTD22090	72.7	63.1	13.7	33.3	187.6
MTD22175	85.0	61.8	13.8	32.4	183.5
MTD22206	82.5	64.0	14.7	32.5	185.5
MTD22417	81.0	63.3	14.6	37.7	187.4
MTD22419	83.1	63.4	14.2	34.9	186.5
MTD22431	77.8	63.7	13.7	34.3	185.9
MTD22447	68.8	63.0	15.6	33.6	184.9
MTD22473	84.8	62.3	14.1	33.9	186.9
MTD22627	80.8	63.9	14.2	35.1	187.1
MTD22999	63.6	63.6	14.7	23.1	179.9
MTD23067	93.4	62.5	13.8	28.0	184.0
MTD23103	68.2	62.1	15.1	30.4	181.7
Average	78.0	62.9	14.3	32.5	184.9
LSD(0.05)	9.7	0.7	0.7	1.7	1.2
Prob > F	<.0001	<.0001	<.0001	<.0001	<.0001
CV%	6.8	0.6	2.9	3.2	0.4
Lattice RE% ⁴	277.4	142.4	105.0	100.0	108.4

¹Grain yield reported on a 13% moisture basis.²Grain protein reported on a 12% moisture basis.³>50% of heads 100% out of boot.⁴Adjusted means provided for Lattice RE% values equal to or greater than 100.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 6. Agronomic Data EARC 2025 Irrigated Durum Advanced Yield Trial.

ID	Yield ¹ (bu/ac)	Test Weight (lbs/bu)	Protein ² (%)	Plant Height (inches)	Heading ³ (Julian)	Lodging (%)
Alzada	105.0	62.8	13.4	30.1	168.1	<u>89.8</u>
CDC Defy	119.2	64.0	12.1	39.0	170.7	51.2
Divide	112.7	63.8	13.0	39.1	171.9	59.7
Joppa	114.1	64.3	12.5	36.6	171.7	46.6
Lustre	114.1	63.3	12.6	37.7	172.8	81.7
Mountrail	118.1	64.0	12.4	35.6	171.0	52.2
MT Blackbeard	106.4	63.2	13.4	38.6	173.6	78.7
MT Raska	109.7	63.8	13.0	28.9	168.2	0.5
ND Riveland	116.6	64.1	12.7	39.5	171.7	16.3
ND Stanley	120.0	64.7	13.1	34.4	173.3	9.1
MTD19011	120.8	63.0	12.5	36.6	171.8	47.1
MTD19241	119.2	63.3	13.0	35.4	171.4	88.6
MTD22011	113.4	62.7	12.8	35.3	173.4	11.5
MTD22013	119.2	62.9	12.6	32.8	171.9	26.9
MTD22016	114.1	64.2	12.2	37.7	172.6	10.5
MTD22030	<u>125.8</u>	63.8	11.9	36.4	172.6	45.0
MTD22045	121.0	64.2	12.1	35.4	170.7	36.1
MTD22075	114.2	63.8	12.9	36.0	171.9	59.7
MTD22090	112.3	63.5	13.2	37.9	172.0	69.5
MTD22175	113.9	63.3	12.8	36.5	172.0	79.0
MTD22206	110.7	64.7	13.4	36.6	172.2	11.3
MTD22417	112.0	64.8	13.2	41.7	174.4	57.0
MTD22419	120.2	64.5	12.2	37.9	172.6	9.9
MTD22431	105.3	63.5	12.2	39.0	174.3	53.7
MTD22447	104.8	64.4	13.5	36.5	172.3	20.1
MTD22473	119.3	63.1	12.3	37.1	173.1	46.3
MTD22627	113.7	63.8	13.0	39.0	173.8	53.5
MTD22999	105.6	63.5	13.2	26.8	167.3	3.8
MTD23067	125.2	61.7	13.4	30.6	170.7	12.0
MTD23103	105.2	62.9	14.4	32.4	168.4	19.6
Average	114.4	63.6	12.8	35.9	171.7	41.6
LSD(0.05)	7.3	0.9	0.6	3.2	1.7	26.7
Prob > F	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CV%	3.6	0.7	2.9	5.4	0.6	38.5
Lattice RE% ⁴	147.4	113.1	101.4	100.0	104.4	100.2

¹Grain yield reported on a 13% moisture basis.²Grain protein reported on a 12% moisture basis.³>50% of heads 100% out of boot.⁴Adjusted means provided for Lattice RE% values equal to or greater than 100.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 7. Agronomic Data EARC 2025 Rainfed Durum Advanced Yield Trial.

ID	Yield ¹ (bu/ac)	Test Weight (lbs/bu)	Protein ² (%)	Plant Height (inches)	Heading ³ (Julian)
Alzada	47.4	60.4	13.9	27.0	170.3
CDC Defy	55.5	64.2	12.8	35.0	171.6
Divide	47.8	63.8	13.7	34.5	173.9
Joppa	44.2	62.8	14.0	32.9	174.2
Lustre	31.8	61.4	14.4	33.0	174.2
Mountrail	50.7	62.8	13.5	33.0	174.0
MT Blackbeard	57.7	63.2	13.8	37.8	175.3
MT Raska	48.9	63.0	13.9	24.7	170.0
ND Riveland	50.7	62.9	14.1	33.7	174.2
ND Stanley	42.8	64.0	15.0	32.5	174.4
MTD19011	56.6	62.8	13.1	31.8	173.0
MTD19241	57.6	63.5	13.9	31.9	173.2
MTD22011	47.8	63.7	14.1	32.8	175.0
MTD22013	46.1	61.4	15.3	29.8	173.8
MTD22016	47.8	62.6	14.6	32.5	174.3
MTD22030	55.6	63.7	12.7	33.8	173.6
MTD22045	50.1	63.0	13.3	32.9	171.9
MTD22075	50.1	62.9	14.6	32.0	172.3
MTD22090	43.6	62.5	15.4	33.8	174.8
MTD22175	47.3	59.9	14.9	30.4	171.2
MTD22206	48.4	63.7	14.9	32.0	174.2
MTD22417	57.4	64.3	14.2	38.2	174.5
MTD22419	51.7	63.6	14.8	33.8	174.4
MTD22431	51.2	63.8	13.1	33.8	174.2
MTD22447	44.7	63.3	14.7	33.0	173.4
MTD22473	53.3	62.5	13.7	33.8	174.3
MTD22627	45.0	64.1	14.0	33.1	175.1
MTD22999	50.4	63.5	13.7	22.6	168.8
MTD23067	<u>58.5</u>	61.2	14.3	26.9	171.7
MTD23103	50.9	62.0	14.9	29.9	170.9
Average	49.7	62.9	14.1	32.1	173.2
LSD(0.05)	10.4	1.2	1.3	2.2	1.2
Prob > F	0.004	<.0001	0.003	<.0001	<.0001
CV%	11.7	1.0	5.2	4.1	0.4
Lattice RE% ⁴	109.6	112.6	126.4	100.9	109.1

¹Grain yield reported on a 13% moisture basis.²Grain protein reported on a 12% moisture basis.³>50% of heads 100% out of boot.⁴Adjusted means provided for Lattice RE% values equal to or greater than 100.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 8. Agronomic Data CARC 2025 Rainfed Durum Advanced Yield Trial.

ID	Yield ¹ (bu/ac)	Test Weight (lbs/bu)	Protein ² (%)	Plant Height (inches)	Heading ³ (Julian)
Alzada	45.0	62.6	10.5	29.3	172.9
CDC Defy	52.8	64.4	10.5	34.0	173.3
Divide	51.1	63.7	10.0	34.0	175.2
Joppa	48.2	63.4	10.5	34.3	175.1
Lustre	48.6	63.5	10.0	31.3	174.6
Mountrail	42.8	63.0	10.6	34.0	175.1
MT Blackbeard	43.5	64.5	10.3	35.7	177.7
MT Raska	43.8	63.2	10.3	28.7	173.5
ND Riveland	46.6	64.1	10.5	33.7	176.1
ND Stanley	44.3	64.1	11.1	31.7	175.6
MTD19011	50.1	63.6	10.0	32.7	175.9
MTD19241	47.9	64.4	10.1	32.0	175.0
MTD22011	47.5	63.3	10.8	31.3	177.5
MTD22013	41.7	63.1	10.8	28.0	175.0
MTD22016	44.4	64.0	10.3	34.7	177.1
MTD22030	53.5	63.9	10.1	32.7	175.7
MTD22045	47.6	64.0	10.1	33.3	174.7
MTD22075	46.0	63.8	10.8	32.7	175.1
MTD22090	47.6	63.8	10.3	33.0	176.7
MTD22175	56.9	62.9	10.1	32.3	173.3
MTD22206	40.6	64.9	10.6	33.0	175.4
MTD22417	47.4	65.1	10.3	34.7	178.2
MTD22419	47.3	64.6	10.5	33.3	175.9
MTD22431	50.9	63.9	10.5	34.7	177.6
MTD22447	46.0	64.1	11.5	33.7	175.4
MTD22473	46.0	63.1	10.1	33.3	176.3
MTD22627	47.6	65.0	11.0	33.7	178.0
MTD22999	42.9	63.6	11.2	23.3	168.1
MTD23067	47.0	62.0	10.5	26.7	173.2
MTD23103	46.4	63.2	10.8	32.7	172.7
Average	47.1	63.8	10.5	32.3	175.2
LSD(0.05)	8.3	0.4	1.0	2.8	1.8
Prob > F	0.080	<0.001	0.192	<0.001	<0.001
CV%	9.5	0.4	5.5	5.3	0.6
Lattice RE% ⁴	113.5	101.7	100.0	100.0	102.5

¹Grain yield reported on a 13% moisture basis.²Grain protein reported on a 12% moisture basis.³>50% of heads 100% out of boot.⁴Adjusted means provided for Lattice RE% values equal to or greater than 100.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 9. Agronomic Data NARC 2025 Rainfed Durum Advanced Yield Trial.

ID	Yield ¹ (bu/ac)	Test Weight (lbs/bu)	Protein ² (%)	Plant Height (inches)	Heading ³ (Julian)	Maturity ⁴ (Julian)
Alzada	51.2	56.5	16.1	30.5	163.7	196.7
CDC Defy	49.0	58.2	16.5	32.5	166.0	199.4
Divide	50.0	56.3	16.5	33.9	166.7	200.3
Joppa	41.9	57.3	16.3	31.8	166.7	200.4
Lustre	47.2	56.0	16.3	32.1	167.0	199.3
Mountrail	44.9	57.4	16.7	31.5	166.3	196.4
MT Blackbeard	46.9	57.2	16.8	33.3	166.7	201.0
MT Raska	53.0	58.6	16.1	26.4	166.7	200.6
ND Riveland	48.1	56.4	16.8	34.9	166.7	200.6
ND Stanley	44.2	57.8	17.0	32.4	167.0	200.0
MTD19011	54.5	56.2	16.8	33.7	167.0	199.7
MTD19241	55.9	57.2	16.7	33.0	167.0	200.0
MTD22011	40.1	56.5	17.5	30.0	167.7	200.3
MTD22013	49.0	56.7	16.9	28.9	166.7	200.3
MTD22016	44.8	57.3	16.8	32.4	167.0	200.0
MTD22030	48.2	56.7	16.2	32.8	167.0	200.0
MTD22045	46.5	56.9	16.4	32.4	166.7	199.0
MTD22075	44.5	56.9	17.2	30.4	166.7	200.4
MTD22090	41.6	57.0	17.5	31.9	166.3	200.7
MTD22175	47.3	54.6	17.7	29.2	166.0	200.7
MTD22206	46.3	58.2	17.8	31.1	167.3	200.0
MTD22417	46.3	58.1	16.8	33.3	167.0	199.6
MTD22419	47.2	57.7	16.3	33.4	166.0	200.7
MTD22431	40.3	57.5	16.1	33.0	166.7	200.3
MTD22447	38.7	57.4	17.3	31.2	166.3	200.7
MTD22473	44.9	55.0	17.0	32.9	166.3	199.0
MTD22627	45.9	58.2	16.7	34.2	165.7	199.7
MTD22999	47.2	59.1	16.0	23.6	165.3	196.0
MTD23067	53.5	56.4	17.1	27.5	166.3	200.3
MTD23103	49.5	56.7	17.1	30.5	164.3	199.7
Average	47.0	57.1	16.8	31.5	166.4	199.7
LSD(0.05)	5.2	0.7	0.6	2.3	1.3	1.1
Prob > F	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CV%	6.7	0.7	2.1	4.5	0.5	0.3
Lattice RE% ⁵	100.0	100.0	113.4	100.0	100.0	101.1

¹Grain yield reported on a 13% moisture basis.²Grain protein reported on a 12% moisture basis.³>50% of heads 100% out of boot.⁴>50% of heads 100% loss of green color.⁵Adjusted means provided for Lattice RE% values equal to or greater than 100.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 10. Agronomic Data Choteau, MT 2025 Off-station Rainfed Durum Advanced Yield Trial.

ID	Yield (bu/ac)	Test Weight (lb/bu)	Protein (%)	Plant Height (inches)	Sawfly Damage (%)
AAC Stronghold	64.7	60.7	16.8	31.1	1.0
Alzada	57.1	60.7	15.3	28.0	15.0
CDC Defy	63.6	61.3	15.7	33.7	16.7
Divide	58.5	60.4	16.7	32.9	13.3
Joppa	48.1	60.9	15.2	32.7	31.7
Lustre	59.1	59.6	16.8	31.0	23.3
MT Raska	64.4	61.9	15.8	25.6	2.3
MT Blackbeard	67.9	61.5	16.9	34.3	5.0
ND Riveland	50.8	60.1	17.0	33.1	5.0
ND Stanley	41.3	60.8	16.2	30.3	31.7
MTD19011	65.9	60.2	16.3	32.6	11.7
MTD19241	57.2	60.6	16.0	29.4	2.3
Average	58.2	60.7	16.2	31.2	13.2
LSD (p=0.05)	6.9	0.4	0.5	2.1	9.8
Prob > F	<0.001	<0.001	<0.001	<0.001	<0.001
CV%	7.0	0.4	1.7	3.9	43.7

¹Grain yield reported on a 13% moisture basis.²Grain protein reported on a 12% moisture basis.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 10. Agronomic Data Valier, MT 2025 Off-station Irrigated Durum Advanced Yield Trial.

ID	Yield (bu/ac)	Test Weight (lb/bu)	Protein (%)	Plant Height (inches)	Lodging (%)
AAC Stronghold	105.8	62.0	15.6	29.8	0.0
Alzada	84.0	61.3	14.5	26.2	33.3
CDC Defy	98.7	62.9	14.8	33.7	0.0
Divide	94.7	62.0	15.4	31.8	23.0
Joppa	87.7	62.3	15.1	29.0	23.0
Lustre	103.9	61.8	15.4	32.2	26.4
MT Raska	86.0	62.5	15.0	25.7	0.0
MT Blackbeard	102.3	63.0	15.2	33.3	23.0
ND Riveland	93.7	62.0	15.9	34.3	0.0
ND Stanley	105.2	63.1	15.1	32.2	0.0
MTD19011	98.9	61.6	15.0	29.7	7.7
MTD19241	96.3	62.1	15.4	27.6	7.7
Average	96.4	62.2	15.2	30.4	12.0
LSD (p=0.05)	10.8	0.4	0.4	2.1	9.6
Prob > F	<0.001	<0.001	<0.001	<0.001	<0.001
CV%	6.6	0.4	#REF!	8.3	18.7

¹Grain yield reported on a 13% moisture basis.

²Grain protein reported on a 12% moisture basis.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 12. Agronomic Data Wibaux Co., MT 2025 Off-station Rainfed Durum Advanced Yield Trial.

ID	Yield (bu/ac)	Test Weight (lb/bu)	Protein (%)	Plant Height (inches)	Sawfly damage (%)
AAC Stronghold	57.0	63.3	15.4	35.3	16.7
Alzada	63.2	61.9	14.0	30.6	56.7
CDC Defy	62.6	64.5	15.0	40.3	40.0
Divide	64.9	64.1	14.8	38.5	33.3
Joppa	59.8	63.8	14.6	37.7	40.0
Lustre	59.7	63.1	15.1	38.6	33.3
MT Raska	<u>66.7</u>	64.4	14.7	29.3	13.3
MT Blackbeard	59.5	63.5	14.7	39.8	40.0
ND Riveland	60.6	64.6	15.3	38.6	40.0
ND Stanley	60.0	64.2	15.2	36.2	33.3
MTD19011	61.5	63.5	15.8	37.1	40.0
MTD19241	64.5	63.3	15.3	35.2	20.0
Average	61.7	63.7	15.0	36.4	33.9
LSD (p=0.05)	12.6	0.8	1.3	2.1	15.9
Prob > F	0.930	<0.001	0.395	<0.001	<0.001
CV%	12.0	0.8	5.1	3.5	27.6

¹Grain yield reported on a 13% moisture basis.²Grain protein reported on a 12% moisture basis.

Bold and underlined indicate the highest yielding line.

Table 13. Agronomic Data McCone Co., MT 2025 Off-station Rainfed Durum Advanced Yield Trial.

ID	Yield (bu/ac)	Test Weight (lb/bu)	Protein (%)	Plant Height (inches)	Sawfly damage (%)
AAC Stronghold	65.5	64.6	15.9	35.7	13.3
Alzada	68.9	62.9	14.7	30.4	26.7
CDC Defy	63.8	64.4	15.6	38.2	40.0
Divide	65.8	64.4	15.8	38.1	23.3
Joppa	62.8	64.3	14.6	38.5	56.7
Lustre	61.5	63.4	16.1	37.1	26.7
MT Raska	64.0	63.9	15.6	28.9	13.3
MT Blackbeard	66.2	64.8	15.6	38.3	33.3
ND Riveland	68.1	64.7	15.0	38.7	23.3
ND Stanley	65.5	65.1	15.2	36.1	30.0
MTD19011	<u>72.2</u>	63.8	15.2	38.2	30.0
MTD19241	63.1	63.8	15.9	34.1	16.7
Average	65.6	66.6	67.6	68.6	69.6
LSD (p=0.05)	9.7	0.9	0.5	1.5	16.3
Prob > F	0.628	0.002	<0.001	<0.001	<0.001
CV%	8.7	0.8	0.4	1.3	13.8

¹Grain yield reported on a 13% moisture basis.²Grain protein reported on a 12% moisture basis.

Bold and underlined indicate the highest yielding line.

Table 14. Agronomic Data Roosevelt Co., MT 2025 Off-station Rainfed Durum Advanced Yield Trial.

ID	Yield (bu/ac)	Test Weight (lb/bu)	Protein (%)	Plant Height (inches)	Sawfly damage (%)
AAC Stronghold	26.9	63.5	17.6	22.6	10.0
Alzada	26.2	62.2	16.5	21.1	43.3
CDC Defy	22.2	63.0	17.3	24.4	46.7
Divide	23.8	62.8	16.7	25.7	36.7
Joppa	20.2	63.1	17.0	23.8	50.0
Lustre	24.5	61.2	17.4	24.8	30.0
MT Raska	25.5	63.8	17.2	20.6	33.3
MT Blackbeard	26.1	63.0	16.6	26.2	43.3
ND Riveland	25.1	62.8	17.1	26.0	36.7
ND Stanley	18.4	63.5	17.2	22.7	50.0
MTD19011	22.3	62.3	17.4	23.4	50.0
MTD19241	<u>28.3</u>	62.8	17.4	25.9	13.3
Average	24.1	62.8	17.1	23.9	36.9
LSD (p=0.05)	3.9	0.6	0.4	2.8	11.9
Prob > F	0.001	<0.001	<0.001	0.003	<0.001
CV%	9.6	0.6	1.4	7.0	19.1

¹Grain yield reported on a 13% moisture basis.

²Grain protein reported on a 12% moisture basis.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 17. Agronomic Data Chester, MT 2025 Off-station Rainfed Durum Advanced Yield Trial.

ID	Yield ¹ (bu/ac)	Test Weight (lbs/bu)	Protein ² (%)	Plant Height (inches)
AAC Stronghold	36.5	58.4	17.5	28.0
Alzada	40.4	57.6	16.3	26.7
CDC Defy	37.4	57.8	17.1	30.4
Divide	40.8	58.0	16.1	29.4
Joppa	35.9	57.0	17.1	29.7
Lustre	37.7	56.7	16.8	29.9
MT Raska	36.8	58.8	17.2	23.3
MT Blackbeard	<u>44.8</u>	58.9	16.3	32.1
ND Riveland	36.9	58.0	17.2	31.2
ND Stanley	38.7	58.4	17.0	28.1
MTD19011	<u>42.6</u>	57.8	16.7	29.6
MTD19241	39.5	57.5	17.1	27.9
Average	39.0	57.9	16.9	28.9
LSD(0.05)	2.9	0.7	0.6	1.7
Prob > F	<0.001	<0.001	<0.001	<0.001
CV%	4.4	0.7	0.2	3.5

¹Grain yield reported on a 13% moisture basis.

²Grain protein reported on a 12% moisture basis.

³Adjusted means provided for Lattice RE% values equal to or greater than 100.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 18. Agronomic Data Loring, MT 2025 Off-station Rainfed Durum Advanced Yield Trial.

ID	Yield ¹ (bu/ac)	Test Weight (lbs/bu)	Protein ² (%)	Plant Height (inches)
AAC Stronghold	29.6	58.9	<u>15.9</u>	26.5
Alzada	24.6	58.7	14.7	25.5
CDC Defy	28.4	59.2	15.0	27.4
Divide	26.4	58.8	15.4	29.0
Joppa	25.1	58.8	14.4	29.3
Lustre	27.9	58.1	15.0	28.9
MT Raska	23.6	<u>59.2</u>	15.2	25.5
MT Blackbeard	30.1	59.2	15.2	<u>30.2</u>
ND Riveland	24.4	58.0	15.7	29.5
ND Stanley	25.7	59.0	15.1	27.3
MTD19011	<u>31.3</u>	58.0	14.4	28.9
MTD19241	<u>34.4</u>	58.7	14.8	26.5
Average	27.6	58.7	15.1	27.9
LSD (p=0.05)	3.8	0.4	0.4	1.2
Prob > F	<0.001	<0.001	<0.001	<0.001
CV%	8.1	0.4	1.7	2.5

¹Grain yield reported on a 13% moisture basis.

²Grain protein reported on a 12% moisture basis.

³Adjusted means provided for Lattice RE% values equal to or greater than 100.

Bold and underlined indicate the highest yielding line, bolded lines are statistically similar based off LSD.

Table 19. Seed Traits from 2025 On-station Durum Advanced Yield Trials (n=5, NARC data excluded).

ID	Test weight (lbs/bu)	Large seeds ¹ (%)	Small seeds ² (%)	Hardness index ³	Individual seed weight (mg)	Individual seed diameter (mm)	Grain Protein ⁴ (%)	Grain ash ⁵ (%)	Falling number ⁵ (sec)
Alzada	61.0	69.3	1.3	70.0	46.9	3.18	13.6	1.45	456.2
CDC Defy	62.7	47.8	1.8	81.3	42.1	2.95	13.0	1.39	405.9
Divide	62.3	56.2	1.6	72.6	43.6	3.00	13.3	1.35	417.7
Joppa	62.4	52.0	3.3	72.9	44.4	3.00	13.3	1.40	387.8
Lustre	61.7	46.8	2.6	73.7	42.3	2.95	13.0	1.33	439.8
Mountrail	61.8	46.4	2.9	72.8	43.8	2.99	13.1	1.40	412.6
MT Blackbeard	62.8	72.6	0.6	73.9	47.1	3.17	13.4	1.41	395.2
MT Raska	62.6	55.3	2.1	80.1	40.7	2.99	13.5	1.41	399.7
ND Riveland	62.3	62.1	1.0	72.5	45.4	3.03	13.5	1.44	416.0
ND Stanley	63.0	63.0	1.5	75.9	43.8	3.02	13.5	1.44	414.6
MTD19011	61.8	61.0	1.1	72.3	44.6	3.04	13.0	1.36	429.7
MTD19241	62.3	46.8	2.2	77.1	39.2	2.90	13.3	1.39	423.7
MTD22011	62.4	63.7	1.5	69.9	44.6	3.06	13.6	1.43	407.7
MTD22013	61.6	52.7	2.6	67.4	44.5	3.01	13.6	1.42	410.7
MTD22016	62.5	60.4	2.0	70.2	45.7	3.05	13.4	1.40	408.5
MTD22030	62.6	62.9	1.0	70.0	45.6	3.06	12.3	1.36	412.9
MTD22045	62.6	63.2	1.1	73.0	44.7	3.07	12.9	1.40	373.7
MTD22075	62.5	59.5	1.1	75.4	43.5	3.05	13.7	1.43	418.6
MTD22090	62.2	58.0	3.2	74.9	43.5	3.01	13.6	1.45	378.6
MTD22175	60.8	55.4	2.8	77.6	42.0	2.96	13.4	1.44	373.9
MTD22206	63.2	54.4	2.1	73.7	42.9	2.95	14.0	1.42	418.9
MTD22417	63.0	64.7	0.7	76.4	45.4	3.09	13.3	1.45	386.5
MTD22419	62.8	59.9	1.5	77.0	43.0	3.00	13.4	1.43	370.6
MTD22431	62.2	66.4	1.0	67.6	48.9	3.12	12.9	1.40	364.9
MTD22447	62.6	61.2	1.2	70.7	44.4	3.04	14.2	1.48	431.9
MTD22473	61.6	57.9	1.3	71.5	43.6	2.98	13.1	1.42	392.9
MTD22627	63.2	60.8	1.3	76.2	43.5	3.03	13.6	1.41	403.5
MTD22999	62.3	61.6	1.2	76.5	42.3	3.06	13.7	1.41	388.8
MTD23067	60.8	61.6	1.0	73.8	46.5	3.10	13.3	1.42	388.1
MTD23103	61.4	64.3	0.8	70.6	46.1	3.05	14.1	1.46	351.4
Average	62.2	58.9	1.7	73.6	44.2	3.03	13.4	1.41	402.7
LSD(0.05)	0.7	6.1	1.9	2.9	2.7	0.08	0.5	0.05	31.6
Prob>F	<0.001	<0.001	0.208	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CV(%)	0.9	8.3	89.5	3.2	4.9	2.2	2.9	1.1	6.3

¹Seeds $\geq$ #7 Tyler Mesh²Seeds #9 $\geq$ #12 Tyler Mesh³Determined using the single kernel characterization system.⁴Reported on a 12% moisture basis⁵Reported on a 14% moisture basis

Bold and underlined indicate the highest numerical value within a column.

Table 20. Milling Quality from 2025 On-station Durum Advanced Yield Trials (n=5, NARC data excluded).

ID	Bran ¹ (%)	Shorts ¹ (%)	Semolina Yield ¹ (%)	Semolina Protein ² (%)	Semolina ash ² (%)
Alzada	26.2	7.5	66.3	12.4	<u>0.71</u>
CDC Defy	28.7	6.8	64.5	11.7	0.62
Divide	27.5	6.2	66.3	11.8	0.61
Joppa	27.0	6.3	66.7	11.9	0.62
Lustre	27.4	6.5	66.0	11.7	0.61
Mountrail	27.0	6.4	66.6	12.0	0.64
MT Blackbeard	27.0	6.7	66.4	11.8	0.65
MT Raska	27.2	6.9	65.9	12.0	0.62
ND Riveland	<u>29.7</u>	7.2	63.1	12.0	0.64
ND Stanley	26.7	6.4	66.9	12.1	0.61
MTD19011	26.4	6.6	67.0	11.6	0.61
MTD19241	29.2	6.6	64.1	11.9	0.61
MTD22011	26.7	6.2	<u>67.1</u>	12.1	0.62
MTD22013	27.0	6.3	66.7	12.0	0.58
MTD22016	26.8	6.4	66.9	11.9	0.62
MTD22030	26.4	5.9	67.6	10.9	0.57
MTD22045	26.9	6.4	66.6	11.4	0.63
MTD22075	28.1	7.2	64.7	12.3	0.64
MTD22090	28.3	6.9	64.8	12.0	0.61
MTD22175	29.2	7.4	63.4	12.0	0.64
MTD22206	26.2	6.1	67.6	12.6	0.61
MTD22417	27.9	6.9	65.2	11.8	0.63
MTD22419	28.9	<u>7.6</u>	63.5	11.8	0.62
MTD22431	28.1	7.6	64.4	11.2	0.61
MTD22447	27.0	7.0	66.0	<u>12.7</u>	0.64
MTD22473	29.2	6.9	63.9	11.5	0.63
MTD22627	28.0	7.1	64.9	12.1	0.62
MTD22999	27.1	7.0	65.9	12.3	0.62
MTD23067	27.4	7.2	65.5	11.8	0.68
MTD23103	27.5	7.3	65.3	12.8	0.66
Average	27.6	6.8	65.7	11.9	0.63
LSD(0.05)	0.7	0.3	0.8	0.5	0.03
Prob>F	<0.001	<0.001	<0.001	<0.001	<0.001
CV(%)	2.1	3.4	0.9	3.2	4.4

¹Milled on Brabender Quadrumat Jr. Mill. Shorts sifted using a #35 US sieve.

²Reported on a 14% moisture basis

Bold and underlined indicate the highest numerical value within a column.

Table 21. Semolina Quality from 2025 On-station Durum Advanced Yield Trials (n=5, NARC data excluded).

ID	L^1	b^{*1}	a^{*1}	Mix Time ² (min)	Peak Integral ² (%Tq*min)	Gluten Index ³ (1-100)
Alzada	84.2	28.6	-2.74	4.7	244.9	97
CDC Defy	84.6	29.6	-3.02	3.9	177.8	40
Divide	85.5	25.8	-2.83	3.9	191.4	74
Joppa	85.2	27.3	-2.95	4.3	201.7	73
Lustre	85.3	26.6	-2.79	3.5	170.6	63
Mountrail	85.6	22.9	-2.47	2.4	108.2	8
MT Blackbeard	85.1	27.4	-3.04	4.8	239.6	95
MT Raska	84.9	25.9	-2.69	4.1	187.6	81
ND Riveland	85.4	27.4	-3.12	4.4	226.8	90
ND Stanley	85.5	26.8	-3.05	3.7	184.5	88
MTD19011	85.0	27.7	-2.92	4.0	188.4	68
MTD19241	85.1	29.2	-3.14	3.8	181.5	76
MTD22011	85.6	26.8	-3.12	3.1	149.8	55
MTD22013	85.9	25.4	-3.02	3.3	157.5	67
MTD22016	85.6	26.2	-2.97	3.5	162.2	73
MTD22030	86.2	23.8	-2.88	3.9	186.5	80
MTD22045	85.7	24.6	-2.84	4.0	185.9	80
MTD22075	85.2	26.6	-2.97	4.4	211.8	84
MTD22090	85.1	26.9	-2.87	3.5	166.6	61
MTD22175	84.5	28.0	-2.81	4.6	215.6	86
MTD22206	85.5	26.7	-3.04	3.0	138.9	56
MTD22417	85.4	27.4	-3.13	3.9	194.7	73
MTD22419	85.2	27.1	-2.99	4.0	199.4	87
MTD22431	85.0	26.6	-2.81	3.7	164.5	61
MTD22447	84.9	27.6	-2.96	3.8	166.9	49
MTD22473	85.3	27.8	-3.16	3.8	182.4	75
MTD22627	85.1	28.5	-3.16	3.8	178.6	61
MTD22999	84.7	25.7	-2.65	4.3	190.7	79
MTD23067	84.5	24.6	-2.48	4.1	193.8	89
MTD23103	84.9	26.5	-2.84	4.3	194.8	63
Average	85.2	26.7	-2.92	3.9	184.8	71
LSD(0.05)	0.3	0.6	0.12	0.4	22.4	-
Prob>F	<0.001	<0.001	<0.001	<0.001	<0.001	-
CV(%)	0.3	1.9	3.3	7.8	9.7	-

¹Determined using the Konica Minolta CR-400 Chroma Meter using CIELAB Color Space L^* =whiteness, b^* =yellowness, a^* =redness.

²Determined using MixSmart software.

³Bozeman rainfed. Determined using Perten Glutomatic.

Bold and underlined indicate the highest numerical value within a column.

Table 22. Durum Fusarium Head Blight Field Evaluation 2025 (Dr. Frankie Crutcher, EARC, Sidney, MT).

ID	Yield (bu/ac) ^a	Severity (%) ^b	Incidence (%) ^c	Index ^d	DON (ppm)
Alzada	18.9 e	11.5a	65.5 a-c	7.6 a-d	42.6 a-d
CDC Defy	40.2 a-e	5.2ab	60 a-c	3.1 c-e	22.6 cd
Divide	41.7 a-e	6.1ab	72.2 a-c	4.4a-e	18.9 d
Joppa	29.6 a-e	7.0 ab	75.5 ab	5.3 a-e	38.1 a-d
Lustre	33.2 a-e	9.5 ab	74.4 ab	7.1 a-e	28.9 b-d
Mountrail	26.7 c-e	10.8 a	86.6 a	9.5 ab	37.0 a-d
MT Blackbeard	32 a-e	5.3 ab	58.8 a-c	3.1 c-e	42.5 a-d
MT Raska	31 a-e	7.1 ab	61.1 a-c	4.7 a-e	31.9 b-d
MTD22473	39.7 a-e	6.3 ab	63.3 a-c	4.1 a-e	24.4 cd
MTD19011	24.7 c-e	6.5 ab	66.6 a-c	4.4 a-e	21.5 cd
MTD19241	47.3 a-d	5.1 ab	63.3 a-c	3.2 c-e	27.5 cd
MTD22011	28.9 a-e	7.3 ab	80.0 ab	5.8 a-e	46.1 a-c
MTD22013	22.7 de	8.3 ab	75.5 ab	6.3 a-e	38.1 a-d
MTD22016	28.1 a-e	6.2 ab	70.0 a-c	4.4 a-e	31.0 b-d
MTD22030	41.9 a-e	5.5 ab	71.1 a-c	3.9 b-e	37.2 a-d
MTD22045	31.3 a-e	6.6 ab	73.3 a-c	4.9 a-e	46.1 a-c
MTD22075	28.2 a-e	6.1 ab	67.7 a-c	4.1 a-e	38.4 a-d
MTD22090	34 a-e	5.8 ab	65.5 a-c	3.8 b-e	30.3 b-d
MTD22175	39.7 a-e	9.0 ab	72.2 a-c	6.5 a-e	34.6 a-d
MTD22206	24.3 c-e	6.8 ab	74.4 ab	5.1 a-e	36.2 a-d
MTD22417	51.4 b	3.8 b	56.6 a-c	2.3 c-e	24.5 cd
MTD22419	27.1 b-e	5.3 ab	65.5 a-c	3.6 b-e	53.6 ab
MTD22431	48.6 a-c	3.5 b	50 bc	1.9 de	28.7 b-d
MTD22447	41.6 a-e	6.1 ab	63.3 a-c	3.9 b-e	32.9 a-d
MTD22627	43.3 a-e	5.0 ab	48.8 bc	2.4 c-e	32.1 a-d
MTD22999	26.5 c-e	8.5 ab	53.3 a-c	4.5 a-e	46.9 a-c
MTD23067	22.0 e	9.5 ab	87.7 a	8.3 a-c	57.7 a
MTD23103	31.0 a-e	11.6 a	86.6 a	10.2 a	36.8 a-d
ND Riveland	52.5 a	3.2 b	38.8 c	1.2 e	22.2 cd
ND Stanley	32.9 a-e	7.3 ab	71.1 a-c	5.1 a-e	35.8 a-d
Average	34.0	6.9	67.3	4.8	34.8
CV%	32.1	39.5	21.2	54.2	11.3
HSD(0.05)	8.1	2.1	16.0	1.6	7.5
Prob>F	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Letters in common did not differ significantly according to a Tukey's HSD test at a significance level of 5%.

^aGrain yield adjusted to 12.0% moisture.

^bPest Severity: Average percent area of head covered by disease. Thirty heads were evaluated for each plot.

^cPest Incidence: Percent of thirty plants per plot that had visible FHB symptoms.

^dIndex: Severity X Incidence / 100

Table 23. Durum Stripe Rust Field Evaluation by Natural Infection 2025 (Dr. Xianming Chen, USDA-ARS, Pullman, WA).

Location Date Growth stage ID	Pullman, WA		Central Ferry			
	7/14		6/4		6/26	
	Feekes 10.54		Feekes 6		Feekes 10.54	
	(IT) ¹	(%) ²	(IT) ¹	(%) ²	(IT) ¹	(%) ²
Alzada	3	15	2	20	3	10
CDC Defy	3	15	3	20	2	10
Divide	2	5	3	20	2	5
Joppa	5	20	2	20	2	15
Lustre	5	20	3	20	2	10
Mountrail	3	15	3	20	2	5
MT Blackbeard	5	20	9	50	2	10
MT Raska	8	60	5	30	5	30
ND Riveland	2	10	3	30	3	20
ND Stanley	3	20	2	20	2	15
MTD19011	2	10	2	20	2	10
MTD19241	3	15	2	20	2	5
MTD22011	5	20	2	20	2	5
MTD22013	2	10	2	20	2	5
MTD22016	3	15	2	20	2	5
MTD22030	5	30	2	20	-	-
MTD22045	5	30	5	40	3	20
MTD22075	5	20	2	20	3	15
MTD22090	5	30	2	20	2	10
MTD22175	2	10	2	20	2	5
MTD22206	5	10	2	20	2	5
MTD22417	5	15	3	30	2	5
MTD22419	5	20	5	40	3	15
MTD22431	5	20	3	30	2	5
MTD22447	3	15	5	30	-	-
MTD22473	3	15	3	30	3	20
MTD22627	5	20	3	30	2	10
MTD22999	5	20	5	40	8	80
MTD23067	3	15	3	30	2	10
MTD23103	3	15	3	30	3	20
AvS (Sus. check)	9	95	9	60	9	100

¹Infection 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.

²Percent severity.

Entries with a high IT in the first note, but a low IT in the second note at Mt. Vernon may indicate that they have high-temperature, adult-plant (HTAP) resistance.

Table 24. Durum greenhouse Tan Spot Evaluation 2026 (Dr. Zhaohui Liu, NDSU, Fargo, ND).

ID	DW5	331-9	86-124	AR CrossB10	Pti2
Alzada	3.7	3.7	2.7	2.3	<u>3.2</u>
CDC Defy	3.2	3.0	1.8	2.2	2.3
Divide	3.5	2.7	2.7	2.8	3.2
Joppa	<u>4.0</u>	3.2	<u>3.5</u>	2.7	2.5
Lustre	2.8	2.5	2.7	2.5	2.3
Mountrail	3.7	<u>3.8</u>	3.0	2.7	2.8
MT Blackbeard	3.0	2.0	2.0	2.2	2.7
MT Raska	2.5	2.3	2.2	1.7	1.8
ND Riveland	3.3	3.0	2.2	1.8	2.3
ND Stanley	3.0	2.7	2.2	2.2	2.8
MTD19011	3.2	3.0	2.5	2.5	2.7
MTD19241	2.3	3.3	2.3	2.0	2.5
MTD22011	3.0	3.5	3.0	2.7	3.0
MTD22013	3.5	3.2	2.7	2.7	2.8
MTD22016	3.2	3.0	2.5	2.3	2.8
MTD22030	3.5	3.5	2.7	3.0	2.8
MTD22045	2.8	3.0	2.5	2.3	3.0
MTD22075	3.2	3.0	2.7	2.3	2.3
MTD22090	3.2	2.5	2.2	1.8	2.2
MTD22175	2.0	2.2	1.5	1.3	2.3
MTD22206	3.3	3.7	2.5	<u>3.2</u>	2.7
MTD22417	2.8	3.3	1.8	1.7	2.0
MTD22419	2.7	2.3	1.8	1.7	2.5
MTD22431	4.0	2.8	2.3	2.0	1.7
MTD22447	1.7	2.2	1.8	1.8	2.3
MTD22473	2.2	2.7	1.8	1.3	2.2
MTD22627	2.5	2.2	1.2	1.5	1.2
MTD22999	2.5	2.5	2.0	2.0	2.0
MTD23067	3.3	2.7	1.8	2.2	2.5
MTD23103	3.5	3.0	2.5	2.3	2.8
Salamouni (res. check)	1.3	1.7	1.1	1.0	1.1
Glenlea (sus. check)	3.6	3.4	4.4	3.3	4.4
6B365 (check)	2.3	4.7	2.8	4.3	3.4
6B662 (check)	3.7	2.5	2.2	2.5	2.5
Average	3.0	2.9	2.3	2.3	2.5
LSD (p=0.05)	0.8	1.0	0.8	0.9	0.9
Prob > F	<0.001	<0.001	<0.001	<0.001	<0.001
CV%	17.0	20.9	20.1	23.2	22.6

¹Evaluation with five *P. tritici-repentis* races, DW5 (race 5), 331-9 (race 3), 86-124 (race 2), AR CrossB10 (race unclassified), and Pti2 (race 1) using a 0-5 scale, 1,2=resistant, 3=moderately susceptible, 4, 5=highly susceptible. Averaged over three replications. Bold and underlined indicate the highest numerical value within a column.